




# AIR UNIVERSITY Review

JULY-AUGUST 1979



The logo for Air University Review features a large, stylized letter 'R' on the left, composed of several overlapping, slightly offset shapes in shades of brown and tan. To the right of the 'R', the words 'AIR UNIVERSITY' are written in a clean, sans-serif, all-caps font. Below 'AIR UNIVERSITY', the word 'review' is written in a much larger, bold, serif font, with the letters in a dark brown color.

# AIR UNIVERSITY review

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## *from the editor's aerie*

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*Since I do not foresee that atomic energy is to be a great boon for a long time, I have to say that for the present it is a menace. Perhaps it is well that it should be. It may intimidate the human race into bringing order into its international affairs, which, without the pressure of fear, it would not do.*

Albert Einstein as quoted in  
*Peter's Quotations, Ideas for Our Time*  
edited by Dr. Laurence J. Peter

Though we did not plan it that way, it seems quite fitting that the current crop of articles appears at the centennial of the birth of Albert Einstein. From his incomparable work in physics and through his celebrated letter warning President Roosevelt of the potential of nuclear devastation, there is a more or less straight line to our lead article on the strategic aspect of neutron weapons. Professor Don Snow's fine article on that subject provided inspiration for our cover, which illustrates the serious complexities the enhanced radiation weapon holds for both humanity and our environment. It is also appropriate that the Einstein centennial and our cover accommodate two other articles: John Kohout's analysis of the future of the manned bomber and Jill Heuer's discussion of Soviet scientific and engineering manpower. We hope you find this collection stimulating, and any comments from you are welcome.

By now, the science of which Einstein was a founder has matured to the point where it has a rapidly growing history of its own. The bibliography of nuclear warfare and the associated arms control efforts are reaching gigantic dimensions that rival those of air power itself. One of the primary tools for such studies has been *United States Air Force History—A Guide to Documentary Sources*. A testimonial to the pace of this technological expansion is the fact that the book, published only in 1973, is already somewhat dated and a revision is under way. Any of our readers having suggestions or pertinent documents for the new edition should contact Lawrence J. Paszek of the Office of Air Force History (Autovon: 297-4548).

Writings on arms control, a topic much in the news, provide the subject for M.I.T. Professor Mark Katz's fine review-article. For those who believe that generalship was invented before Hiroshima, Dr. I. B. Holley of Duke University has given us his analysis of the most recent biographies of one of the Army's great men, John J. Pershing. As a final word, readers who think they might like to get involved in this book reviewing effort have only to call Major Ted Kluz at Autovon 875-2773 (Commercial 205-293-2773) for more details.



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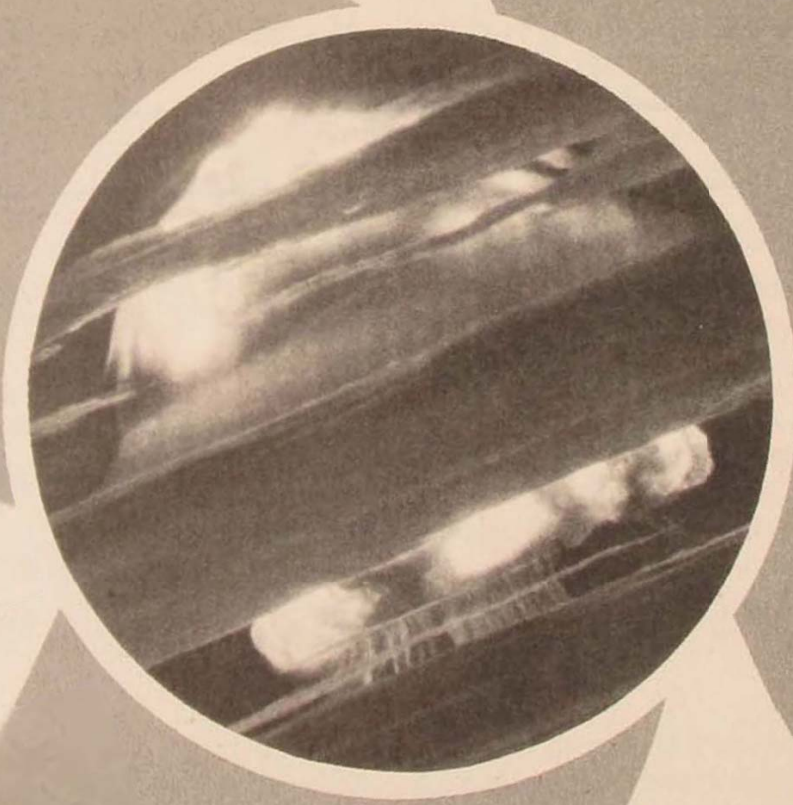
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# STRATEGIC IMPLICATIONS OF ENHANCED RADIATION WEAPONS

a preliminary analysis  
DR. DONALD M. SNOW



IN July 1977 the Carter administration announced that it was prepared to arm the W70-3 Lance missile with the so-called "enhanced radiation" or "neutron" warhead for theater use, primarily against Soviet armor in Europe. The announcement has caused a flurry of reaction and debate both within the United States and among members of the North Atlantic Treaty Organization (NATO) alliance. The debate has focused on several issues regarding use of this type of warhead at the tactical level, while discussions of possible strategic implications of enhanced radiation (ER) bombs have been missing from analysis.

The context of the current debate has focused on the short-range delivery (the Lance missile has a 170-mile range) of small warheads supporting conventional forces. The deuterium-tritium fusion reaction, which is the basis of ER warfare, is not limited to small warheads but can be extended to warheads of the megaton or larger yield; there are practical but not theoretical limits to the size of a fusion reaction.

Although the original announcement of the wedding of the ER warhead with the Lance missile created the impression that a new technological breakthrough in warhead design had been achieved, the technology, in fact, is not new at all. Rather, the "basic designs for the 'enhanced radiation device' . . . were completed at California's Lawrence Livermore Laboratory in December, 1958," and the first experimental weapon was detonated in spring 1963, according to a *Los Angeles Times* account.<sup>1</sup> Work on ER weaponry was largely associated with development of the antiballistic missile (ABM) system,<sup>2</sup> an Army project that may help explain why, in its 1977 reincarnation, ER weaponry has been associated with tactical battlefield applications. According to *Washington Post* reporter Walter Pincus, "the Ford administration . . . originally requested funds for the enhanced-radiation Lance,"<sup>3</sup> public knowledge of which came about "when ERDA [Energy Research and

Development Agency] failed to delete from published testimony at a House public works appropriations subcommittee hearing the fact that the warhead . . . was to be produced."<sup>4</sup>

The technology underlying ER warheads is thus "an old one," as one author puts it.<sup>5</sup> There is, however, little knowledge about this kind of device in the literature and little understanding of how so-called "neutron bomb effects" compare to other forms of nuclear reaction. Basically, there are three forms of nuclear reaction in warheads: fission, fission-fusion, and fission-fusion-fission.<sup>6</sup>

- Fission, which involves splitting atoms of unstable elements such as U-235 or plutonium and creating energy from that process, is the simplest and most primitive. The result of fission, which was the basis of the original atomic bombs, causes many residual particles, some of which are highly radioactive, to be released into the atmosphere. Many of these radioactive particles find their way back into the ecosystem, resulting in a high level of contamination or residual radiation and, thus, the designation of fission bombs as "dirty" weapons.

- In the fission-fusion form of reaction, energy production results from fusing deuterium and tritium atoms under high temperatures to form helium, with the emission of a "fast" neutron as a by-product. As Legault and Lindsey describe it:

The main fusible nuclei are the heavy isotopes of hydrogen: deuterium (H<sup>2</sup>) and tritium (H<sup>3</sup>) . . . . At temperatures of tens of millions of degrees, H<sup>2</sup> and H<sup>3</sup> will fuse, liberating a very fast neutron and a great amount of energy.<sup>7</sup>

The process is called fission-fusion because creation of the heat necessary to begin the fusion process requires the use of a small fission explosion or trigger. Fusion itself does not create any residual radiation, although the freeing of neutrons by the process creates enormous initial neutron and gamma radiation. Some residual radiation is emitted by the

fission trigger, and there is some concern about the physical properties of otherwise inert materials when they are subjected to neutron bombardment. There are no theoretical limits on the size of a fusion reaction. Since the entire reaction occurs in milliseconds and because of the randomness of neutron emission, not all the possible fusions of deuterium and tritium will occur, so that practical warhead designs place an upward limit in the one-megaton (MT) range.

- In the fission-fusion-fission process, the reaction begins with a fission trigger, which in turn initiates a fusion reaction. The fission-fusion-fission warhead, however, has an outer coating of fissionable material, such as U-236 or plutonium, the reaction of which is triggered by the heat and neutron emission of the fusion process. To obtain very large (i.e., multiple megaton) blasts requires use of fission-fusion-fission; thus, the chain reaction associated with it has a kind of multiplier effect which allows very large yields (the Russians purportedly have tested a 85-megaton device using this process). Since the ultimate factor in the reaction is fission, however, there is the creation of the same kind of residual radiation as is associated with the simple fission process.

The ER weapon, obviously, falls into the category of fission-fusion or thermonuclear reactions. It is an extremely powerful and efficient form of nuclear reaction that derives its effectiveness by suppressing certain of the effects of nuclear blasts while enhancing others. The way in which these blast effects are "rearranged" in the thermonuclear (as opposed to the fission) reaction creates the rationale for their utilization in battlefield conditions and provides some properties that may give these weapons strategic applicability.

As is well known, the basic lethal effects of nuclear explosion come from heat, pressure, and radiation (initial and residual). While fission warheads rely heavily on all of these effects to accomplish their deadly purpose, the major effects of ER weapons occur through the

emission of neutrons. As Harold M. Agnew explains it:

. . . the fusion process produces neutrons, heat, blast and fallout but produces many more neutrons and, specifically, more high-energy neutrons in relation to the other products than does the fission process.<sup>8</sup>

Thus, the secret to enhancing the radiation from this kind of weapon involves maximizing the proportion of neutron emission compared to other nuclear effects. Feld summarizes the degree to which this can occur:

In principle, if it were possible to neglect the effects of the fission trigger, a pure thermonuclear bomb . . . could release up to 80 percent of its energy in the form of fast neutrons.<sup>9</sup>

The power of the reaction derives from the fact that the so-called "fast neutrons" emitted in the thermonuclear reaction create more energy than neutrons produced in fission. Frank Barnaby notes that "the neutrons produced during the fusion process have much greater energy than fission neutrons. On average, each deuterium-tritium fusion event produces 14 MeV of free neutron energy, compared with 3 MeV for each fission event."<sup>10</sup> Moreover, "fusion is a more efficient explosive process than fission. The complete fusion of, for example, about 6 grammes of deuterium and about six grammes of tritium would produce an explosion of one kiloton."<sup>11</sup> By comparison, about 56 grams of plutonium are necessary to create a one-kiloton fission reaction.

The deadly effects of the explosion are created both by heat and blast and neutron radiation. According to Barnaby, within a 500-meter radius of a one-kiloton ER blast, everything would simply disappear (primarily from heat and blast effects). Within one kilometer (KM), there would be immediate incapacitation and early death (within hours from the neutron and gamma radiation) for all exposed individuals. Within two KM of ground zero, there would be severe radiation sickness, and most exposed individuals would die within

a few weeks.<sup>12</sup> It might be emphasized that these effects would result from use of a warhead one-fifteenth to one-twentieth the yield of the devices used at Hiroshima and Nagasaki and that outside the immediate heat and blast area (the 500-meter radius), very little collateral damage would occur.

Because "enhanced radiation . . . is achieved not so much by increasing the output of neutrons as by suppressing everything else,"<sup>13</sup> heat and blast effects are limited to the immediate blast area. Lethal effects occur when neutrons penetrate and destroy tissue, a principle employed in radiation treatment of cancer. As Agnew puts it, ". . . certain of the radiations such as neutrons have what the medical profession calls a high LET (linear energy transfer). This means they interact with living tissue in a strong manner."<sup>14</sup>

The lethality of neutron radiation occurs because neutrons will penetrate any medium, although with varying effectiveness depending on the medium. Schematically, this relationship can be described by the formula

$$N = N_0 e^{-\mu X}$$

where  $N$  is the number of penetrating neutrons,  $N_0$  the initial number radiated, and  $e$  to the minus  $\mu X$  is an exponential factor wherein  $\mu$  is the absorption coefficient ( $\mu$ , in turn, is a function of the type of material and the energy of the radiation) and  $X$  the thickness of the substance being penetrated. The  $\mu X$  factor is stated negatively to connote the degradation effect (active radiation is effectively limited to the period light is being emitted from the stem of the explosion and constantly decreases). The relation between the absorption coefficient and thickness, obviously, is inverse; the greater the thickness of a given material, the more neutrons will be absorbed by it. Thus, reducing radiation effects involves using protective substances that are highly absorptive or of increasing thickness. Conversely, enhancing penetration involves improving the penetrability of the neutrons by devices such as increasing their speed or by more closely

approximating what physicists refer to as a mono-energetic beam of neutrons (making more uniform the speed of the stream of irradiated neutrons).

In terms of capability as a "people-killer," the effectiveness of these weapons depends on the penetrability of neutron radiation through various materials that might be used as protection against this weapon. Virtually no public information is available on this crucial point, but some less direct information is. For instance, the weapons have been heralded for their use against Soviet armor, such as tanks. Since their kill-power derives from their radiation effects, apparently neutron radiation will penetrate Soviet armor plating efficiently enough to contaminate the inhabitants. According to Towell, "Data on regular nuclear blasts indicated that the lethal radius of any given amount of neutron radiation against troops in tanks or in foxholes was only 20-30 per cent less than the effective radius for troops out in the open."<sup>15</sup> In addition, Feld maintains that, "these neutrons can penetrate reasonable thicknesses of materials—up to, say, a meter of concrete. . . ."<sup>16</sup> This latter factor is of some importance when dealing with the application of ER warheads as a countermeasure to the Soviet civil defense program.

These weapons are thus very lethal. "A workable neutron bomb would probably have the same radiation (neutron)-killing capability, at a given range, as a 'normal' nuclear weapon of about five times the explosive power."<sup>17</sup> If delivery capabilities allow it, the weapons can be used highly selectively. Herbert Scoville observes:

Special designs to allow more and higher neutrons to escape from the bomb material enhance the neutron effects, but even if ten times as many neutrons are released, the lethal range will only be increased by about one-third.<sup>18</sup>

At the same time, since fusion produces no residual radiation, "the cleanest bomb would be a fission-fusion bomb with the minimum amount of fission necessary to trigger the thermonuclear reaction."<sup>19</sup> In the context of



ALCM-23



ALCM-34



ALCM-14

*Air-launched cruise missiles, in various wing and stabilizer configurations, being released by B-52 bombers (artist's concept)*



tactical utilization of these weapons as proposed by the Carter administration, however, there has arisen considerable controversy.

THE Lance missile-equipped enhanced radiation warhead has been advanced as a theater weapon in Europe. The use of small ER warheads to attack Warsaw Pact armor and incapacitate the crews through exposure to intense neutron radiation is said to have at least three tactical advantages. First, Secretary of Defense Harold Brown maintains that, because of reduced heat and blast damage, "they would make our constraints policy of minimizing collateral damage easier to achieve."<sup>20</sup> Since heat and blast are limited to the immediate zone around the blast, it is thus argued that there would be less damage to buildings and landscape than with other weapons. Second, since there is virtually no residual radiation from the weapons (other than the radiation from the fission trigger), forces could occupy the attacked area within a matter of hours without special protective clothing and without fear of contamination. Third, if the armor were attacked outside the limited area where heat and blast effects occur but inside the zone of intense radioactivity (the one-kilometer zone in the example above where radiation achieves the necessary 800 rad level), the tanks themselves would be largely undamaged and could be appropriated for NATO use.

Despite these advantages, the use of ER weapons in the manner suggested has met considerable resistance. Reservations about the ER-Lance weapon have basically been focused on two concerns: that the existence and potential use of such weapons may contribute to lowering the nuclear threshold; and that, since little is known about the long-term effects of neutron radiation on humans and some inert materials such as soil, their use may be inhumane and even border on self-imposed bans on radiological weapons.

The purported virtue of the ER-armed Lance missile is that it would be a useful tool for dealing with the overwhelming Warsaw Pact advantage in armor, and especially tanks, should war break out in Europe. This very usefulness is viewed by some, however, as a vice, in that such a weapon might be employed in situations where more conventional nuclear weapons would not. As one European observer puts it, "we believe that the *only* real motivation for the development of the neutron bomb is the intention to *use* it in cases where existing nuclear weapons would not be employed."<sup>21</sup>

This argument basically says that the use of ER warheads, because they do not present many of the difficulties associated with other nuclear weapons (e.g., large-scale collateral damage, residual radiation), is more "thinkable" and, thus, lowers the nuclear threshold. Feld states that, "by contributing to the illusion that nuclear weapons are usable . . . the deployment of neutron bombs could greatly enhance the chances of . . . nuclear war,"<sup>22</sup> and thus raises the possibility of unleashing the escalatory process.

This line of argumentation is similar to the more general debate about whether the doctrine of flexible response, by elaborating contingency plans for controlled employment of nuclear weapons, contributes to the likelihood of actual use and thus lowers the threshold. The essence of this general problem was captured by Alain Enthoven in 1965:

There is and will remain an important distinction . . . between nuclear and non-nuclear war, that both combatants can recognize and agree upon, if they want to agree upon one. And, in the nuclear age, they will have a very powerful incentive to agree upon this distinction and limitation because if they do not, there does not appear to be another easily recognizable limitation on weapons—no other obvious "firebreak"—all the way up the destructive spectrum to large scale thermonuclear war.<sup>23</sup>

Secretary Brown, writing in the 1979 *Annual Report*, recognizes this potential problem but maintains that ER weapons do not lower the

firebreak: "These weapons would not lower the nuclear threshold: the consequences of using any nuclear weapons are so uncertain that the decision to release enhanced radiation weapons would be no easier than any other nuclear decision."<sup>24</sup> Regardless of the position one takes on this issue, the problem is well summarized in the staff summary of the Arms Control Impact Statement (ACIS) of the ER-equipped Lance: "The principal dilemma for policy-makers considering the W70-3 is whether the perceived gains for deterrence outweigh the perceived risks of a lowered nuclear threshold."<sup>25</sup>

Arguments opposing ER weapons on the basis of their effects focus on two elements: their capacity for causing human suffering and their potential effects on the ecosystem. Those opposing the employment of the weapons on humanitarian grounds in turn tend to argue on one of two grounds.

First, outside the area where instant (or nearly instant) incapacitation and death occur, little is known about the psychological and physiological impact of massive doses of neutron radiation. These opponents raise the hypothetical question of whether soldiers so exposed and knowing they were dying, but not yet physically incapacitated, would fight with more abandon and ferocity than a normal soldier. Since death, in the outer reaches of the affected area, can take weeks and be accompanied by a gradual and gruesome onset of radiation sickness, the capacity for destruction of such individuals could be quite high and might cancel any advantages that the initial use of the weapons had created.

Second, little is known about the genetic implications of exposure to neutron radiation, leading Miettinen to conclude, "No 'deterrent' which would have incalculable consequences for future generations should be introduced to the battlefield under the guise that the weapon is 'small' and 'clean.'"<sup>26</sup> Viewing the overall effects of ER weapons on humans, Barnaby says, "The high lethality of these weapons, and

their potential for causing unnecessary human suffering, are sufficient reasons for banning them."<sup>27</sup> Senator H. John Heinz III (R-Pa.) goes a step further: "To perpetrate death by neutron radiation smacks of the sort of chemical and biological warfare that has historically outraged civilized nations."<sup>28</sup>

The second concern involves the stimulation of certain otherwise dormant elements in the soil that exposure to the massive neutron bombardment associated with detonation of an ER warhead would entail. Elements that could be affected include carbon and cobalt,<sup>29</sup> and the commentary on the Arms Control Impact Statement carries the additional admonition: "Neutrons emitted by the detonation would combine with nitrogen present in the atmosphere to form Carbon-14 ( $C^{14}$ ) isotopes.  $C^{14}$  is highly radioactive with a half-life of 5,720 years."<sup>30</sup>

WHILE the W70-3 proposal has stimulated considerable controversy within the limited confines of that program, there has been no public dialogue about potential strategic implications of this warhead. For instance, the analysis of the Arms Control Impact Statement states, "The ACIS does not intimate whether it expects anyone will perceive a strategic application for ER weapons . . . It does not comment on whether the United States has plans for applying the ER concept to strategic weaponry."<sup>31</sup>

This silence is strange because enhanced radiation warhead technology does have potential strategic applications. While making no pretense of being exhaustive or even representative about potential strategic implications of ER weapons, I perceive at least one possible strategic mission that is worthy of consideration, if not necessarily adoption. That application would involve arming a portion of the cruise missile force (more specifically the air-launched cruise missile or ALCM, and as command and control and accuracy increase,

possibly the submarine-launched cruise missile or SLCM) with ER warheads as a direct response to challenges to the hostage effect crucial to the doctrine of mutual assured destruction (MAD) posed by the Soviet civil defense program. If employed in a proper manner, such a deployment could have a beneficial effect on the strategic nuclear balance by reducing the Soviet's ability to calculate survivability and recovery in a general nuclear exchange. Because the neutron radiation emitted by these weapons can penetrate passive defense structures (air raid shelters), Soviet survival plans would be compromised. By attaching these warheads to an obviously second-strike weapon such as the ALCM and withholding their use to the point where general countervalue exchange occurs, this deployment could have the simultaneous effects of raising the nuclear threshold by reinforcing the assuredness of destruction and preserving maximum flexibility of nuclear response.

The effects of the Soviet passive defense program, which includes elements such as evacuation plans for the Russian urban population, air raid shelters to protect key personnel, and the conscious dispersal of industry and population, have been the subject of considerable debate. The discussion has encompassed both the effectiveness of the system in protecting the population and the implications of the program for strategic stability. Because much of deterrence is psychological and thus based on perceptions of the utility of strategic programs, much conjecture has emerged about what the Russians think the effects of their civil defense program are.

The literature on the subject is growing, but Paul H. Nitze summarizes the issue effectively for our purpose:

... the Soviet Union has adopted programs that have much the same effect on the situation as an ABM program would have. And as the Soviet civil defense program becomes more effective it tends to destabilize the deterrent relationship for the same reason: the United States can then no longer

hold as significant a proportion of the Soviet population as a hostage to deter a Soviet attack.<sup>32</sup>

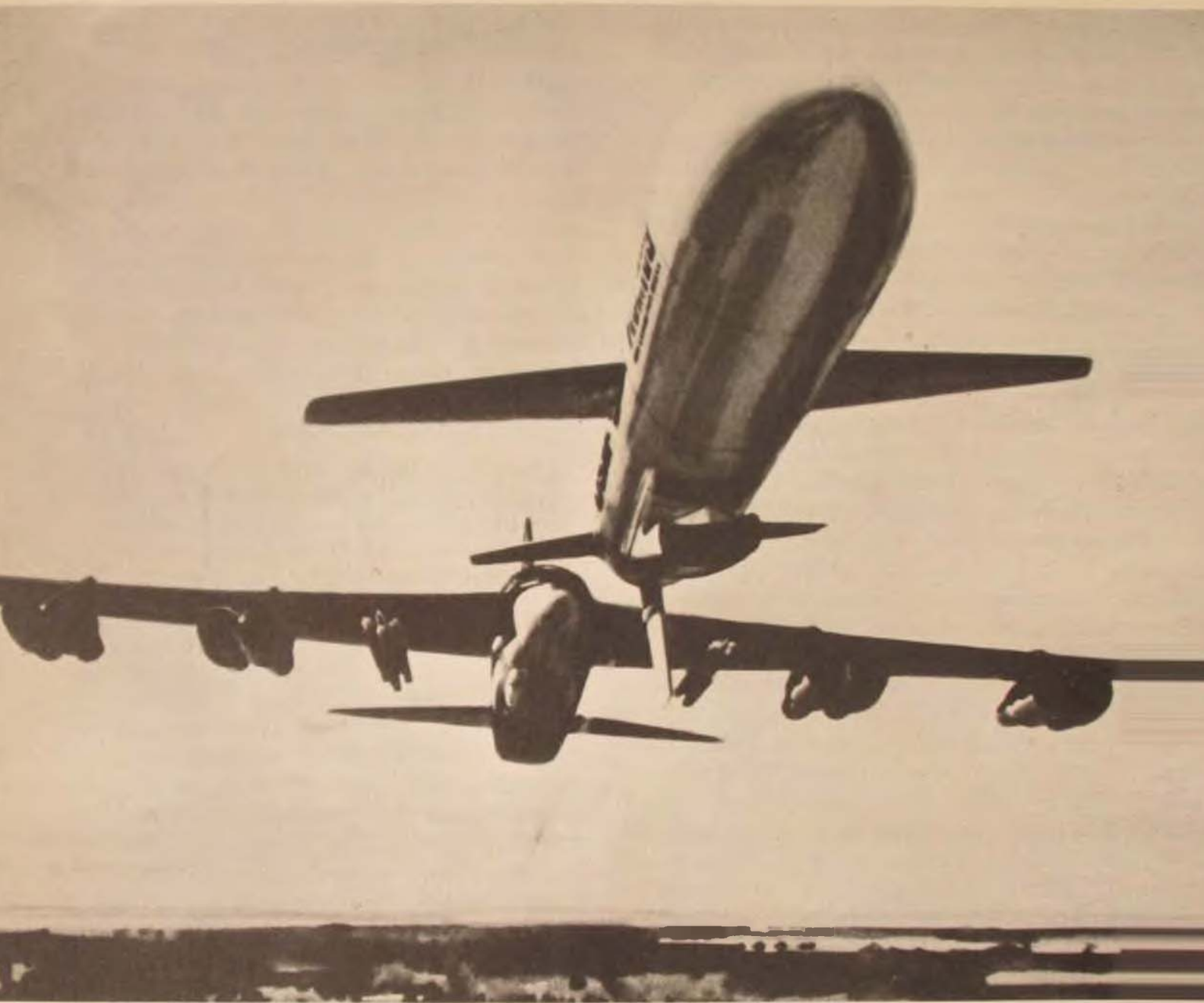
Much of this analysis arises from two sources. First, stated Soviet nuclear strategy does not make the same sharp distinctions between deterrence and warfighting that American doctrine does. Indeed, the Soviets, at least publicly, maintain that the basis of their deterrence of an American nuclear attack is American knowledge that the Soviets would win such a war. From that mind-set, a war-winning strategy that includes civil defense follows.<sup>33</sup> Second, the Soviets have talked increasingly of their ability to protect their population. As Nitze points out:

In the Soviet Defense Manual issued in large numbers beginning in 1969 and 1970, the estimate is made that implementation of the prescribed evacuation and civil defense procedures would limit the civilian casualties to five to eight percent of the urban population and three to four percent of the total population—even after a direct U.S. attack on Soviet cities.<sup>34</sup>

The effect is "dangerously eroding the U.S. deterrence posture."<sup>35</sup>

These claims are hotly contested by other observers, who point out that the Soviet projections are almost entirely conjectural in nature; the Soviets have never attempted the evacuation of a major city, for instance, the effectiveness of which would depend on such unpredictable factors as weather.<sup>36</sup> Statements about the level of civilian survival if procedures are carried out doubtless have an exhortatory intention, and it is not clear that the Soviets believe these pronouncements. Regarding Soviet strategic statements generally, Jack L. Snyder avers that "the Soviets may be not only inscrutable, but also inveterate liars."<sup>37</sup> Secretary Brown is also reported to be "skeptical of the utility of these programs for either superpower and confident of the U.S. ability to overcome Soviet civil defense measures through retargeting and other expedients."<sup>38</sup>

Speculation on the effectiveness of Soviet



*The air-launched cruise missile (ALCM), when armed with an enhanced radiation warhead, is notable for penetration, accuracy, and second-strike capability. The artist's concept shows the ALCM as released from a B-52.*

civil defense programs is not intended here. The fact is that the Russians have engaged in an elaborate and expensive civil defense buildup and that they would not have made such an investment without reason. The obvious purpose is the protection of the population or, at least in the shelter program, "protecting essential cadres and key industrial personnel."<sup>39</sup> To the extent the Russians believe in the effectiveness of this program (and it is not particularly important if they are correct unless we can convince them otherwise), they can begin realistically to calculate personal and societal survival and recovery from a nuclear war. In turn, such perceptions weaken the hostage effect that is vital to MAD and the ultimate recourse under the policy of flexible response and, thus, the basis of deterrence as it is understood by Americans and presumably Russians.

The arming of ALCMs with ER warheads may be an effective way to alter Soviet perceptions about survival arising at least from the shelter program. The combination of these technologies may be appealing for at least three reasons:

- The penetrating character of the neutrons emitted from ER warheads through substances like concrete obviates the protection from lethal effects against which the shelters are designed. Reinforced concrete shelters can be hardened against both heat and blast effects of nuclear weapons, but their protective capacities against neutron radiation is questionable. While undoubtedly there would be degradation of the radiation effect due to absorption, uncertainty about the level of contamination that people within the shelters would suffer has to force recalculation of any possible survival of inhabitants. As radiation properties are enhanced and delivery capabilities reduce targeting errors to the point of near certainty of hitting a target, the probability of lethality will increase. In all likelihood, the Soviets would take countermeasures better to shield the

shelters, but that would be an expensive and uncertain business.

This point is particularly important, considering the kinds of people the Soviets seek to protect in the shelters. Their calculation of winning a nuclear war apparently is premised on saving the highly skilled portion of the population for which the shelters are designed. Since "our deterrent is based on the ability to destroy what the Soviet leadership values most—the Soviet state as a functioning entity, the economic base which is the pride of the Communist regime, and the nation's ability to recover from a nuclear war"<sup>40</sup>—the last individuals one wants to release from the hostage relationship are those who would be the major architects of recovery.

- The accuracy of the cruise missile makes it an excellent delivery system for ER warheads. In order to best ensure that a target is within the effective radius of the neutron radiation of an ER warhead, it is necessary to ensure that there is a high level both of penetrability of the weapon (to ensure that it gets to its target) and accuracy of delivery. The cruise missile, whose "terrain-comparison guidance allows pinpoint accuracy, sufficient to destroy many hard targets,"<sup>41</sup> can be fired accurately enough to ensure a high probability of kill adequate to dissuade anyone who felt he could survive an attack. One author maintains, for instance, that versions of the weapon currently under development have a circular error probable of 100 feet at a range of 2000 kilometers.<sup>42</sup> This accuracy figure can be compared to the destructive impact of a one-KT neutron warhead, to get some idea of lethal effect.

John J. McLucas further points out that the current cruise models are comparatively primitive and that the technology is available to produce "a future fleet of cruise missiles that is tied together through data links at a control center, which keeps track of their position and performance."<sup>43</sup> Such a system could direct retargeting and evasive actions, among other things. The ALCM is thus not only a very

effective attack weapon, but it will in all likelihood improve significantly.

- Because the cruise missile is obviously a second-strike weapon, which can be used in conjunction with the most controllable leg of Triad (the strategic bomber force), the use of ER-tipped weapons can be withheld until the situation is sufficiently desperate to justify their use. Improved command and control associated with the Trident submarine may make the sea-launched version of cruise an attractive platform as well, given its high survivability. As has been suggested, the strategic utility of ER warheads would be in re-establishing (or reinforcing) the hostage effect against those key personnel the Soviets seek to protect with their shelter program. Thus, the weapons would serve the ultimate countervalue deterrent purpose of threatening to kill people, a mission which is the logical extension of MAD.

If most normal conceptions of how a nuclear war might be conducted are correct, the kinds of values against which ER warfare would be most effective are not targets one would wish to attack early in an exchange. Congruent with Thomas C. Schelling's analysis of the "diplomacy of violence,"<sup>44</sup> one would want to withhold attacks on critical values such as population as long as possible in order to maintain an ability to threaten increased and unacceptable hurt on the enemy. Alternatively, most Americans find the massive annihilation of innocent civilians repulsive and would prefer not to do so unless the situation were truly desperate, as in the case of a Soviet counter-cities attack on the U.S.

These usage scenarios imply that the United States would want to be in a maximal position to control and withhold these weapons as long as possible during an exchange. The ALCM fired from SAC bombers (B-52s or converted 747-type aircraft) or Trident-launched SLCMs seem to fit that need. As Ohlert states, "The cruise missile represents the ideal in offensive weaponry for a second-strike oriented nation. Its slow speed precludes its use as a first-strike

weapon, while its high pre-launch survivability deters an opponent's first-fire decision."<sup>45</sup> Thus, the high lethality of these weapons, delivered with great accuracy above or near the shelters (probably low air blasts), would put some of the terror back into the "balance of terror," while not being as provocative as they would if launched from other platforms such as ICBMs (which, as they become more vulnerable, will require progressively earlier launch). For ER weapons to be effective tools, one must have maximum control of them, and the enemy must know this control exists: the terror they engender can be allayed by an enemy's knowing the U.S. will use them only in desperate situations and knowing the U.S. has the capacity to control them until such use is absolutely necessary.

IN assessing the potential use of ER warheads as strategic weapons, we need to examine three additional points. First, are these weapons compatible with American strategic doctrine and particularly the limited options/MAD doctrinal debate? Second, what objections might be raised to these weapons? More specifically, are the objections raised about tactical use of ER weapons as valid in the strategic context? Finally, what, if any, arms control implications do these weapons have? Will they force a Soviet response that will add yet another spiral to the arms race? Because these questions have not yet been discussed in the public literature, the analysis must be somewhat tentative.

I believe the addition of ER weapons to the American arsenal would be compatible with the doctrine of mutual assured destruction and would be supportive of the notions of limited options and essential equivalence. The compatibility with MAD is straightforward: the basis of that doctrine is the holding of the Soviet population as the hostage of American

nuclear might. The Soviet shelter program, against which it has been suggested ER weapons might be an effective response, is dangerous to the stability of the strategic balance because it represents (or can be perceived to represent) a loosening of the hostage effect by promising the survival of key Soviet personnel and, thus, the capacity for postwar recovery. The ability to calculate survival in turn makes calculation of the fighting of a nuclear war less irrational and, thus, potentially more "thinkable." To the extent that ER weapons remove the ability to calculate survival, they make MAD-based deterrence more credible.

MAD as a basis for deterrence doctrine has, of course, been criticized as lacking credibility as a deterrent against anything but an all-out nuclear attack by the Soviet Union. Many observers view such an attack as the least likely form of Soviet nuclear aggression, both because it would be suicidal and because Soviet doctrine appears to favor a counterforce strategy. The dilemma in American MAD strategy has been described as the *ex post-ex ante* problem: the all-out countervalue destruction prescribed in MAD may provide maximum deterrence, but it might leave the U.S. with a single fighting option should deterrence fail.<sup>46</sup> The result has been the re-emphasis of flexible nuclear response, operationalized through the notion of limited nuclear options (LNO) and the force characteristics of essential equivalence.

The heart of the new doctrine is that, should nuclear exchange occur, the United States should have appropriate and symmetrical means to respond, rather than the single option of leveling Soviet cities. Thus, as former Secretary of Defense James Schlesinger pointed out, the U.S. should be able to respond to a limited Soviet counterforce strike in kind, rather than having the dual options of launching a massive countervalue response that would invite the destruction of American cities or of doing nothing.

Without dealing with the merits of the limited options/MAD debate, it is sufficient to say that the ultimate option within the doctrine of limited options is the threat of massive countervalue attack that is the centerpiece of MAD. LNO seeks to limit nuclear war beneath the level of general exchange, but central to doing so requires the maintenance of adequate and appropriate forces to guarantee the suicidal nature of general exchange. Thus, ultimately the hostage effect holds as a control over general exchange even in a limited nuclear environment. To the extent that holding in reserve the ER-cruise option contributes to the hostage effect, it is compatible with the general flexible response position.

The second question involves the objections that can be raised about strategic, as opposed to tactical, use of ER warheads. To address these objections requires looking again at the objections to the W70-3, though these objections are largely obviated in the strategic context.

The first objection to battlefield ER weapons is that they potentially lower the nuclear threshold because of their tactical utility. In the kind of potential strategic use suggested where these warheads would be held back as an ultimate countervalue weapon only to be employed when exchange had degenerated to the general level, this argument loses its force: the threshold would long since have been crossed before use of ER weapons is even contemplated. In the strategic context, it is rather possible to argue that such weapons raise the threshold by reinforcing the awful human consequences of nuclear exchange: the hostages recognize they are still (or once again) prisoners and, thus, certain victims.

The second objection is more delicate to deal with because it deals essentially with the inhumanity of systematically subjecting people to lethal doses of neutron radiation. Certain aspects of the argument are probably not germane (the question of the fighting tenacity of contaminated soldiers, for instance), but

others are. Radiation death, particularly for those who would die slowly, is obviously cruel and inhumane. It is also true that the genetic mutations that might occur in the survivors are not clearly understood, nor are ecological impacts such as the creation of  $C^{14}$  isotopes.

A response to these objections can take two interrelated forms. First, the use of nuclear weapons against humans is awful to contemplate under any circumstances and could hardly ever be couched in humanitarian terms. Killing people with neutron radiation is cruel, but so is extinction through fire, overpressure, and residual radiation. As has been pointed out, in one sense ER weapons are "clean" bombs: the residual radiation they emit is limited to that produced by the fission trigger. Conventional fission-fusion-fission warheads, while not as "dirty" as early versions, inevitably include residual radiation, the consequences of which for humans and the ecosystem are also largely speculative. In other words, this objection may amount to little more than asking what kind of postwar nuclear wasteland one prefers.

The answer to that theoretical question, quite obviously, is that the most preferable nuclear wasteland is no wasteland at all, leading to the second form of response. Since the consequences of the use of nuclear weapons are so unpredictable but potentially catastrophic, the "best" nuclear weapons to have are those that contribute most to the unlikelihood that any nuclear weapons will ever be used. To the extent that ER weapons would add to the stability of the nuclear system, they may, through an admittedly somewhat convoluted sort of logic, be viewed as "humanitarian," in that they make the use of any nuclear weapons less likely.

THE final consideration is the impact the ER-cruise option would have on

arms control and, more specifically, whether deployment would place the Russians in a position where they feel compelled to respond in such a manner as to harm arms control efforts. Setting aside the impact of cruise per se (which, because of size and ease of concealment, raises serious verification problems that apparently will be addressed in SALT II with a launcher sublimit of 70-120 bombers), the decision to deploy strategic ER warheads can be examined.

As has been pointed out, the technology to produce these weapons has been available to the United States for twenty years, and there is little reason to believe the Soviets cannot produce them as well. At the same time, deployment of the warheads would be impossible to verify, and, to the extent that verification remains a sticking point in ongoing discussions, deployment limits remain a problem.

The most important question concerns Soviet motivation to deploy, and the answer is mixed. On the one hand, Soviet pronouncements emphasize counterforce and war-winning. Implicit in this strategy is, at the end of a successful war, having something left that was worth winning (Soviet manuals, for instance, include occupation plans for Europe). In that context, a warhead that minimizes collateral damage is appealing in that it would preserve a maximum value at war's end. On the other hand, the Soviets have emphasized very large warheads, generally above the practical one-MT limit apparently imposed on ER warheads. Doubtless this preference results partially as compensation for lower Soviet accuracy in delivery. If the argument regarding the utility of ER weapons is valid, they are most useful when delivered with extreme accuracy. Until the Soviets have developed delivery systems with the kind of accuracy attributed to American cruise missiles (how far away they are is conjectural), they may find them undesirable as a component in their arsenal. If the history of arms control is a guide,



they will probably object to them (the Russians have generally objected to limits on anything they do not have or technologically cannot produce that the U.S. has for fear of cutting off future options).

Obviously, this analysis, particularly as it relates to possible objections to ER warheads and arms control implications, is very tentative and incomplete. The purpose here has not been to produce a definitive statement or advocacy of the strategic application of enhanced radiation warheads but rather to raise the veil of consideration of this option and thereby, it is

hoped, begin to stimulate public debate. The combination of ER warheads with cruise missile technology as a means to counter Soviet civil defense programs is but one possible application of this technology. There may be important technological or policy difficulties to this potential application that need critical examination, and there are doubtless other potential applications that should be explored. Regardless of the conclusions regarding strategic implications of ER warheads, the technology is available, and the options need to be analyzed.

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#### Notes

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10. Frank Barnaby, "Crossing the Nuclear Threshold," *New Scientist*, January 19, 1978, p. 151.
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12. *Ibid.*
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17. Barnaby, p. 151.
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24. *Annual Report, Department of Defense, Fiscal Year 1979*, p. 72.
25. "The Neutron Bomb Arms Control Impact Statement," *Congressional Record*, August 3, 1977, p. H8500.
26. Miettinen, p. 35.
27. Barnaby, p. 151.
28. Quoted by Towell, p. 1407.
29. This concern is raised by Pincus, "Production of Neutron Arms Backed," p. A2.
30. "The Neutron Bomb Arms Control Impact Statement," p. H8499.
31. *Ibid.*, p. H8500.
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33. For a thorough discussion and analysis of Soviet pronouncements on strategy, see Leon Courè, Foy D. Kohler, and Mose L. Harvey, *The Role of Nuclear Forces in Current Soviet Strategy* (Miami, Florida: Center for Advanced International Studies, 1974).

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35. Christopher Leeman and Peter C. Hughes, "'Equivalence' and SALT II," *Orbis*, vol. 20, 1976, p. 1053.

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37. *The Soviet Strategic Culture: Implications for Limited Nuclear Options*, a project Air Force report prepared for the United States Air Force (Santa Monica, California: Rand Corporation, September 1977), p. 5.

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46. Richard Rosecrance has written extensively on this problem. See particularly *Strategic Deterrence Reconsidered*, Adelphi Papers No. 116 (London: International Institute of Strategic Studies, 1975); and his edited volume, *The Future of the International Strategic System* (San Francisco: Chandler Publishing Co., 1972).

Our *air-launched cruise missile program* has our highest near-term strategic priority and we will soon modify aircraft from which to launch these new missiles if it becomes necessary.

Maj. Gen. James B. Currie  
Director of Programs  
DCS/Programs and Analysis

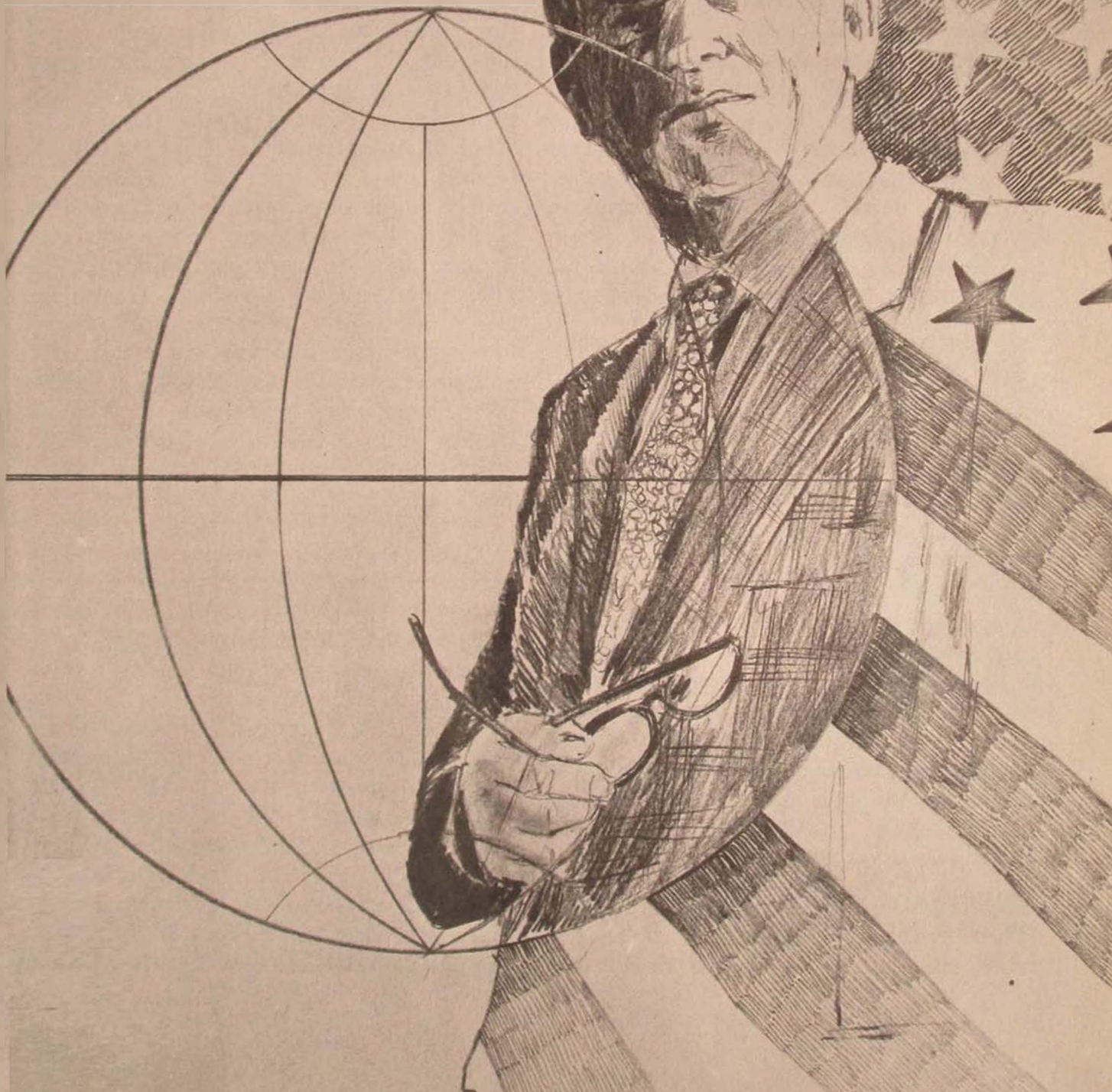
In Major Thad A. Wolfe's article "Soviet-United States Civil Defense: Tipping the Strategic Scale?" which appeared in our March-April 1979 issue, the annual civil defense dollar comparison in Table I (page 48) is incorrect. For the U.S. it should read: Estimated \$0.1B (i.e., decimal 1 billion or approximately \$100 million). For the U.S.S.R. it should read: Estimated \$1-2B (i.e., between one and two billion dollars). We regret the error and any confusion it may have caused our readers.

The Editor

# INTERDEPENDENCE, SPECIALIZATION, AND NATIONAL SECURITY

*problems for diplomats,  
soldiers, and  
scholars*

COLONEL WILLIAM J. TAYLOR, JR., USA



NATIONAL security studies have been concerned principally with geostrategic interests, goals and objectives, policies and programs, and domestic systems and processes that underpin strategy. Little enough attention has been given to the large numbers of people involved in large government bureaucracies that shape policy. Beginning in the late 1960s and early 1970s, Richard Neustadt, Graham Allison, Morton Halperin, and others expanded our analytical net to include organizational process and bureaucratic politics. This helped us understand better how people in the aggregate act and interact in the policy process and served to shed light on the political bargaining that takes place more or less among individual actors at the top federal agency levels.

In 1977, Allison and Peter Szanton reiterated that "organization matters" in remaking foreign policy, defining organization to include the combined effect of three factors:

(1) the *structure* of government, which is to say the existence of agencies having particular missions, authorities, and competencies and the nonexistence of others; (2) the *processes* by which issues are identified and assessed, decisions made and put into effect; and (3) the *people* whose energy, skills, and values more nearly than any other factor determine whether government works.<sup>1</sup>

They continue:

Processes . . . and people (as everyone knows) have fully as pronounced an effect on performance as does formal structure.<sup>2</sup>

This article suggests that too little attention is being accorded "what everyone knows." In this age of rapidly increasing interdependence, job qualifications and the performance of middle- and higher-level public servants constitute an increasingly important element of national power and a legitimate area of academic inquiry.

### Understanding National Security

There was a time, when national security studies emerged as a discrete field,<sup>3</sup> that

national security or national defense could be conceptualized rather narrowly in strategic and structural terms. In those days, one might have depicted the relationship between foreign policy and national security policy as two tangential spheres, one sphere concerned generally with the diplomacy of international political, organizational, economic, and legal relationships, and the other sphere focused on the more specific features of military strategy and the domestic politics of defense budgets. (See Figure 1.) The area of tangency between the two resided principally in alliance politics and Cold War diplomacy. The latter 1960s and early 1970s—the period including the end of the Cold War and the beginning of *détente*—drew the two spheres of foreign policy and national security closer together (Figure 2), as Strategic Arms Limitation Talks (SALT) and Mutual and Balanced Force Reductions (MBFR) discussions began and as international public trade and finance and multinational business became increasingly linked in the international politics of *détente*. The suddenness with which the 1973 oil embargo impelled interdependence into the consciousness of academicians and diplomats alike has all but fused the spheres of foreign policy and national security policy so that, as noted in Figure 3, it is difficult to conceptualize most aspects of the two apart.

Those involved in teaching separate, one-semester courses in foreign policy or national security policy have been confronted increasingly by a fundamental problem of pedagogy. Given the increasing numbers of formerly national security issues involved in foreign policy and vice versa, it is difficult to find sufficient time to do justice to the important issues subsumed by either course. "Linkage" presents as many problems for the academician as it does for the diplomat. In its simplest definition, linkage is "an international political strategy relating two or more issues in negotiations, and then using them as tradeoffs or pressure points, much as in a 'carrot and stick'



Figure 1



Figure 2



Figure 3

technique.”<sup>4</sup> The facts of interdependence facilitate policies of linkage. Although linkage strategy was ostensibly dropped by the Carter administration in 1977, its potential uses are legion. Finding solutions to the problems of interdependence and linkage may be more portentous (in terms of the national interest) for the diplomat, but teachers are nonetheless concerned about the responsibilities of serving well in the front line trenches of academia—the classrooms.

It is not news that it is practically impossible to do justice in contemporary discussions of human rights policy, arms control policy, or trade policy without pointing out the actual or potential relationships among them; the Jackson amendment and recent revisions in American arms transfer policy remain too fresh in our minds.

### Diplomats and Scholars: Common Problems

A second problem that flows from the realities of international interdependence and the requirements of linkage politics resides in the people who conduct diplomacy or teach. Both the study and the practice of foreign policy and national security policy place enormous demands on the intellects of practitioners. Nuclear strategy is no more the sole province of the political scientist than interna-

tional trade and finance fall exclusively in the realm of the economist. The demands on interdisciplinary understanding have become large indeed. The problem is not solely a function of the requirements of a world accelerating in interdependence. It is also a function of the revolutions in information and technology.<sup>5</sup>

Most would agree that the answer resides in specialization. The Department of State was the first federal agency to recognize and act on the trends. As early as 1954 the Wriston committee endorsed the principle of functional specialization. Reindorsed in 1962 by the Herter committee, the principle was put into practice in 1963 when State’s Board of Examiners began admitting candidates into one of three basic specialties or “cones” identified as political, economic, and administrative. The practice was endorsed once again in 1970 by the Macomber Report, “Diplomacy for the 1970’s: A Program of Management Reform for the Department of State.” But, by 1970, this type of functional specialization was already outmoded. Alvin Toffler told us why.

Despite much loose talk about the need for “generalists,” there is little evidence that the technology of tomorrow can be run without armies of highly trained specialists. We are rapidly changing the types of expertise needed. We are demanding more “multispecialists” (men who know one field deeply, but who can cross over into another as well) rather than rigid, “mono-specialists.”<sup>6</sup>

How much education is required for multi-specialization? Almost all career public officials must have a bachelor's degree before entry into a particular service. Even in the Army, 96 percent of all officers have bachelor's degrees. But is that enough? More than a decade ago Jerome B. Wiesner, educator and communications engineer, observed:

The need in this present decade for more individuals with superior graduate training was the central thesis of the [President's Science Advisory Committee's] first report. The role of the inventory with limited education, no matter how inspired, has diminished; on-the-job training has become a poor substitute for advanced formal education; and today the requisite background in fundamentals cannot be crowded into the undergraduate curriculum. Apart from adding to a student's substantive knowledge, graduate education and research provide a discipline of mind that fosters objectivity and a capacity to continue the learning process independently. Even one year beyond the baccalaureate strengthens the student's capacity to contribute in all fields of employment.<sup>7</sup>

In 1973 William McGill, the president of Columbia University, commented:

There is now good reason to doubt that a college level major prepares a student for anything. It may whet an intellectual appetite, but not much else is achieved.<sup>8</sup>

Through what media does one acquire "multispecialization"? How does the nation produce the required numbers and appropriate mix of public servants and academicians who have a mastery of one field and a sufficient understanding of another or others? What signifies "mastery"? What signifies "sufficient understanding"? Are our universities or our federal agency schools up to the challenge? Do prospective candidates have the time, patience, and, not least, the personal funds required? Do our federal agencies have available, or can or will they make available, for people in government and academia the time away from productive work required for multispecialization? Will candidates accept the possible career-opportunity costs involved? In

an era of skyrocketing personnel costs in public and private programs, will our public and private institutions accept the opportunity costs involved? Each of us can make relevant predictions for the institutions and groups of people we know best. One can hazard some more-or-less-informed predictions for the armed services.<sup>9</sup>

A study of the backgrounds and preparation of the people involved in foreign policy decision-making and implementation (subsuming most of national security policy) would, no doubt, be revealing. Although the separate systems (Civil Service, Foreign Service, Armed Services) have their own data, to my knowledge no study exists that examines all or most agencies involved in foreign policy.

We have good data on levels of education (degrees) at the executive level (GS 16-18 and levels I-V; FS Class 2 and above, and Armed Services flag or general ranks).<sup>10</sup> We have good data at entry level. Thus, we can get a clear picture of input (entry) and output (executive level). Except for the Civil Service, data on throughput (between entry and executive level) are more difficult to acquire. Data on specialization, except for the Civil Service Executive Inventory, are even more difficult to acquire. This information gap has implications for higher level selections to executive positions.

Apparently, there is cause for concern. For example, Frederick T. Van Dyk, who resigned in 1977 as Director of Intragovernmental and International Affairs, Agency for International Development, explained his resignation partly on the grounds that:

... many agency employees lacked adequate skills for managing development assistance, were too fond of the comforts of Washington and consequently too reluctant to accept the discomforts of the field, and consequently were too inured of the old use of aid as a diplomatic and political weapon.<sup>11</sup>

The armed forces may have fared no better. The current president of the National Defense University, Lieutenant General Robert G. Gard

(USA), recognized the problem early in his tenure and took steps to remedy the situation. However, my experience with more than a hundred students while I was a visiting professor at the National War College (NWC) in 1975-76 tends to confirm my impression that we may lack the expertise required for sound foreign policy. These students were Army, Air Force, and Marine lieutenant colonels and colonels and, Navy lieutenant commanders and commanders, Foreign Service officers fourth through second class, and General Schedule 14 and 15 civilians. Most were selected to attend NWC because they had proved themselves during 16 years of service to be consummate operators, and because a selection board judged they had shown potential for positions of greater public trust and responsibility. About 70 percent had graduate degrees. Yet, in my judgment more than half of them lacked the knowledge and skills required for multivariate analysis across several fields. In particular, most of those with backgrounds in the physical sciences were sorely lacking in understanding of the social sciences.

The National War College curriculum of academic year 1975-76 did not help much. There was no attempt to discover student academic backgrounds before the academic year began and no mechanism for determining individual strengths, weaknesses, and needs. The core curriculum included a smattering of everything taught to everyone, regardless of background, over the ten-month period. The elective program was totally voluntary, without regard to individual student needs as determined by the faculty. Two basic conclusions were inevitable. First, the rewards of interservice socialization notwithstanding, a major educational opportunity had been missed. Second, the majority of the graduating class were woefully unprepared for the interdisciplinary demands in positions of greater responsibility. And this was the last formal education for almost all them. These

were first-class professionals who developed through years of command and staff duty in peacetime and were tested ultimately in combat. Some of them are glowing exceptions to my observations concerning interdisciplinary, analytical capability, but I am talking about the rule, not the exception.

Many of these NWC officers, historically about 40 percent, will be promoted to flag rank or its equivalent, where their own analysis, their decisions resulting from the analysis of others, and their advice may weigh heavily in foreign policy decision-making and implementation. Perhaps they will not be up to the challenge. But, then, even former secretaries of state have been chided for their lack of understanding of such disciplines as economics. In sum, we do not know very much across federal agencies about how well we are preparing our public servants to perform the increasingly complex foreign policy tasks required of them, and we need to know. We also need to develop a consensus concerning the requirements of specialization: a consensus that clearly does not exist.<sup>12</sup>

The proposition advanced here is not that each person in the foreign policy decision-making bureaucracy should be an intellectual (a term notorious for its diverse connotations). The need is to determine what tools of analysis are needed by people required to perform certain complex tasks and to develop programs to provide them appropriate skills.

### Public Officials and Job Performance

It might be argued that the concrete test of adequacy should be based on actual job performance rather than a preliminary judgment concerning qualifications. Unfortunately, there has been a long-term trend in most large federal bureaucracies toward inflation in performance evaluations. The trend is not peculiar to government. Large business corporations have experienced the same phenomenon. Our colleges and universities, too, have

experienced inflation in performance evaluations of faculty members, not to mention inflation in student grades. There are many explanations for this, some the result of the human condition, some the result of organization. First, few superiors enjoy the interpersonal conflict inherently involved in writing evaluations that indicate performance inadequacies. Most, if not all, evaluation systems have for some time required that superiors both counsel subordinates and provide a copy of written evaluations. The Freedom of Information Act requires that subordinates have access to evaluations. Second, the general level of performance evaluations has organizational impact that can affect organizational morale. Despite the confidentiality of individual performance evaluations, "the word gets out," especially among the dissatisfied. Third, there is a tendency for rating supervisors to take care of their own. Fourth, aware of the general tendency to inflate performance evaluations, raters realize that "honest" evaluations of their subordinates would be "unfair" under the present system. And, fifth, there has been an enormous growth in the power of public employee unions over the past decade, especially among civilian public servants. The American Federation of Government Employees (AFGE) and professional associations, such as the American Foreign Service Association (AFSA), have served as deterrents to objective performance evaluations. The same holds for academia, where such organizations as the American Association of University Professors have exerted escalatory pressures on faculty evaluations. In brief, current systems for evaluating job performance appear inadequate.

### Attempts at Personnel Policy Reform

Most federal executive agencies have conducted extensive periodic studies of their personnel systems. In the early 1970s most

embraced centralized personnel systems with emphasis on functional specialization. Probably the most extensive of these studies resulted in the 1970 Macomber Report, which examined the entire management system of the Department of State. The energies of 13 task forces produced 505 recommendations, 345 of which were devoted to personnel questions.<sup>13</sup> Although the personnel system has been recentralized, many of the reform proposals have been stymied through legal action by AFSA and AFGE. Proposals for lateral entry into the Foreign Service for qualified specialists have met strong resistance.

All the military services have centralized their personnel management systems and have moved quickly into functional specialization. For example, the Army's Officer Personnel Management System was created in the early 1970s. Its basic concept is to increase professional competence, improve productive competition, and provide greater satisfaction by encouraging officers to focus their careers according to individual talents and interests. Officers may focus on command and spend a large share of their time serving with troop units. Those who perform best with such units are selected for successively higher commands. Other officers focus their careers along functional lines, e.g., personnel, operations, plans, recruiting, project management. Still others eventually become specialists in such fields as automatic data processing (ADP), research and development (R&D), logistics, or information.

There has been a fundamental problem for all federal executive agencies seeking personnel reforms that might further multispecialization for the most qualified and productive public servants—rapidly increasing personnel costs. The first personnel programs to be cut are always those where costs are quantifiable and clear and benefits judgmental. Educational programs fall in this category and have fallen under the meat-ax of cost-benefit analysis. For example in the Department of Defense, the



number of officers annually provided full-time, fully funded graduate education fell by 38 percent over the period FY 1972 to FY 1978.<sup>14</sup> However clear the needs of multispecialization, there has been insufficient progress in programs for lateral entry to acquire existing expertise or for programs to develop expertise for career public servants.

### The Challenge in Foreign Policy

Although access to quantity and quality of tangible resources and geostrategic position will continue to figure largely in the capabilities of nations, a nation's capability to influence others in international relations will reside increasingly in the ability of nations to coordinate policy and control in an incredibly complex web of economic, political, and military considerations. The demands for coordination of U.S. policies and programs will be as important at home as abroad, for the traditional distinction between domestic politics and foreign policy has eroded. The politics of public and electoral pressures under the impact of a resurgent welfare ethic demands absolute gains in domestic prosperity, which may not be bargained away as "chips" in any international balance.<sup>15</sup>

Domestic prosperity is measured largely in terms of the health of corporate enterprises at home and abroad. On their prosperity hinge such critical variables as the rates of employment, range, quantity, and prices of consumer goods available, and the vitality of stock markets. The involvement of corporate enterprise in national, international, multinational, and transnational operations is growing rapidly. Every day there are countless meetings and transactions on financial and trade matters which, considered in the aggregate, have a great deal to do with the power positions of nation-states. The great challenge to governments is to assess the infinite number of linkages involved in these transactions and determine the extent to which they work, or

can be made to work, in the national interest. National security interests of the United States will be very much affected by balance of payments considerations. The military mobilization potential of the United States will be critically affected by economic arrangements for secure energy resources. The ability of the United States to fight limited but protracted subnuclear wars to protect vital security interests will be conditioned by its balance of payments position. The reputation of the United States as a world leader will be affected by the understanding of complex issues in other countries and the approach demonstrated by our public servants in hundreds of foreign countries and diverse international forums.

Citing a number of prominent failures in American foreign policy, some have suggested that the principal key to central decision and coordination in foreign policy resides in government reorganization.<sup>16</sup> It is to be expected that, given the relatively new and urgent demands of increasing interdependence and linkage politics, reorganization would be in order. But the new demands on analytical capability (properly organized) are equally great.

It cannot be argued with confidence that the United States is confronted with no greater problems in this respect than other nation-states. First, because of its position in world affairs, the United States carries far greater responsibilities than most states. Second, although relatively free of domestic constraints, the U.S.S.R., the leading competitor for world power and responsibility, appears to do at least as well as the United States in linkage politics. There are several possible explanations for this. One might be couched in indications that the Soviets understand the requirements of specialization and, perhaps, multispecialization. Although the Soviet educational system is not comparable to that of the U.S., and although the Soviet drive for graduate level education for its government officials

came later, there appears to be considerable effort to provide specialized graduate education. For example, in Soviet armed forces:

. . . military officers may study in civilian institutions for a particular specialty. Although it is not entirely clear how this program works, it does help to train teachers for the military academies and schools, and it probably provides specialists in areas where the military institutions have either no graduate programs or only weak ones. In the case of the Moscow Finance Institute, a military department has been established in this otherwise civilian institution. Third, officers who hold advanced degrees may be employed in civilian institutions for research purposes or activities in which their training is needed. Throughout the prestigious USSR Academy of Sciences, for example, one may find generals, admirals, and officers with advanced degrees working in their particular fields of expertise. Administratively they are usually on "reserve" status, receiving only part of their pay from the military and the remainder from the institution in which they work. Clearly the civil sector is quite porous, permitting the military to move in and out of almost all educational and research activities.<sup>17</sup>

### Defining Needs

The general thrust of the foregoing discussion is certainly not new. In addition to the studies cited already, Harlan Cleveland's *The Future Executive* focused on the problems of complexity.<sup>18</sup> Recommendations for identifying and securing the services of gifted managers at the top level of federal government were proposed in 1964 by the Committee for Economic Development.<sup>19</sup> More recently, and closely related to the subject of this article, the Murphy Commission has examined the requirements for personnel in foreign affairs.<sup>20</sup> Indicating that all federal agencies might look to management practices in private corporations and the military and supporting the leading role of state in foreign affairs, the commission examined functional competence in Washington. It "found widespread agreement that the effectiveness of State Department personnel in a number of functional areas . . . is at a low ebb."<sup>21</sup>

In the Foreign Service, the commission concluded, "the cone system as an administrative device does appear to encourage and nurture a limited degree of special competence at least for the short run. But it hardly produces the full range of special knowledge at posts overseas, or more importantly, in Washington."<sup>22</sup>

For the Foreign Service, the commission recommended that:

The cone system should be continued (although the program direction cone would be rendered superfluous by the executive development recommendations). Its basic purpose is to protect the consular and administrative activities as viable career specialties and to continue to upgrade the economic competence of the Service. Its continued effectiveness should be reviewed from time to time.

All political officers should have the 26-week FSI course in economics or its equivalent. The techniques, as well as substance, are essential to good policy analysis.

Over time, the distinction between political and economic cones should be dropped. Economics today provides a major context to all international relations.

Intercone assignments should be increased where the purpose is to broaden experience, rather than to accommodate an excess of political officers. The exchange should be a two-way street where Consular and Administrative officers receive political assignments.

Officers should be given incentives to pursue deeper substantive issues of foreign policy. They should be rewarded for initiative (self study) and excellence in their chosen fields through promotions, assignments in their chosen fields, awards, and mid-career work study programs.<sup>23</sup>

Those in the Foreign Service and other agencies involved in foreign affairs who surface as multispecialists in agency Executive Development Programs would be identified and designated as members of a Foreign Affairs Executive Service (FAES), about 2155 strong.<sup>24</sup>

The concept, similar to that proposed in 1964 by the Committee for Economic Development, appears to be sound organizationally. However, there are huge gaps in guidance.

First, beyond insistence that a greater degree of specialization in economics is required,<sup>25</sup> the proposal does not address the requirements for other specialties. For example, one might develop an argument for increasing numbers of anthropologists for agencies involved in foreign policy. Such a case might be made for most overseas programs. A 1973 survey of anthropologists in U.S. government identified 55, none of them assigned to the Agency for International Development.<sup>26</sup> (See table.)

It might be suggested that "social soundness analysis" (the societal impact of programs abroad) should be an inherent part of proposed aid programs and essential to the evaluation function. Burdick and Lederer's *The Ugly American* told us why; so did David Halberstam's *The Best and the Brightest*. Evidently, the Agency for International Development (AID) has recognized the need. In June 1977 there were 22 anthropologists working full time with AID, 20 with Ph.D.s and 2 with M.A.s. Ten were in Washington and 12

overseas. Some were full time on Personal Service Contracts, and others were direct hire employees on leave from universities under the Intergovernmental Personnel Act.<sup>27</sup>

One can think of a wide variety of policies and programs that require social soundness analysis—from development assistance, to private capital investment, to arms transfers, to human rights. The point is that we need to define requirements for multispecialists.

Second, the commission's proposals are not based on even a gross estimate of the current inventory of people with specialties related to foreign policy. One cannot forecast what education and training are required over the long term without a reasonable idea of what is now available and can be made available in the near term. Depending on the degree of multispecialization involved, this information might be difficult to acquire because:

- Although all personnel systems have come a long way in their ability to identify people with specialties (e.g., the Civil Service "Execu-

Agency	Positions Identified		
	by the CSC*	by the survey	replies received
Total	55	50	33
Health, Education, and Welfare	5	9	7
Transportation	3	2	2
State	18	1	1
Agency for International Development	0		
Commerce	0	1	1
National Science Foundation	1	2	0
National Endowment for the Humanities	0	1	1
Army	7	7	5
Air Force	4	3	2
Veterans Administration	1	1	1
Smithsonian Institution	16	23	13

\*Data were made available by the Bureau of Manpower Information Systems, United States Civil Service Commission, in a letter dated January 6, 1975.

tive Inventory" and the Army OPMS), there is a long way to go in identifying subspecialties and multispecialties.

● Talented people are an organization's scarcest resource, and information about the most talented, by name, can be considered an important element of organizational power. It would be only natural for an organization to husband for itself the most talented people who might be in high demand in another, perhaps higher, organizational echelon.

The task of identifying requirements for multispecialization, determining the available inventory, projecting requirements, and securing budgets to support programs to develop specialists is a large undertaking. However, it is an important undertaking. There appear to be gaps at the interface of specialties in some foreign policy areas. For example, policies toward international terrorism should involve analysis which integrates through multispecialization understanding of regional history,

culture, religion, politics, and geography; international law; international and regional organization; international peacekeeping; intelligence; arms limitations; technology transfers; arms transfers; international trade; comparative ideologies; theory of revolution; and multinational corporations. The interface of the implied specialties develops the linkages among competing interests in the international system and between domestic politics and foreign policy related to all of the foregoing. Whether viable policy toward international terrorism has or can be developed is couched in the "art to the possible."

INTERDEPENDENCE is with us. The necessities of linkage politics cannot be wished away by "removing the term from our official rhetoric." The question is: are we—academicians and diplomats alike—up to the tasks involved?

*United States Military Academy  
West Point, New York*

#### Notes

1. Graham Allison and Peter Szanton, *Remaking Foreign Policy: The Organizational Connection* (New York: Basic Books, 1976), p. 14.

2. *Ibid.*

3. The first course in national security was taught at Harvard in the mid-1950s. The second was designed by an Army officer, then Captain (now Lieutenant General) Robert G. Gard, who pursued graduate studies at Harvard in preparation for teaching in the Department of Social Sciences at West Point.

4. *International Relations Dictionary*, Department of State, 1978, p. 25. Although James R. Schlesinger and Secretary Cyrus Vance pointed out in 1977 that the concept of "linkage" has disappeared from our official rhetoric, the concept remains critical to our understanding of contemporary international relations and foreign policy. See Schlesinger's foreword to *Defending America: Toward a New Role in the Post-Détente World* (New York: Basic Books, 1977), p. xii and "Vance Jettisons Kissinger's Linkage," *Washington Post*, February 5, 1977, p. A10. See also Gregory Crossman's article, "The Economics of Détente and American Foreign Policy" in *Defending America*, which makes a strong argument for an active policy of linkage while pointing out the major difficulties in devising a consistent strategy and suitable tactics.

5. Amos A. Jordan and William J. Taylor, Jr., "The Military Man in Academia," *The Annals*, March 1973, p. 131.

6. Alvin Toffler, *Future Shock* (New York: Random House, 1970), p. 228.

7. Jerome B. Wiesner, *Where Science and Politics Meet* (New York: McGraw-Hill, 1965), p. 111.

8. *New York Times*, January 8, 1973, p. 58.

9. See, for example, Sam C. Sarkesian and William J. Taylor, Jr., "The Case for Civilian Graduate Education for Professional Officers (The Impact of Graduate Education on the Profession and Its Relationship to Society)," *American Defense Policy*, John E. Endicott and Roy W. Stafford, Jr., editors, fourth edition (Baltimore: Johns Hopkins Press, 1977), pp. 567-72.

10. For example, see U.S. Civil Service Commission, *Executive Manpower in the Federal Service*, September 1975, p. 35; William J. Taylor, Jr., and Donald F. Bletz, "A Case for Officer Graduate Education," *Journal of Political and Military Sociology*, Fall 1974, p. 281.

11. Clyde E. Farnsworth, "Now U.S. Overseas Aid Seems Less Political," *New York Times*, September 18, 1977, p. 4E.

12. There is no consensus among the systems that develop public officials, within the executive agencies which employ public officials or, for that matter, within our universities concerning the proper training for and education for public executives. See Robert Presthus, *Public Administration*, sixth edition (New York: Ronald Press, 1975), pp. 225-26, 228, 231. See also Lawrence J. Korb, editor, *The System for Educating Military Officers in the United States* (Pittsburgh: The International Studies Association, 1976). How well prepared are our public servants who are involved in foreign policy? Allison and Szanton conclude that "The agencies engaged in foreign relations contain large numbers of skilled and devoted people. But the capacity for performing certain limited but crucial tasks is clearly inadequate." (p. 41)

13. William I. Bacchus, "Diplomacy for the 70's: An Afterview and Appraisal," *American Political Science Review*, June 1974, pp. 740-45.

14. Allan V. Burman, "Officer Graduate Education: Costs and Benefits," a draft paper in the Office of Defense Education, April 21, 1977, p. 2.

15. Robert O. Keohane and Joseph S. Nye, Jr., "Power and Interdependence," *Survival*, July/August 1973, p. 162.

16. Allison and Szanton.

17. William E. Odom, "The 'Militarization' of Soviet Society," *Problems of Communism*, September-October 1976, p. 39.

18. See Harlan Cleveland, *The Future Executive* (New York: Harper & Row, 1972).

19. See Committee for Economic Development, *Improving Executive Management in the Federal Government* (New York: GED Publications, 1964).

20. *Report of the Commission on the Organization of the Government for the Conduct of Foreign Policy* (Washington: Government Printing Office, 1975).

21. *Ibid.*, p. 168.

22. *Ibid.*, p. 178.

23. *Ibid.*, p. 179.

24. *Ibid.*, pp. 186-88.

25. *Ibid.*, pp. 168, 179.

26. Bela C. Maday, "Anthropologists in the U.S. Government," *Human Organization*, Spring 1977, p. 89.

27. Allan Hoben, "Anthropologists in AID," *Anthropology Newsletter*, September 1977, p. 30.

# A POST B-1 LOOK AT THE MANNED STRATEGIC BOMBER

LIEUTENANT COLONEL JOHN J. KOHOUT III



This has been one of the difficult decisions that I've made since I've been in office. In the last few months, I've done my best to assess all the factors involving production of the B-1 bomber. My decision is that we should not continue with deployment of the B-1's. And I am directing that we discontinue plans for production of this weapons system.<sup>1</sup>

**W**ITH these words President Carter ended the B-1 development project, the only continuing large-scale effort to inject modern technology and new vitality into our rapidly aging manned bomber fleet. To gain the full import of the President's decision, we must look back to three similar statements made earlier by responsible members of the executive branch.

Former Secretary of the Air Force Robert Seamans, speaking before the House Committee on Armed Services, 4 May 1971, said,

The FB-111 does not have the capability of the B-1 as projected by a significant factor. It doesn't have the bomb-carrying capability to be a really competitive airplane that does not require tremendous tanker force, that can really penetrate into Soviet targets.<sup>2</sup>

Ten years earlier, in March 1961, before the same committee of the Congress, General Thomas D. White, then Chief of Staff of the Air Force, admitted,

I say, there is nothing wrong with the B-58 except that it has generally been overtaken by events . . . It is a very expensive weapons system . . . And with a finite budget, let us say, other programs are more important than continuing the B-58.<sup>3</sup>

And only three weeks earlier Secretary of Defense Robert McNamara had testified:

After weighing all of the advantages and disadvantages, we have concluded that the B-70 should not, at this time, be carried forward as a full-scale weapon system development.<sup>4</sup>

These decisions marked the termination, or decisive reduction by the executive branch, of each of the manned strategic bomber development programs intended to replace or augment the early 1950's technology of the B-52. In each instance the aircraft involved were engineering

successes, meeting the technological challenge that had been set and providing sound flyable airframes that could have filled the originally perceived strategic need. Yet none was procured in strategically significant numbers.

The pouring of vast resources into these redundant development programs to update our manned bomber force, only to have each of them stillborn in terms of a refusal to make the final production decision, has been one of the real tragedies of our strategic arms procurement policy. While one can explain the refusal to produce a given weapon at a given time in terms of competition for scarce economic resources against more acutely felt domestic imperatives or alternative defense needs, the multiple failures to achieve the sought-for production of a new manned strategic system demand a more clearly focused analysis.

The demise of the B-1 sets a benchmark from which a retrospective review of efforts to establish and improve our manned strategic offensive force is imperative in order to determine the best response to these ever more crucial questions: Is there a need for a new manned bomber? If a new manned vehicle is necessary, what should be its characteristics?

To answer these questions it will be necessary to consider the changing role of the manned strategic system, its characteristics and how they contribute to our strategic posture, and the costs that such weapons incur. Then we will project these factors into the future to evaluate the potential for future manned bomber utility and discuss characteristics of such vehicles that would make a contribution to our strategic posture meriting their inescapably high expense.

## Evolving Role of the Manned Bomber

We cannot begin with any assumptions that the manned bomber has an unchallengeable place within our strategic arsenal. It is there

because it is perceived to fill a need. It was there ten and twenty years ago because it filled needs then. The needs of the past are not the same as today's needs, however, and the needs that the manned bomber should be evaluated against for the future may well not be the same as those of today.

#### *exclusive nuclear capability*

At the beginning of the atomic era, the manned bomber had a clear and unequivocal role to play. It was the only technologically feasible way to transport the awkwardly heavy weapons of the day to their eventual targets. The essential performance parameters were range and load-carrying ability. The nuclear bomber in its initial form of the World War II-proven Boeing B-29, regardless of the narrow margin by which it could meet these parameters, had no existing competition. Because it depended on forward bases or air refueling techniques then in their infancy, the B-29 was soon supplanted by larger and more capable aircraft, but no other type of vehicle could perform the mission. Thus, in the beginning, there was no debate over whether an air vehicle was destined to deliver the nuclear weapon, only debate over the nuclear weapons themselves and the contribution they would make to modern warfare.

However, the manned bomber was quick to find itself at the center of a hornet's nest of controversy. The high cost of successor aircraft to the B-29 and the organizational problem of carving out a separate Air Force from the living and protesting bodies of the pre-existing services exacerbated the bitter competition over drastically reduced postwar defense resources. The technological inability to predict accurately the performance of new large aircraft, such as the B-36, which were pushing back the frontiers of flight, complicated the problem and ensured that all sides of the argument were well equipped with equally ambiguous data.

#### *erosion of primacy*

The unquestioned primacy of the manned strategic aircraft began to be eroded by the debate over the capability of manned aircraft to penetrate increasingly potent enemy defenses and the embryonic development of ballistic missile technology. The B-29 had easily outperformed World War II fighter opposition. The B-50 and B-36 could give good assurance of successful penetration against the first generation of jet aircraft with limited range and firepower. But as the Soviets proved their tenacity in building and rebuilding effective anti-air defenses to blunt any manned bomber attack, the creation of an unstoppable ballistic missile force became the obvious pathway to the preservation of unquestioned strategic offensive capability.

So even while we were building and operating large forces of B-47 and B-52 bombers, the tone of Defense Department spokesmen began to change noticeably. The heretofore unchallenged role of the manned bomber was couched with qualifiers. In February 1959, Secretary of Defense Neil McElroy introduced his request for manned bomber funding with these words: "Recognizing that manned bombers will continue to be an important element of our retaliatory forces for some years to come . . ." <sup>5</sup> Two years later, with substantial progress in the ICBM program, Secretary McNamara said:

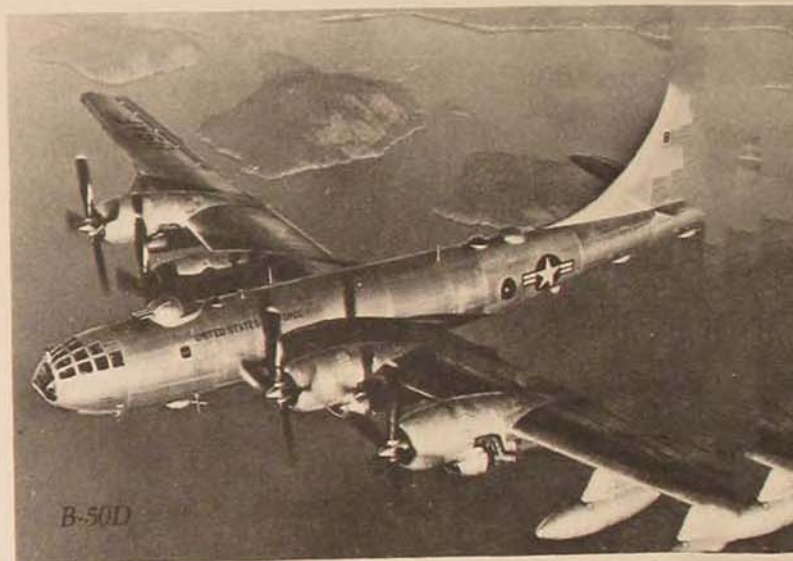
Even though the revised Defense budget provides for a substantial increase in our long-range missile capabilities, we still foresee the need for a large manned bomber force, at least over the next several years. <sup>6</sup>

As these statements indicate, the manned bomber and the ICBM were perceived, at least for a certain period, by a certain number of people within the defense establishment to perform the same missions to such a degree that the utility of the manned bomber was clearly approaching its term.

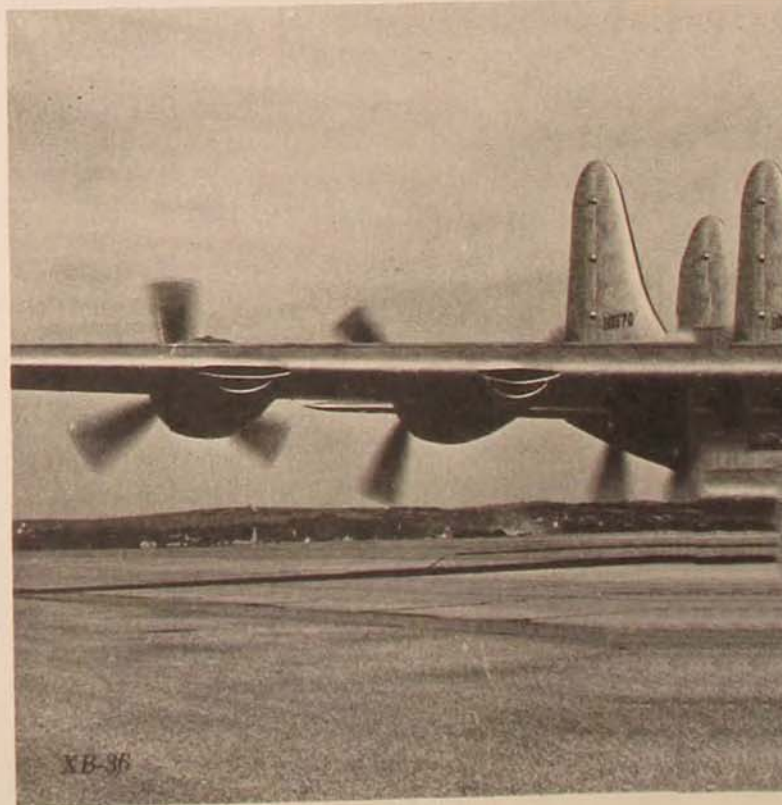
Missile forces continued to grow in both numbers and reliability. Today, while the



B-29



B-50D



B-36





#### **Bombers, Ca. 1945-55**

*The bombers of the later World War II era were designed to accommodate the long-range, heavy bomb-load requirements of the day. That the B-29 Superfortress, which continued its heavy-bomber role in the Korean War also, became the first nuclear bomber was more by chance than by design. Subsequent bombers of the early postwar era—notably the huge B-36 and the B-50—extended the capacity and capability of the B-29. By the advent of the speedy B-47 Stratojet (ca. 1953), with its billowing drogue chute, the role of manned bomber was being redefined.*

technology of the missile continues to soar, we are in the era of stabilization of numbers under the Strategic Arms Limitation Talks (SALT), and the manned bomber is not only still with us but a whole new explanation for its continued validity has been assembled. At first the payload advantage of the heavy bomber over the missile was cited. Then, as Soviet missilery became more redoubtable, it was the ability of the bomber to launch under positive control to escape a Soviet counterforce attack.<sup>7</sup> Next came the theme of flexibility. Perception of the role of the manned bomber has thus changed from one of finite duration, to be assumed in due course by the ballistic missile, to one of indefinite duration, which supplements missile technology.

A whole conceptual framework for the integration of the three major strategic delivery vehicles—the manned bomber, intercontinental ballistic missile (ICBM), and the submarine-launched ballistic missile (SLBM)—was created in the form of the “Triad.” The Triad refers to the insistence on a mix of ICBMs, SLBMs, and SAC bombers that exploit the inherent characteristics of each of the three systems to compound targeting and defense problems faced by a potential enemy. In theory the combination of three types of systems results in deterrent effect superior to that which would result from even a superior force based on any one or two of the systems.<sup>8</sup>

#### *perception today*

As the manned bomber force has aged, increasingly effective Soviet defenses have complicated the penetration problem, and increasingly capable missile forces have been placed in operation. The need to procure more modern manned strategic systems has become more acute. This trend has seen increasingly insistent and elaborate voicing of the role of the manned bomber. General Russell E. Dougherty, then Commander in Chief of the Strategic Air Command, defended the role of the

manned bomber in these terms in his forceful letter to Senator Barry Goldwater in February 1976:

A hardened, long-range, manned penetrating bomber offers a uniquely capable and dependable strategic delivery system that spreads itself reliably and capably across the broadest possible spectrum of those required military capabilities. When completely modernized and manned with skilled, ingenious military crews, such a penetrating bomber offers the United States an overall flexibility of choice and application that is unmatched by any other weapons system. It can:

Carry a larger number of weapons (conventional or nuclear) than any other strategic delivery system—to any fixed targets, anywhere, under a wide variety of circumstances.

Achieve unequalled accuracies in long-range delivery under all circumstances; and, through self-contained sensors, offer our only long-range capability against mobile or imprecisely located targets.

Provide a highly visible deterrent force, one that can be used as a recognizable expression of national determination and resolve in either preplanned or ad hoc contingency situations.

Accommodate (or readily be adapted to) the delivery of multiple types of conventional and nuclear weapons—highly accurate gravity delivered, standoff-launched cruise, ballistic, semi-ballistic or defensive weapons—in large quantities, for multiple or selective delivery.

Through design growth characteristics, adapt rapidly in tactics and/or avionics to negate or avoid unanticipated defenses and other threats.

Drive an enemy requirement for extensive diversion of his resources to defensive (vice offensive) systems—but still can be designed with the flexibility to penetrate those defenses if penetration is required for assurance.

Provide us the most effective and economical way to redress the already serious (and worsening) imbalance in deliverable megatonnage vis-à-vis the Soviet Union.

Provide a simultaneous capability for long-range, real (or near real) time strike assessment deep within enemy territory with the flexibility of striking alternate planned targets or withholding unnecessary attacks and retaining weapons.

Be launched as a visible expression of active deterrence, yet be recalled without expenditure of ordnance, even after launch, should the deterrent objectives be achieved.

Provide our nation an assured capability to

extract severe penalties on an enemy society, regardless of any unexpected degradation or blunting of our SLBM or ICBM forces; thus providing insurance against unexpected defenses or failure of any aspect of our strategic missile systems.

Be used repeatedly. Depending on the nature of conflict, substantial recovery can be anticipated—thus enabling rearming and reuse for any required strategic purpose in subsequent war fighting or war terminating activities.

Exploit superior U.S. technology and capability; for we can build, maintain and operate a flexible, modern delivery system of this type better than any potential adversary.

Be applied across the spectrum of military capabilities—and is uniquely useful for an infinite number of lesser contingency missions; without loss of ultimate capability as a major delivery system for large nuclear payloads.

Survive blunting and reliably be protected from destruction on the ground through tried, proven launch procedures of Strategic Air Command adapted to reasonable expectations of our modern detection and warning systems.<sup>9</sup>

The role of the manned bomber is clearly at a critical juncture. Those who defend the future need for a manned bomber have marshaled sound arguments. They feel strongly that the bomber contributes significantly to the flexibility and responsiveness of our forces as well as the effectiveness of our deterrence. They argue that the manned bomber can be kept viable in the face of increasingly elaborate and effective defenses. The success of the manned bomber in its role as a part of an effective deterrent to this point is a central theme.

The Achilles' heel of the manned bomber force as well as the question of its rejuvenation is the suspicion that the Air Force and the supporters of a new penetrating strategic aircraft are voicing the type of intellectual bias that would have the United States buying an expensive weapon system after it is no longer of any objective utility.<sup>10</sup>

The opposition to the manned bomber has demonstrated its strength by the defeat of the B-1. The opposition will continue to increase its strength as the debate drags on, and the bomber force declines in relative importance.

If the manned bomber force is allowed to decline through age to a point where it is manifestly ineffectual in the strategic balance, and the functional strategic balance between the United States and the Soviet Union does not change perceptively, the days of the manned bomber will be over.

## Manned Bomber Performance

The specific performance characteristics designed into manned strategic vehicles have often overshadowed all other design or procurement considerations. Airframe performance of a given weapon system has repeatedly been confused with the contribution that that aircraft can make to our strategic capabilities. This phenomenon has sometimes clouded decision-making as well as the rationalization of system development by military and industry alike. A sound analytical approach to the design of manned bombers as elements of our strategic offensive forces requires continuing emphasis.

### *function and characteristics coincide*

This situation can be explained by the fact that the development of early manned bombers was characterized by the search for performance characteristics identical in statement to the strategic capabilities being sought. The B-29, B-50, and B-36 aircraft had payloads that reflected almost exactly the nuclear weapon dimensions of the day. Their range defined the strategic "reach" that the United States could claim. European bases and air refueling were directly additive to enable the first two of these aircraft to reach intercontinental range.

The first phase of the assembly of our strategic force was a direct outgrowth of World War II aircraft procurement. The B-29 had seen operational service in World War II; the B-50 was an improved, re-engined B-29; and the B-36 design concept had been developed by the air plans section of the Depart-





### **Air Refueling**

*With the introduction of midair refueling, flying range has become much extended. Since World War II the technique has been widely used—over Europe, Korea, and Southeast Asia—but never more consistently than in Strategic Air Command's use of the KC-135 Stratotanker to refuel B-52s and FB-111s on a daily basis in training exercises.*

ment of War nine months before Pearl Harbor.<sup>11</sup> The dialogue between the uniformed services and the aircraft industry, effective as it may have been, was cloaked in secrecy and came under scrutiny of the highest levels of decision-makers and the Congress only late in the process and then in the most general terms. The House Committee on Armed Services hearings on the B-36 bomber program were conducted while the aircraft were actually being delivered. Evidently the Congress felt better able to influence the development of the new Air Force in terms of the number of "Groups" authorized and the amount of military construction to be accomplished. Aircraft design was a *fait accompli* by the time Congress had its say. Congress had to consider a specific aircraft in terms of how well it met the specifications that had been set by the Air Force. Selection of one design from among competing alternatives had been long since decided by the uniformed service.

The first steps of the manned bomber into the jet age followed a similar pattern. The Congress was at least informed of the development of the B-47 and B-52, but the direction of that development was kept under wraps. Basic characteristics of both aircraft were determined by the obvious need to increase speed and altitude to ensure penetration against improved Soviet fighters. The momentum of the strategic arms build-up was not to be denied. The manufacturer was of proven competence, the engines were the only ones of demonstrably adequate performance. Otherwise the complexity of the design effort closed off any real opportunity for criticism. These two systems reinforced the tendency to think of strategic systems in terms of aircraft performance rather than strategic contribution. A weapon system was perceived to be a single closed system and not a collection of desirable and less desirable capabilities that decision-makers could tailor to fit within cost constraints.

It must be noted, though, that all of the

aircraft mentioned to this point were highly successful weapon systems; they not only served their intended purpose but were modified to perform missions that had not existed when they were designed, and they lasted far beyond their intended service life. Indeed, the B-52, first delivered on 29 June 1955,<sup>12</sup> is still the mainstay of the manned bomber force and may well perform a useful strategic role for decades to come. Each of these aircraft has been designed to performance criteria that mirrored simple, straightforward strategic concepts. Range and payload were the key. Once they could meet this standard, all progress was in terms of flying higher and faster, characteristics that seem to hold a certain fascination for the American spirit.

#### *basic relationships confused*

The introduction of complexity into the strategic bomber equation had begun. Range, which had started as a constant, became a variable. Air refueling could extend range almost indefinitely, or forward bases could make range a less exacting criterion. As speed and altitude were perceived to be more necessary to penetrate increasingly effective defenses, speed and altitude were attained at the expense of range. It is central to note that progress in aircraft design is not all in terms of advances in technology; much progress is in terms of the trade-off of a characteristic less desired, range, in exchange for one deemed more acutely necessary, speed. The reduction of payload may also serve to increase both range and speed.

The costs of these trade-offs are not always as obvious as are the desired characteristics obtained in return. Use of European and North African bases was an obvious constraint on U.S. unilateral operation of its strategic bomber force. Hence, these bases were used for a time and then phased out as both political circumstances and technical alternatives al-

lowed. Note, though, that several of the former European bomber bases are still operational for air refueling forces.

The cost of air refueling is more complex. The early uncertain techniques applicable to B-29s and B-50s were the subject of slow refinement. Profiting from this early experience, FB-111 and B-52 air refueling is today an accepted part of the Strategic Air Command (SAC) function, and it is practiced on daily training missions. SAC's mastery of air refueling, even complex multiple aircraft operations, is a unique capability in the world today. However, the effectiveness of the bomber that relies on air refueling depends directly on the survival and reliability of its mated tanker or tankers. The less air refueling the better. More reliance can be placed on a bomber that can complete its mission, or at least a degraded mission, without a refueling than on a bomber that must have one or even more refuelings to even reach its target.

The design of the Convair B-58 marked a pronounced departure from the established trend in manned bomber development. Intended to improve penetrating ability radically, the mach 2 B-58 obtained its impressive speed at the expense of range and load-carrying ability. It was absolutely dependent on air refueling, usually multiple air refuelings, to accomplish even the shortest strategic mission. It could normally carry only a single compact nuclear weapon. The B-58 was planned to replace the B-47 as a complement to the B-52 force. It would have used its great speed to penetrate to the most heavily protected targets. While pushing forward the state of the art in both aerodynamic and avionic equipment design for its day, it possessed minimal capacity for additional equipment or engineering changes in response to the evolving Soviet defenses.

#### *diverging function and characteristics*

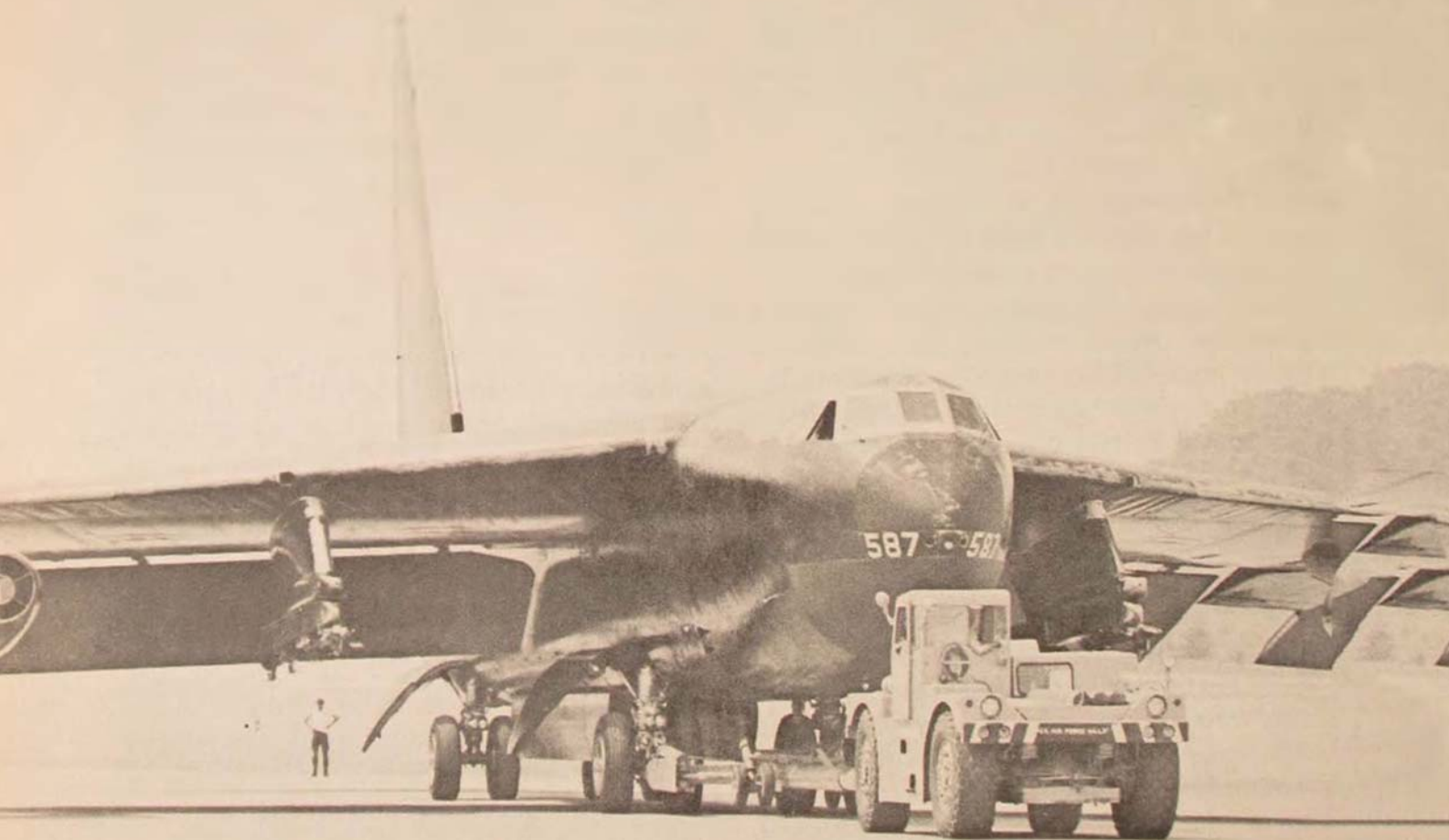
The B-58 program, however, was severely disrupted by a pair of revolutionary changes

that affected the strategic bomber function around 1959 and 1960. At the time when the number of SAC aircraft was at its all-time high, two aspects of the future problem of penetrating Soviet defenses became painfully clear. Flying high and fast to outrun opposing fighters and saturate their radar controllers was a thing of the past. Surface-to-air missiles could attain any speed and altitude possible for the manned bomber, and continued missile development would only increase the margin by which defensive missiles were superior. The other half of the penetration problem was the realization that the integration of radar and other sensors, computers, and communications into the enemy defenses made electronic warfare a key function of any penetrating force. It meant that electronic warfare capability had to be extensive and continually responsive to electronic changes in the enemy threat.

SAC's operational response to these revolutionary changes was to develop the low-level penetration tactic. In 1959 SAC started low-level training in earnest.<sup>13</sup> Both the B-47 and the B-52 were capable of low-level penetration. They incurred a penalty in terms of increased fuel consumption as well as long-term structural fatigue problems which, while proving costly in terms of eventual modification of aircraft structure, did not detract from the overall effectiveness of the tactic. Low-level flight works by keeping the penetrating aircraft below optimum radar coverage, in the shadow of intervening high terrain, as well as at an altitude where effective interception is difficult for both fighters and missiles.

An effective response to the challenge of increasingly exigent electronic warfare was facilitated by the large volume of the B-52, which permitted the addition of extensive countermeasures equipment and the large electrical power generation capacity required to drive powerful jamming transmitters. The B-47 design largely predated the electronic warfare threat, but some modifications were

*Numerous modifications over the years have enabled the venerable B-52 to continue as the mainstay of our bomber force today. However, in the future, further modification of the B-52 may become impractical or too expensive.*







*The mach 2 B-58 was planned as a replacement for the B-47 to complement the B-52 force. The delta-winged B-58 was the Free World's first supersonic bomber, but it was overtaken by time and technology. Its phase-out was announced just three years after the delivery of the last production model late in 1965.*

possible. Further, the large number of B-47s available made it possible to devote significant numbers entirely to an electronic warfare mission. In place of weapons certain of these aircraft carried not only extensive electronic equipment but also additional crew members to operate it.

The B-58, however, could not be adapted in either direction. At low level its fuel consumption was prohibitive and there was no way to attain even token low-level range. The B-58 had a respectable electronic warfare capability, but the elaborate engineering that squeezed the required equipment into a small supersonic airframe did not permit the continual modification which would have been needed to keep up with the changing threat. Added to these problems, the aircraft was found to be extremely costly to maintain and operate. Phase out of the operational force was announced on 8 December 1965, only three years after delivery of the last production aircraft.<sup>14</sup>

Even as this revolution in penetration tactics was occurring and the B-58 was being placed in operation in reduced numbers, the Air Force and North American Aviation were developing the B-70. This large canard-configured aircraft was to fly so high and fast that it would completely overwhelm any defenses. It could carry extensive electronic countermeasures equipment, but it was structurally incapable of efficient low-altitude flight. The political and organizational support behind the evident progress in terms of altitude and speed embodied in this unique aircraft built up a momentum that kept the B-70 program going long after all involved should have realized that these capabilities were strategically irrelevant. By 1961, President Kennedy and Secretary of Defense McNamara were finally forced into the decision to cancel the B-70 development program.

At this point it had become clear that for any manned bomber to successfully penetrate undegraded defenses, the low-level tactic

would have to be flown, and flown at extremely low altitudes, and the latest electronic countermeasures equipment would have to be employed to augment the low-level tactic. High penetration speeds incurred great penalties in terms of range and stress on both equipment and crews. Low-level penetration speed higher than the mach 0.53 to 0.55 attainable by B-47 and B-52 and the mach 0.85 of the FB-111A and B-1 appear to be of dubious utility because they would result in penetration at higher altitudes.

Significantly, the transit time, and hence efficient cruise speed from the launch base to the beginning of the penetration of enemy defenses, is without direct correlation to bomber effectiveness. A mach 2 bomber has no significant advantage over a subsonic bomber if both must penetrate at subsonic airspeeds. Indeed, the durability of the manned bomber as a strategic threat is due in no small measure to the fact that its arrival in the target area occurs after several hours of degradation of enemy defenses by ICBMs, SLBMs, and nuclear armed tactical aircraft operating from forward bases. Whether or not defenses are specifically targeted, the cumulative effects of a massive nuclear exchange would inescapably reduce the cohesion and effectiveness of any antibomber defense.

Endurance required to orbit while waiting for an executive decision after a launch under positive control is a real asset possessed by the manned bomber and no other strategic weapon. This characteristic also facilitates the assumption of a sustained airborne alert posture which is a highly visible demonstration of resolve that places a significant portion of the force in a position where it is secure from a surprise counterforce action.

#### *recent cases*

With these considerations in mind, it is enlightening to evaluate the two most recent strategic bomber candidates as to their effi-

ciency in adding to the strategic offensive potential of the United States. The FB-111A's good low-level penetration ability profited from relatively compact airframe dimensions and excellent avionics to achieve extremely low penetration altitudes. It also possesses relatively small radar cross section, radar energy reflectivity, which facilitates the electronic warfare aspect of penetration. Unfortunately, its range is extremely restricted, forcing it to depend entirely on multiple refuelings to accomplish a nominal mission. Its small size also compounds the problem of updating or adding to electronic equipment. The FB-111A's mach 2 cruise capability is a very expensive fringe benefit, helpful under only unique circumstances. The cost of the mach 2 ability in terms of weight penalty for the swing-wing configuration is high. The two-man crew of the FB-111A also forces dependence on automatic function to a degree not true of larger aircraft. These considerations contributed to the decision made public by Defense Secretary Melvin Laird on 19 March 1969 to reduce the planned FB-111A force from 210 to 60 aircraft.<sup>15</sup> The FB-111A, with its total dependence on extensive tanker support, is a tactical aircraft straining to perform a strategic mission.

The B-1 was indeed the highest state of the strategic bomber art. Excellent low-level penetration ability, coupled with good electronic warfare capability and large payload, equipped it admirably to perform the strategic mission. Air refueling was essential, but not to the degree necessary for the FB-111. Good growth potential was provided for avionics advances that might be anticipated in years to come. But again the aircraft was overdesigned in terms of its supersonic cruise capability. The excessive structural strengthening and elaborate swing-wing carry-through structure necessary for mach 2 flight were obvious to critics and, being integral elements of the basic airframe design, could not be discarded in order to reduce weapon system cost of a

rationalized production version. In view of these excessive capabilities, the unprecedented unit and program costs of the B-1 made it as uniquely vulnerable to its domestic critics as it was supposed to be invulnerable to Soviet defenses.

Thus, as a general trend, we have seen the design of strategic manned systems emphasizing aerodynamic characteristics of speed and altitude long after those characteristics ceased to contribute to the strategic utility of the manned bomber. To attain these no-longer relevant abilities, strategically useful characteristics such as range, load-carrying ability, or system flexibility were given up, or the cost of the weapon system was inflated to unacceptable, or at least unpalatable, levels.

In order to reinforce the argument that the manned bomber development in recent years was unique among strategic systems in retaining excessive, obsolete performance characteristics, it is noteworthy to consider the ballistic missile in comparison. The range of a given missile, determined by launch point and target, defines the speed and trajectory that the missile must follow. Consequently, there has never been the confusion between technological characteristics and strategic utility that exist with aircraft. ICBM evolution has been in terms of warhead weight or megatonnage, the addition of multiple warheads, the development of greater accuracy, the addition of terminal tactics to evade defenses and protection of the missile before launch. All of these are directly applicable factors to the determination of strategic utility. This is not to imply that missile development may at some future time diverge from strategic needs, but for the present the ICBM seems to have remained more closely related to true strategic capabilities than the manned bomber.

### Costs of the Manned Bomber

The inexorable rise in the cost of all defense hardware has sensitized the public and policy-

makers alike to the need to ensure that progress in strategic weaponry is attained in the most cost-effective manner. The manned bomber has seen this issue become a crucial obstacle standing between it and continued existence as a viable part of our strategic posture. Aircraft unit costs and anticipated program costs (\$88 million and \$21.6 billion in the case of the B-1<sup>16</sup>) have soared to levels that merit headline notice in any media treatment of the question. At the same time it is paradoxical to note that the overall annual expense for all strategic forces has held steady at approximately 10 to 15 percent of the defense budget for recent years.<sup>17</sup>

Still, the manned bomber absorbs a high percentage of the annual cost of the strategic program. A figure projected for 1974 to 1980 shows 35 percent of the strategic program going to the manned bomber (including some of the B-1 program), 27 percent to the SLBM force, and only 10 percent to the ICBM force.<sup>18</sup> Since this period includes very little new aircraft production, it is indicative of the high operation and maintenance costs associated with the manned bomber force. Unlike the missile force, where missiles are on alert in their silos while the crews receive training in classrooms, simulations, or procedural drills, the bomber force must fly to keep effective. This requires immense expenditures for fuel, maintenance support, facilities operation, and personnel support. It is a continuing cost that cannot be eliminated without a precipitous decline in readiness. This also makes it extremely difficult to keep a high percentage



*Another alternative to the Stratofortress was the XB-70A, shown taking off on its second flight, 5 October 1964. Although it flew at great heights and at a speed of mach 3, these capabilities were insufficient to balance its other limitations, and only two of the experimental aircraft were completed: One was destroyed in a midair collision, and the other is at the Air Force Museum, Wright-Patterson AFB, Ohio.*



of the force on alert for any length of time without incurring extreme penalties in terms of costs and proficiency. Quanbeck and Wood estimate the direct operating cost for a squadron of B-52s, of which we have 20,<sup>19</sup> to be approximately \$40 million annually with indirect support costs nearly equal to this amount.<sup>20</sup>

Operating and maintenance costs are a fertile area for potential cost reductions, but these costs are only very partially sensitive to actions aimed at rationalizing operations in the field. Increased efficiency permitting small reductions in personnel or savings in flying hours could be effected at unit level with appropriate encouragement from higher echelons. The institution of personnel procedures making the mission more attractive in order to reduce turnover and, hence, reduce the need to train replacements would be possible at command level. But the basic characteristics of the weapon system being addressed still drive the great majority of the costs. Fuel consumption is a function of the size and efficiency of the aircraft. Complexity, state of the art, and eventually system age drive many of the maintenance costs. An FB-111 unit with smaller, more modern aircraft with only a two-man crew is more fuel and aircrew efficient than a B-52 unit. Likewise maintenance man-hours and spare parts costs for a B-52 unit today may be significantly less expensive than they will be ten years from now because of the increasing difficulty of keeping old systems operating.

Beyond the increased costs of day-to-day maintenance, a significant cost of an aging manned system is the requirement to modify aircraft to operate beyond their designed lifetime, to perform missions for which they were not originally intended, and to overcome new threats. The B-52 fleet, for example, has undergone constant modification for years. In mid-1976, B-52s were undergoing five different modifications, all of which were required even if the B-1 had entered the force in

quantity. Cartridge starters were put on all eight engines to decrease reaction time at a cost of \$35 million; the electro-optical viewing system was being installed on all 269 G and H models, \$269 million; Phase VI electronic countermeasures were going on all G and H models, \$296 million; short range attack missile (SRAM) launchers were being added, \$359 million; structural strengthening of 80 B-52Ds, many of which were at double their original design life of 5000 airframe hours, \$208 million. These ongoing changes totaled more than \$1.1 billion just to keep the B-52 force functioning.<sup>21</sup> Indeed, it is reasonable to estimate that the cumulative costs of all modifications of B-52 aircraft now flying well exceed the unit costs of the aircraft when purchased.

In any evaluation of the future of the manned bomber, costs are a prime consideration, whether in dollars, defense manpower, or technology. Not only must any manned bomber force be cost-effective but it must be perceived to be so by the nation. Development and production costs must be held to reasonable levels, with longevity of the system a prime consideration at the outset.

## The Future of the Manned Bomber

The Carter decision to discontinue development of the B-1 was met by rapid aerospace industry response. Rather than undertake the design of a single strategic system to perform the manned strategic mission, two separate systems were proposed. The operational FB-111A would be redesigned, adopting B-1 technology to provide a new manned penetrator. Concurrently, proven wide-body transport engineering would combine with rapidly advancing cruise missile technology to produce a cruise missile carrier large enough to provide mass to an attack. This bifurcation of the strategic bomber function provides a simplification of the engineering challenge,



*Since the discontinuation of B-1 development, some of the advanced technology of the B-1 has been applied to the FB-111A two-seat, variable-geometry strategic bomber (above). The resulting FB-111H manned penetrator will have improved range and payload, while retaining the essential structure and subsystems of the FB-111A.*

but, more significantly, it could, in the view of aerospace industries, represent a tactic more likely to get an affirmative production decision through the machinery of government for at least one of the two approaches. The B-52 force could continue to perform the part of the mission not possible for whichever of these systems goes into production.

The FB-111H proposed as the manned penetrator offers a modest improvement over the FB-111A in terms of range and payload. B-1 engine technology enabled an increase in airframe capacity for an airframe that had otherwise approached its limits of useful growth. The new aircraft should retain the excellent low-level penetration characteristics

*Continued on page 48*

## Proposals for a New Manned Strategic Bomber

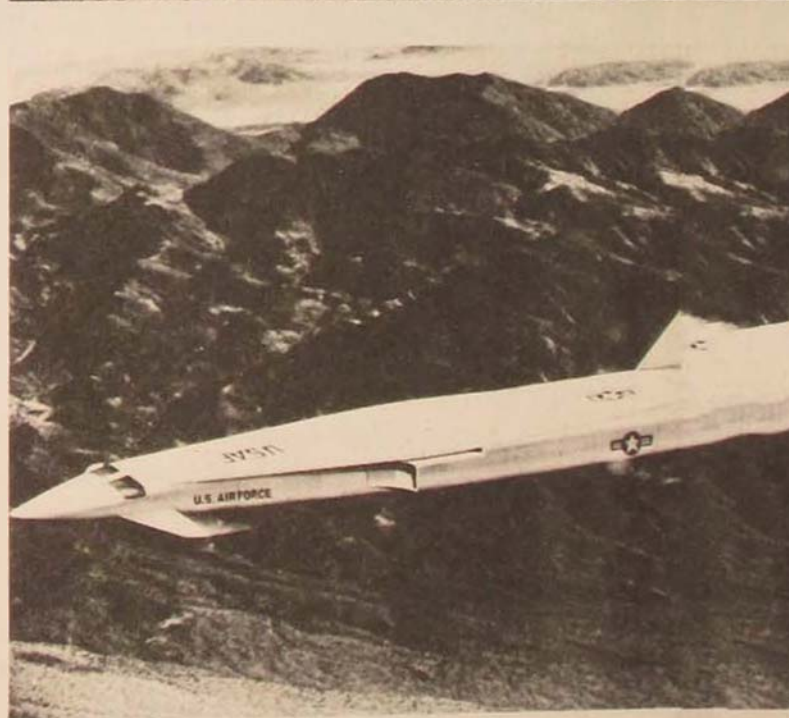
In the Innovative Strategic Aircraft Design Study, a recent Air Force-sponsored program, the aircraft industry produced several advanced-bomber concepts that incorporate significant technological advancements. These "paper airplanes" were designed against typical B-52 strategic mission requirements and carried double the nominal B-52 payload, without refueling. Additional design requirements included resistance to nuclear effects, payload and mission flexibility, low initial and life-cycle cost, low gross weight, survivability, and tanker independence.

The designs incorporate technological advances in materials, propulsion, and aerodynamics. The greatest advances projected were the use of advanced composite materials, exotic forms of fiber glass. The composite aircraft design gross weights ranged from 250,000 to 350,000 pounds (compared with 488,000 pounds for the B-52). Advanced aerodynamic concepts included a fully skewable wing for good high- and low-speed performance, ride-control canards to assure a comfortable ride at high-dash speeds, advanced super-critical airfoil shape, fly by wire, and relaxed static stability. Initial projections show evolutionary improvements in engine thrust and efficiency for subsonic speeds; however, innovative approaches, such as a multi-mode variable-cycle propulsion system, promise significant improvements for future supersonic aircraft.

The designs ranged from relatively conventional-looking wing-fuselage turbojets, through prop-fan (large six-blade turboprop) designs, to supersonic aircraft with wings that swing flush with the fuselage during high-speed penetration.

In the second phase of the study, which is just drawing to a close, extensive analyses have shown the relative merits of these various technological advances, and program plans have been outlined to achieve these advances—a technology roadmap for future research and development.

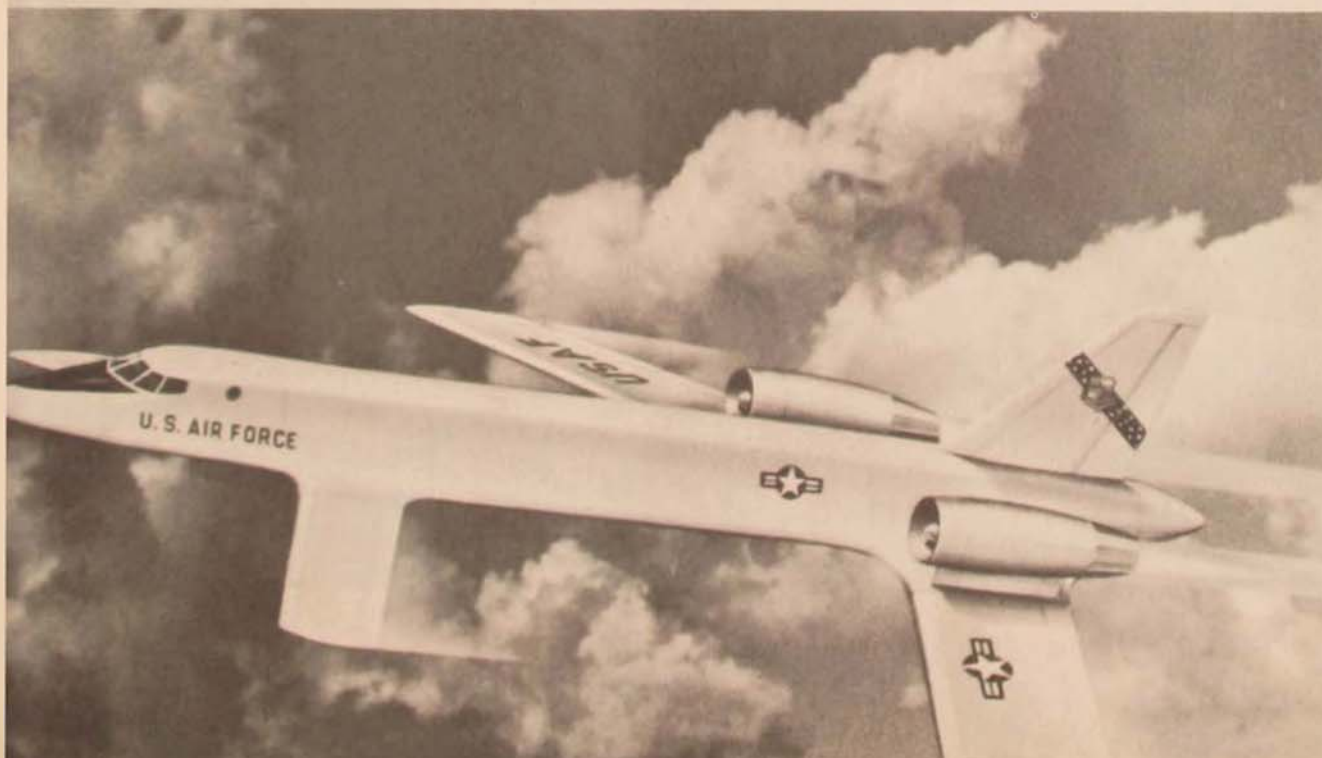
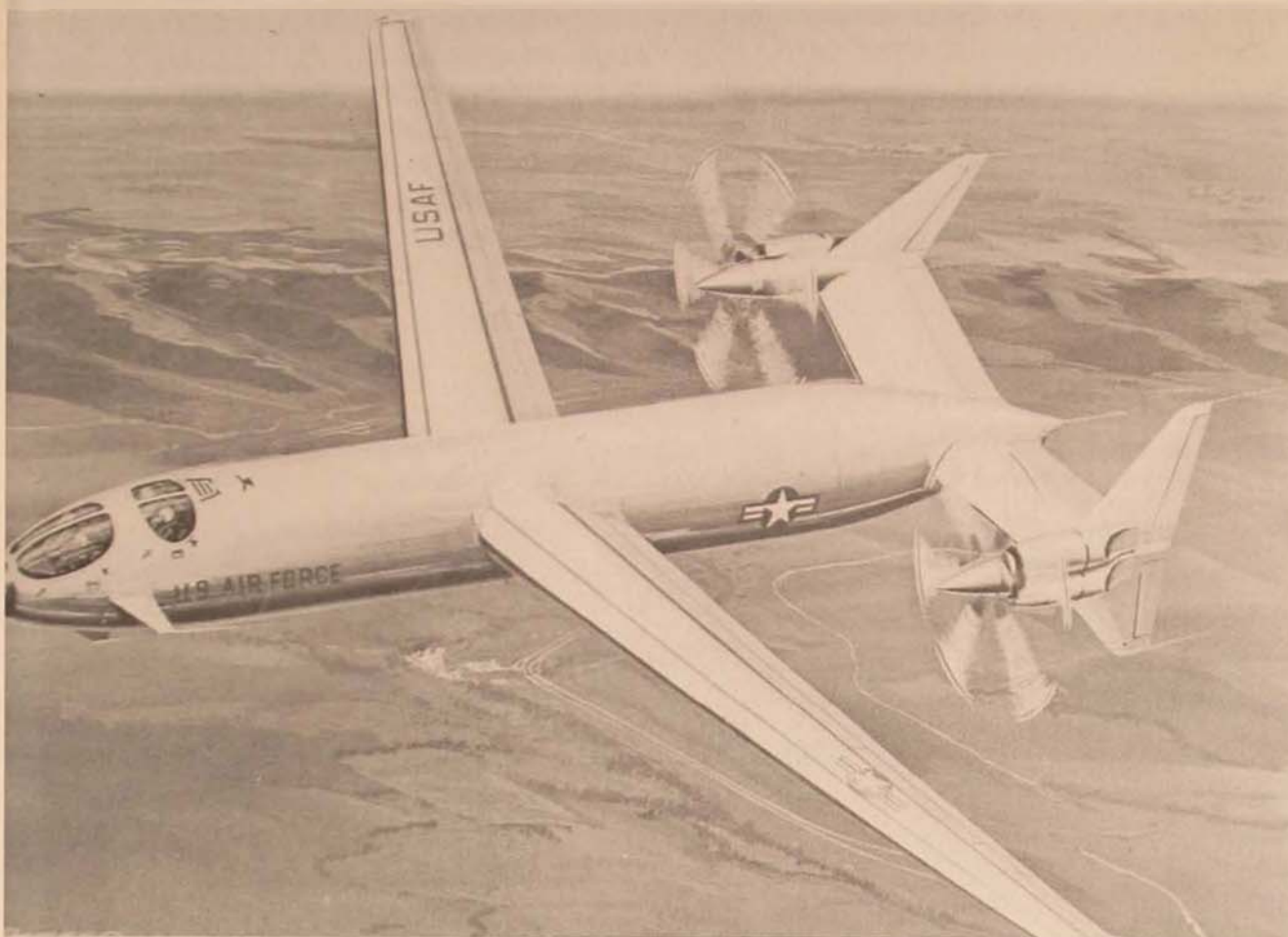
*Directorate of Strategic Planning  
Deputy for Development Planning  
ASD/AFSC*



*Among advanced-bomber concepts, the long, high-aspect-ratio wing gives this design long range and good takeoff and landing performance. Its unique characteristic—the wing is skewed or rotated flush with the fuselage (below)—provides for supersonic dash to the target. Body lift alone will sustain flight of this aircraft.*



*Not all economy efforts are successful. The aircraft below was designed with an advanced high-efficiency prop-fan propulsion system and high-aspect-ratio wing to reduce fuel consumption, gross weight, and life-cycle cost, but savings were offset by development and maintenance costs. . . . Another innovation that is simple and inexpensive to manufacture is the forward sweep airfoil, (bottom), based on aerodynamics research by Defense Advanced Research Projects Agency and Air Force Flight Dynamics Laboratory.*

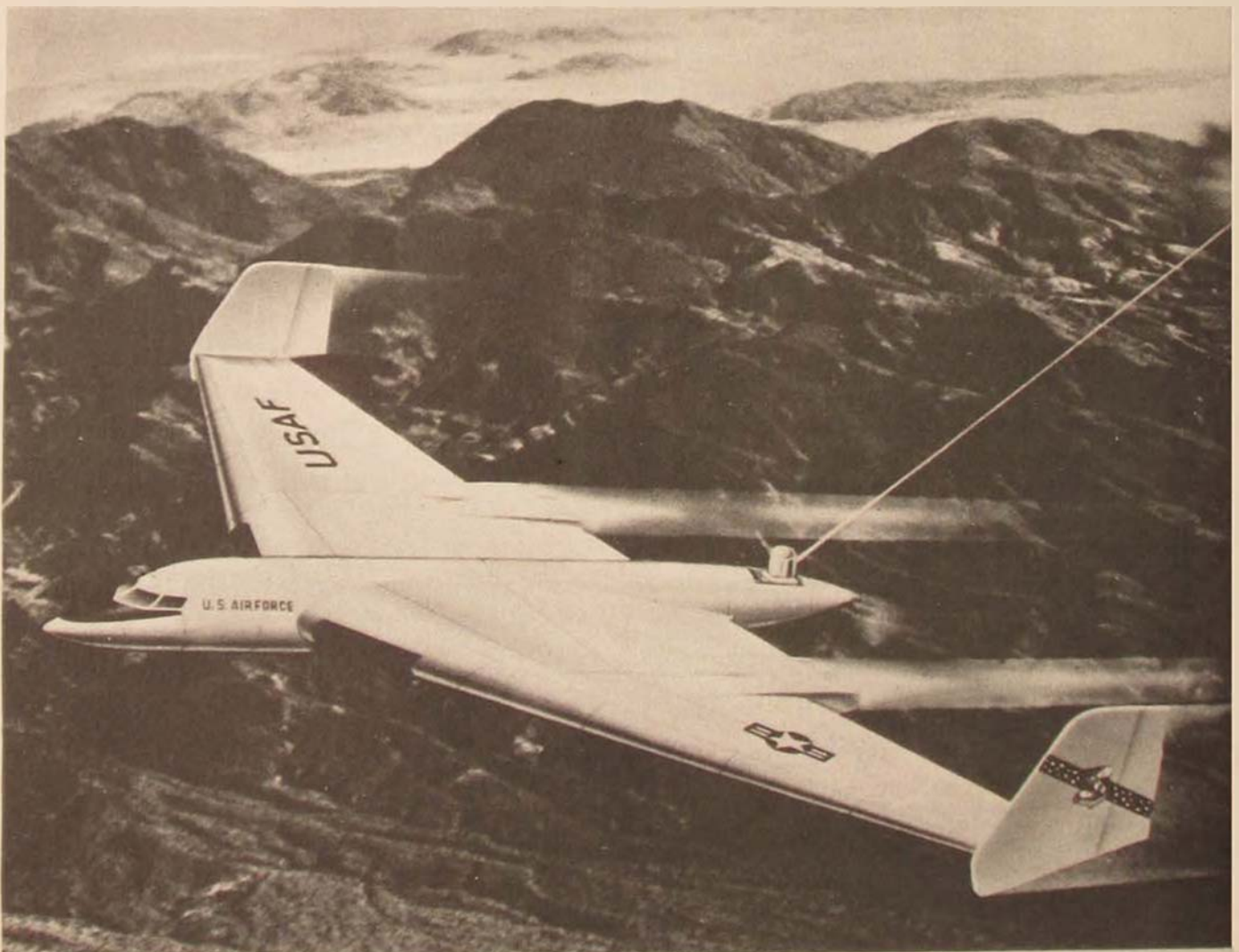


of the FB-111A and may even increase its capabilities incrementally by employing some avionics designed for the B-1. The FB-111H would still rely on significant air refueling to complete most missions and will probably not have the mission flexibility and electronic warfare expandability of the B-52 or B-1. The FB-111H would not be a practical cruise missile carrier because of bomb bay volume constraints and range degradation if they are carried externally.

The FB-111H suffers from essentially the

same limitations that caused its predecessor, the FB-111A, to be held to one-third of the originally intended production run. Its payload is clearly subject to an unfavorable trade-off with range, with most missions probably limited to internal SRAMs or, at most, partial underwing stores. The FB-111H, just as the FB-111A, bears the burden of structural design intended for supersonic flight not essential or usable in its primary mission profile. The FB-111H, even if it possesses a respectable degree of capability today, would be at the limits of its

*A possible future bomber (shown in artist's concept) blasts surface-to-air missiles using a high-energy laser.*

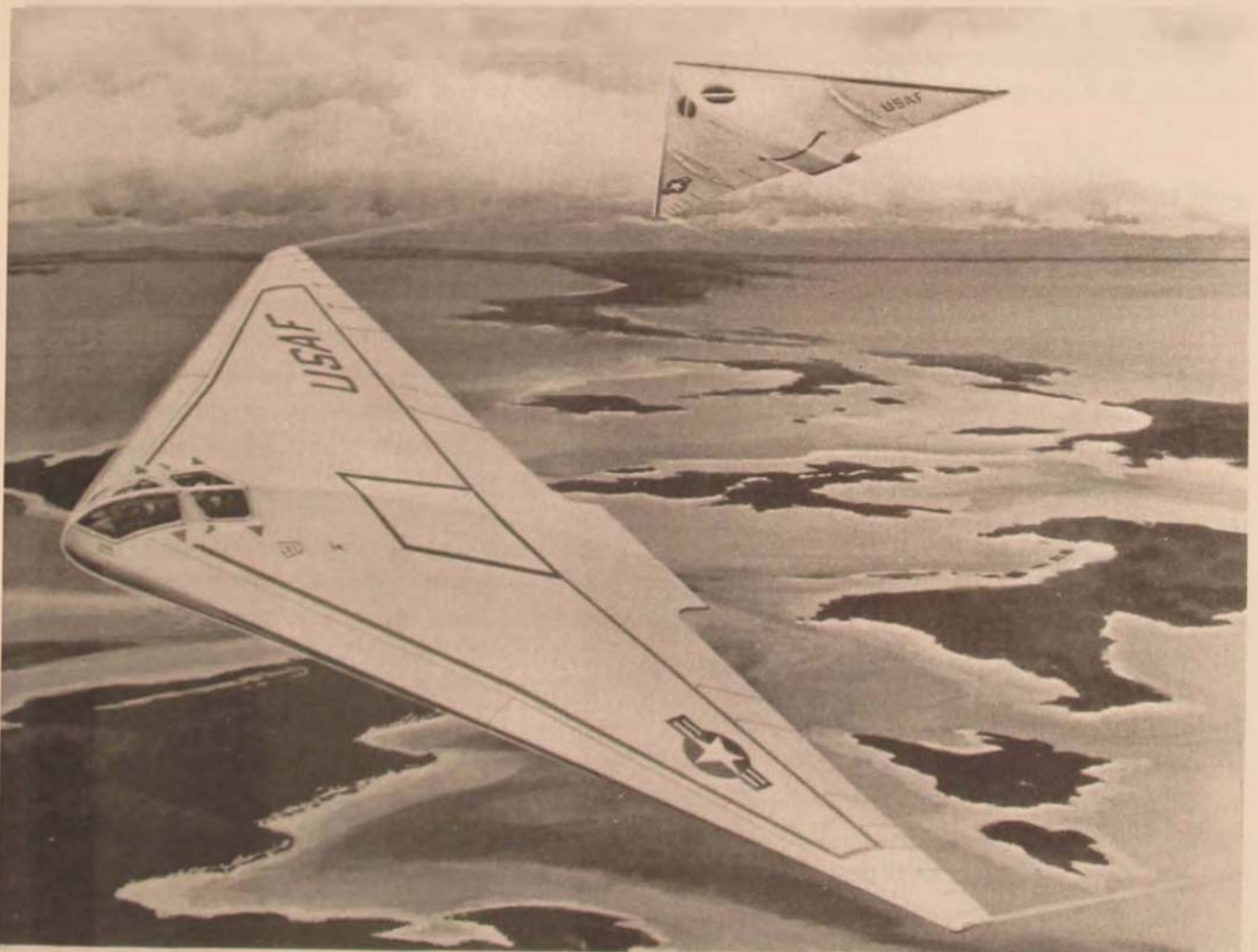


design and would respond to tomorrow's missions and threats only with the greatest difficulty and expense.

The wide-bodied cruise missile carrier, on the other hand, profits from the great potential growth in capability of the air-launched cruise missile (ALCM) and the immense payload potential of existing commercial transport. Using an existing wide-bodied transport as the basic airframe will reduce development costs and lead time, but it may saddle the operational vehicle with the range limitation and high-

fuel consumption resulting from large fuselage diameter unnecessary for this mission. The cruise missile carrier is, however, essentially not a war-fighting aircraft and must stay well clear of enemy defenses. Consequently, its deployment is rigidly constrained at the outset. Past experience indicates that Soviet response to deployment of such a system will be quick. Development of the ability to detect, identify, and destroy such a basically vulnerable aircraft is strictly within the current state of the art. The uniquely large size of this aircraft may even

*The 30-year-old all-wing concept is extremely attractive of late because of its low structural weight and its simplicity (no fuselage).*



enable the Soviets to monitor its presence to facilitate interception by long-range missiles or fighters well before reaching optimum firing position.

If indeed these two systems were to be procured, yet another problem would surface. The operations and maintenance costs of two parallel systems would necessarily be higher than costs of a single capable aircraft design. Production runs of both would be lower than optimum, and training expenses would be higher. Any savings effected by purchase of two specialized aircraft based on existing designs would be lost later on through unnecessarily complex operations. Neither of these two aircraft possesses a usable conventional capability; consequently, at least some B-52s would have to be retained indefinitely. This would place the United States back in the inefficient situation of the 1950s with an excessive number of strategic aircraft types to maintain and operate.

#### *fundamental questions*

These observations on the past of the manned bomber and on present attempts to design new aircraft as well as projections of its future lead to a number of key questions that may offer a useful sketch of what the manned bomber will have to be in order to survive and serve to the year 2000 and beyond.

*Why, in spite of its inescapable costs, would we find it necessary to retain and improve the manned bomber as a part of our strategic inventory?* Because it would continue to stabilize our deterrent posture by providing the only system that can be manipulated before a nuclear strike is executed in order to signal resolve or perception of a threat of war or to eliminate prelaunch vulnerability. It complements the characteristics of ICBMs and SLBMs in this way, and it is the only vehicle with strategic range and payload that can actually be used to apply nonnuclear firepower in lower level conflicts.

*Will the manned bomber remain viable through the remainder of this century as an effective weapon system?* Yes, as long as we apply to it available advances in technology. We must depend on SRAMs, the ALCM, decoys, and other more advanced munitions or aids to penetrate defenses too potent for the bomber alone. The bomber will be able to penetrate a modern defensive system only in conjunction with the combined effects of a nuclear exchange where missile-borne weapons will have degraded defenses during the relatively long transit time of the bomber. The bomber will then have particular utility in the subsequent phases of a nuclear war where the aircrew's judgment would be essential and defenses much less of a factor. Any manned bomber, even if primarily intended for a stand-off launch of relatively long-range missiles in early phases of a conflict, must retain an ability to defend itself against interception and a residual penetration ability against degraded or limited defenses.

*When should new manned systems be procured?* When we perceive the need to replace an obsolescing system in order to retain our capability and modification of the old system is no longer practical or cost-effective, or when it becomes apparent that operating and maintenance costs of the old system can be so drastically reduced that capital outlay for a new system is more sound. Thus the decision to purchase a new system could be advanced significantly by industry proposals showing particularly good cost performance. Careful projections must be made in order to allow for the long lead time characteristics of large strategic systems.

*What should we buy?* Any new manned bomber must first possess the basic characteristics required to qualify as a war-fighting machine. It must have generous range, payload and inherent growth potential, and the ability to employ a variety of munitions and tactics. It would be unwise to select a vehicle so constrained in these areas that responsiveness

to an evolving threat would be limited. Any serious candidate must be at the state of the art for subsonic technology: supercritical wing, efficient high bypass ratio turbofan engines, reliable avionics, perhaps much of the sturdy structure of contemporary airliners but without the large volume fuselage. It must have the type of fuel efficiency and dispatch reliability that characterize the best airliners. It should be easy to fly and ideally so similar to transport or tanker type aircraft in handling characteristics that crews could be rotated from one type to the other to sharpen skills. It must be well engineered to protect crew and avionics from the effects of nuclear detonation. It must incorporate technology aimed at maximum structure of contemporary airliners but without the large volume fuselage. It must have the flexible, able to function as a stand-off ALCM launcher in the face of concentrated unde-

graded defenses, but able to penetrate in later stages of a conflict where defenses have lost their cohesion and effectiveness or when used in a nonnuclear role in a more permissive environment.

IF MANNED bomber development is held tightly to these objectives and within these constraints, the manned strategic vehicle will continue to offer considerable potential for strategic utility far into the future. As long as our position in the world is one where, as a democracy, we are likely to be in the role of a reacting power in international conflict, the manned bomber gives a dimension to that reaction which greatly complicates any opponent's plan of attack while avoiding any appearance of threatening or aggressive advantage.

*Strategy Division  
DCS Operations, Plans and Readiness  
Hq USAF*

#### Notes

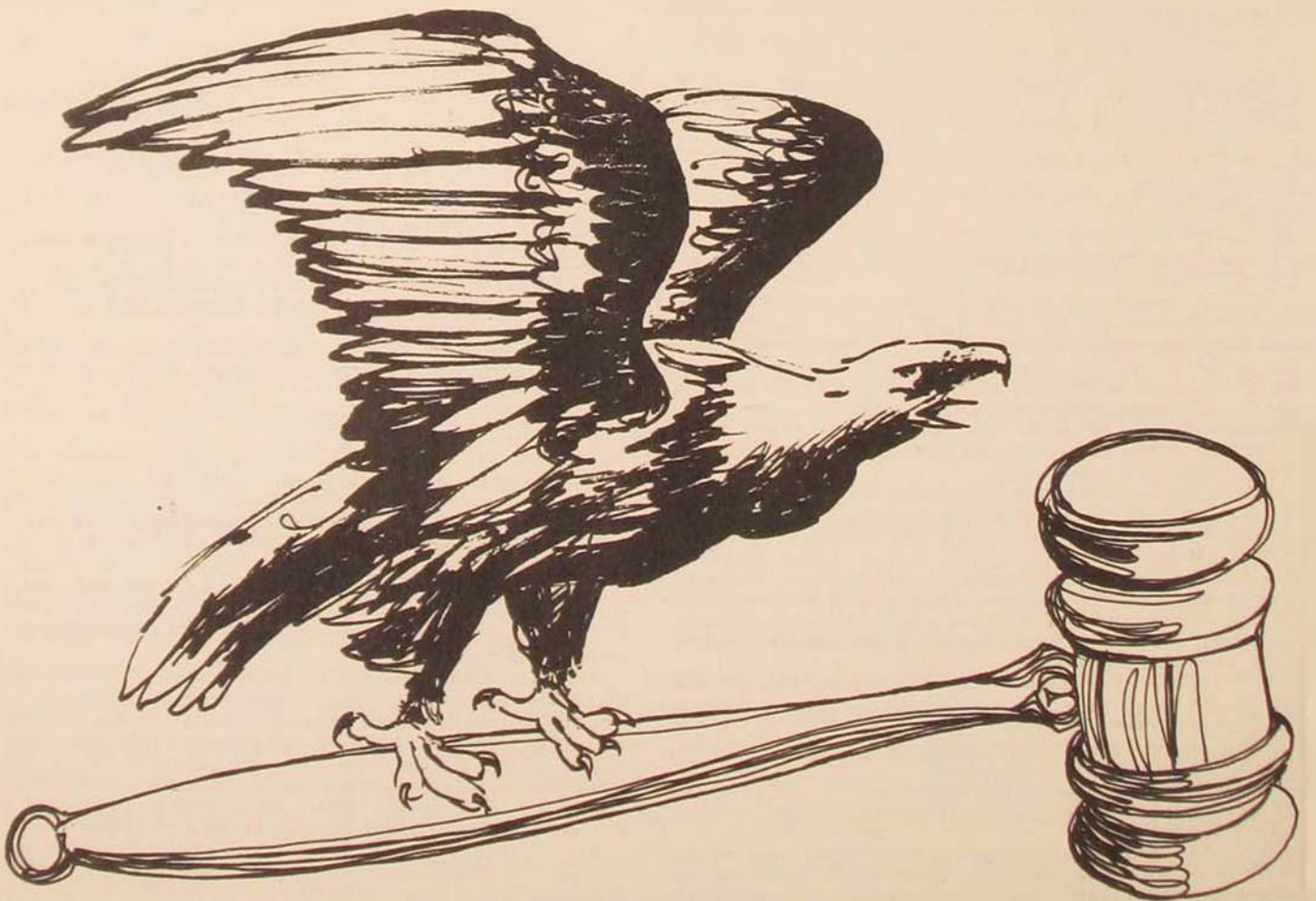
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# MILITARY JUSTICE: IS IT EQUAL?

MAJOR FELIX FENTON MORAN III



*It is a shameful fact that this nation, which prides itself on offering "liberty and justice for all," fails to provide a first rate system of justice for the very citizens it calls upon to defend those principles. More than three million Americans now under arms are being denied rights fundamental to all members of a free society.*

Senator Birch Bayh<sup>1</sup>

**T**HIS supposed lack of justice in the armed forces is caused, some legal writers believe, by the simple fact that the military system is different. Charles Morgan, of the American Civil Liberties Union, states that "the Uniform Code of Military Justice is uniform, is a code, and is military—and therefore has nothing to do with justice."<sup>2</sup> Unfortunately, criticism of this caliber is often an outgrowth of the now popular rhetoric condemning the military in general.<sup>3</sup> It often ignores the actual realities of the military justice process and cites as its proof isolated incidents not at all representative of that process.<sup>4</sup>

It is significant to note that most criticism of military justice comes from legal theoreticians rather than practitioners: most attorneys

experienced in both military and civilian trial work will acknowledge that the military trial offers the accused the better advantage.<sup>5</sup> Many rights, just recently held by the Supreme Court to be vital to due process of law and essential to safeguard individual liberty, have been part of military justice for as long as 40 years.<sup>6</sup> This system has prompted Senator Sam Ervin to state that ". . . military justice [has] attained virtual parity with civilian criminal justice."<sup>7</sup>

This unique system of law has been created by Congress to enforce certain standards of conduct, some identical to standards enforced in civilian life, which have importance in maintaining discipline and public respect for the military service. The administration of this system is placed in the hands of various military courts because these courts are more

familiar than a civilian court would be with the problems of maintaining discipline and assessing appropriate punishment. Also, in some situations, a military court may be more convenient or may be the only feasible alternative.<sup>8</sup> Although many supporters of this system base their belief on the idea that the peculiar requirements of military discipline make such a system necessary,<sup>9</sup> military justice is regarded by the Department of Defense and most field commanders as a system of justice whereby fair and impartial trials are provided for military personnel accused of criminal conduct; discipline is an incidental effect since the guilty are punished and the innocent are exonerated.<sup>10</sup>

My primary purpose in this article is to compare the military and civilian justice systems by reviewing the fundamental rights afforded the criminal offender in each system. I hope the reader will be able to draw a reasonable conclusion as to whether the administration of justice in the armed forces substantially protects or endangers the constitutionally guaranteed rights of individual citizens.

### Military Justice and the Bill of Rights

For many years the Bill of Rights was not recognized as applicable to members of the armed forces. This policy was changed when the United States Court of Military Appeals decided *United States v. Jacoby*, in which the new standard became that "the protections in the Bill of Rights, except those which are expressly or by necessary implication inapplicable, are available to members of our armed forces."<sup>11</sup> Thus, for the first time, it was expressly held that the Bill of Rights did have application in the military justice system. Since 1960, the Military Court has expanded this concept through its decisions so that there is now a clear understanding of the rights and protections afforded the serviceman by the

Constitution and the Uniform Code of Military Justice. A format that lends itself easily to an examination of these rights is a comparison between the military and civilian systems.

#### *search and seizure*

The right of the people to be secure in their homes and possessions as guaranteed by the Fourth Amendment is no less applicable to the military than it is to the civilian justice system. In two decisions, the Supreme Court eliminated as evidence the use of material obtained through an illegal search. First in 1914 with *Weeks v. United States*,<sup>12</sup> and then in 1961 with *Mapp v. Ohio*,<sup>13</sup> the high court established the basic dimension of the exclusionary rule for the federal and state courts, respectively.

The military, on the other hand, adopted the exclusionary rule shortly after the *Weeks* decision, but it was not expressly sanctioned in service manuals until the 1949 *Manual for Courts-Martial*.<sup>14</sup> Today, the admissibility of such evidence depends on much the same rules as prevail in the civilian system.<sup>15</sup>

There are, to be sure, basic differences between the civilian and military mechanisms for safeguarding this right. Probable cause is basic to any lawful search.<sup>16</sup> In the civilian court system, probable cause is set out in a written application for a warrant, and the determination of sufficient proof is made by an independent magistrate.<sup>17</sup> This rule is obviously inoperable in a foreign jurisdiction. The United States Court of Military Appeals has recently defined the limits of admissibility of evidence seized by foreign police officials and used to prosecute United States servicemen in courts-martials in deciding *United States v. Jordan*.<sup>18</sup> In its decision, the court ruled that evidence produced by a search conducted by host-nation police officials is admissible in an American military trial so long as there is no United States involvement or presence, and the search and seizure are conducted in accordance with the host-nation's laws and do not, in



the view of the judge, "shock the conscience of the court."<sup>19</sup>

Probable cause, as set out in a written application for a warrant, has been held by implication to be inoperative in areas under control of the armed forces. Consequently, the *Manual* provides that a search of property on a military installation may be authorized by a commanding officer, based on probable cause.<sup>20</sup> Further, the military practice does not require that the application for search be in writing, nor does it require that the application be on oath or affirmation.<sup>21</sup> The Court of Military Appeals has, however, encouraged the use of written applications, and many commands have adopted this practice as a local rule.<sup>22</sup>

These concepts of military search and seizure are clearly based on the belief that the commanding officer can always be impartial toward his men. Unfortunately, this is not always the case.<sup>23</sup> The armed forces have already begun the practice of allowing military judges to issue search warrants, but the practice is not widespread nor is it mandatory.<sup>24</sup> Only when this trend is brought to its logical conclusion will the serviceman be afforded the fullest protection of the Fourth Amendment of the Constitution.

#### *self-incrimination*

The serviceman's privilege against self-incrimination is well established. Not only does the Fifth Amendment apply but the right is further protected by Article 31 of the Uniform Code of Military Justice. It is interesting to note that the warnings codified in Article 31<sup>25</sup> contain most of the elements required by *Miranda v. Arizona*,<sup>26</sup> which it predated by 16 years. In addition to requiring that a suspect must be advised of the nature of the offense, that he has the right to remain silent, and that any statement which he makes can be used against him, the Court of Military Appeals, expanding the *Miranda* rule, ruled in *United*

*States v. Tempia*,<sup>27</sup> that a suspect in the military must also be advised of his right to hire a civilian attorney and told that, if he desires, a military lawyer will be provided free of charge. He can consult with his attorney before any interrogation takes place, have his attorney present during questioning, and terminate the interview at any time. Further, he is advised that any statement he makes must be voluntary and with a full understanding of his rights.<sup>28</sup>

There can be little doubt that the warnings provided in Article 31 and *Tempia* are broader than those provided the civilian accused. Further, the Supreme Court's decision in *Miranda* pertains to custodial interrogations, while Article 31 is applicable regardless of custodial status.<sup>29</sup> Additionally, case law established by the Court of Military Appeals has expanded the gap even further, going far beyond the protections afforded civilian defendants. Under military law, an accused serviceman cannot be compelled to speak for voice identification, give handwriting examples, urine or blood specimens.<sup>30</sup> Thus, the Military Court has brought within Article 31 actions which the Supreme Court has held are not protected by the Fifth Amendment and, therefore, are not applicable to civilians.<sup>31</sup>

#### *grand jury indictment*

The Fifth Amendment right to indictment by grand jury is the only right expressly inapplicable to the military accused.<sup>32</sup> Again, however, the military has a substitute procedure for the grand jury indictment. Article 32 of the code requires that prior to referring charges to a general court-martial, a commander must appoint a commissioned officer to conduct a thorough and impartial investigation of the facts. Although the two procedures are analogous, their differences are rather distinct.

Grand jury proceedings are conducted in secret. The defendant is barred from all proceedings, and, consequently, he does not have counsel and cannot confront the witnesses

against him. The defendant is not permitted to introduce evidence or witnesses in his own behalf. Further, the grand jury indictment has not been considered an essential element of Fourteenth Amendment due process so long as the state provides a suitable substitute.<sup>33</sup>

On the other hand, Article 32 investigations are open proceedings. The accused is always present and represented by counsel and can confront and cross-examine the witnesses for the government. The accused can call witnesses and introduce evidence in his own behalf.<sup>34</sup> Further, at an Article 32 investigation, the government makes almost its entire case available to the defense.<sup>35</sup>

Because of these differences, even the harshest critics of military justice have acknowledged the superiority of Article 32 investigations. By contrast, substantial criticism has been leveled at the civilian grand jury. Consequently, little support can be given to the notion that the military accused would benefit procedurally if they were under a grand jury system.<sup>36</sup>

#### *right to counsel*

At present, as provided by the code, a military attorney must be appointed for a defendant in all general and special courts-martial,<sup>37</sup> except on the rare occasion when counsel is not available for a special court-martial because of "physical conditions and military exigencies."<sup>38</sup> The *Manual*, in defining physical and military exigencies, has virtually eliminated special courts-martial without benefit of counsel.<sup>39</sup> Thus, the only trial situation where counsel is not required by the code is the summary court-martial.<sup>40</sup> Recent court decisions and department regulations, however, have negated this practice. The Supreme Court, in a civilian case, *Argersinger v. Hamlin*,<sup>41</sup> held that counsel must be provided whenever criminal proceedings may result in a sentence of imprisonment. The decision extends the Sixth Amendment right to counsel to misdemeanor trials. Since a

summary court-martial can adjudge a maximum sentence of one month's confinement,<sup>42</sup> it was foreseeable that the decision could have an implication within the military system. Following the Supreme Court's decision, the Army and the Air Force promptly announced that counsel would be provided in a summary court-martial as a condition of adjudging a sentence of confinement. The Navy and Marine Corps chose not to extend this protection to their members.<sup>43</sup>

This decision, however, was short-lived. The United States District Court for the district of Hawaii decided in *Daigle v. Warner*<sup>44</sup> that counsel must be provided in summary courts-martial. In reaching this decision, the court rejected the government's notion that the accused had waived his right to counsel by his failure to demand a special court-martial. Relying on *United States v. Jackson*,<sup>45</sup> the district court found that the possibility of the greater punishment that can be adjudged by a special court-martial "chilled" the defendants' exercise of their Sixth Amendment rights.<sup>46</sup> The court did recognize that, because of the exigencies of military operations, the armed forces may not be able to provide a lawyer as counsel.<sup>47</sup>

A year later the same issue reached the Court of Military Appeals. In deciding *United States v. Alderman*,<sup>48</sup> the high military court held that the Supreme Court's *Argersinger* decision does in fact require that counsel be provided in summary courts-martial, unless military exigencies prevent it. The issue was confused three years later when the United States Supreme Court decided *Middendorf v. Henry*,<sup>49</sup> holding that neither the Sixth Amendment nor the due process clause of the Fifth Amendment required that counsel be provided at a summary court-martial proceeding.<sup>50</sup> The Court stated that a summary court-martial differed from customary civilian criminal proceedings since most of these trials were for purely military offenses and the penalties allowed were very limited.<sup>51</sup>

Finally, the United States Court of Military Appeals in applying the *Middendorf* ruling restricted the use of the summary court-martial. *United States v. Booker*<sup>52</sup> established that a summary court-martial should be limited to disciplinary action involving minor military offenses unknown to civilian society. Such hearings, in the absence of counsel are not "criminal convictions" for any purpose. Counsel must be made available, and if the defendant waives counsel, the waiver must be in writing.<sup>53</sup> Thus, without representation of counsel or a valid waiver of counsel, imposition of discipline by summary court-martial cannot be used to escalate sentences in a subsequent court-martial (*Booker*), nor can a sentence of confinement be rendered (*Alderman*).

This sequence of cases clearly shows that the military justice system is responsive to the tenets of justice as decided by the Supreme Court and practiced in the civilian community. The military requirement for counsel during trial is identical to that in the civilian courts, with application of the rules coming at about the same time.

Military right to counsel in some situations actually goes beyond civilian practice. For example, military counsel is provided during the Article 32 pretrial investigation. There is no such provision in the civilian grand jury system, where the accused has no opportunity to defend himself. Also, military counsel is provided free of charge throughout the entire military appellate process,<sup>54</sup> regardless of the financial status of the accused. Civilians, on the other hand, enjoy neither of these benefits.

In addition to appointed military counsel, the accused, in all proceedings, has the right to civilian counsel, provided at his own expense. An accused can request a specific military attorney if reasonably available.<sup>55</sup>

#### *trial by jury*

It has long been held that the right to trial by jury does not extend to military courts-martial.

The reason for this exclusion is threefold. First, courts-martial are not courts within the meaning of Article III of the Constitution and are therefore not directly bound by that article's requirement that all trials be by jury. Second, the purpose of Article III, paragraph two, and the Sixth Amendment was to ensure trial by jury only for those cases in common law where a trial by jury was the rule. Since military trials at the time did not provide for a jury, neither Article III nor the Sixth Amendment can be construed to include juries for military trials today. Finally, the Fifth Amendment expressly excludes members of the armed forces from the right to a grand jury indictment. It is felt that this exception extends, by implication, to the Sixth Amendment right to a jury trial.<sup>56</sup>

Although not required, the armed forces were provided with a form of jury trial by the Congress. A jury of at least five members is required for a general court-martial, and at least three members are necessary for a special court-martial.<sup>57</sup>

The military jury has been the brunt of much criticism. Two practices frequently criticized have been the less than twelve-man size and the fact that the jury does not require a unanimous verdict for a finding of guilty. Both of these criticisms, however, have been negated by recent Supreme Court decisions. The Court ruled in *Williams v. Florida*<sup>58</sup> that state felony trials with six-man juries were constitutional. In another important decision, *Apodaca v. Oregon*,<sup>59</sup> the Supreme Court ruled that the practice of requiring a unanimous verdict was not constitutionally guaranteed. On these two issues, the military's jury procedures would certainly survive constitutional scrutiny.

Even though these two decisions, in the civilian courts, have seemingly brought the two jury systems closer together, there still remains one glaring fault with the trial by jury as practiced by the military courts. The code provides for the selection of the jury by the convening authority.<sup>60</sup> The jury usually consists of officers: only on written request by an

enlisted defendant will enlisted personnel be assigned to serve on courts-martial, and even then he is only guaranteed that one-third of the court members will be enlisted personnel.<sup>61</sup> It is widely accepted that such requests usually result in senior noncommissioned officers being appointed to the jury. These senior enlisted men are often more strict disciplinarians and have even less in common with the young enlisted man than do young officers.<sup>62</sup> Even though the commander has wide discretion in the selection of the court members, this power is not without some limits. For example, the convening authority is prohibited from selecting members favorable to the government,<sup>63</sup> and he cannot systematically exclude identifiable groups.<sup>64</sup> These two restrictions have questionable value, however, when the overall selection process is considered. While military procedures are not subject to the usual constitutional restraints on civilian juries, the jury selection practice nevertheless appears to lack the basic fairness necessary to ensure an impartial hearing.<sup>65</sup>

Although this practice is unjustified, there seems to be little foundation for the many overly broad statements made by the critics of military justice. For example, one writer has stated that "the American public has viewed with growing distaste a process where ninety-four percent of its sons are convicted by hand-picked juries."<sup>66</sup> Unfortunately, "conclusions such as these are all too often accepted as irrefutable fact without any pretense of independent inquiry as to their foundation."<sup>67</sup> Not only do the facts fail to support the broad generalities of such statements but most critics would probably be surprised to learn that the great majority of Army officers today are themselves overwhelmingly in favor of some system of random selection of courts-martial members.<sup>68</sup>

There can be little doubt that a random selection of jury members is essential to a fair trial. This reform, coupled with the possible increase of enlisted men among the court

members, could do much to dispel the fears of many lower-ranking servicemen that the courts-martial is an arbitrary tool of the commander rather than a viable system of justice.<sup>69</sup>

### The Present as a Prologue to the Future

In the past, criticism of the military judicial process has been harsh. Typical are the remarks of Mr. Justice William O. Douglas when he characterized military justice as being "singularly inept in dealing with the nice subtleties of constitutional law [and] . . . marked by the age-old manifest destiny of retributive justice."<sup>70</sup> With equal conviction, others have taken an opposite view.

Senator Sam Ervin, the noted constitutionalist, observed that "military justice has attained virtual parity with civilian criminal justice."<sup>71</sup> Chief Justice of the Supreme Court Warren Burger believes that the system is "the most enlightened military code in history."<sup>72</sup>

Three circumstances provide a relatively objective basis from which to judge these two extremes of opinion and thereby determine the essential character and quality of military justice. The first was noted by Yale law professor James Bishop. He observed that since the adoption of the Uniform Code of Military Justice, the Supreme Court "has yet to find a fatal denial of constitutional rights in a court-martial."<sup>73</sup> The second is a comparison of the rights and protections provided for the accused in a court-martial with those of a defendant in a civilian court. While the military accused is afforded somewhat different search and seizure protections, and only partial protections of a jury trial, he enjoys broader rights to counsel, rights of discovery and securing of witnesses, and protections against self-incrimination than his civilian counterpart. The final basis for an objective judgment of military justice lies in the American Bar Association Standards for the Administration

of Criminal Justice. While many states fall far short of these standards and, in fact, consider some of them quite revolutionary, the military, for the most part, is already up to the level of the American Bar Association standards.<sup>74</sup>

Even though the military judicial process equals and in many cases surpasses that of the civilian community, it is by no means perfect. It is only after the single most glaring deficiency is corrected that servicemen will be able to have the highest confidence in and respect for military justice and the armed forces in general.

Without doubt, the most fundamental deficiency in the military judicial system is the military jury. The philosophy behind the right to trial by a jury of one's peers chosen at random is that there is a better chance of a fair and impartial hearing if the jury represents different economic groups, occupations, and perspectives within society. The all-officer jury, appointed by the convening authority, on the other hand, is composed of a small, select group who by their very positions, generally reflect the attitudes of the command. As such, military juries do not reflect the wide spectrum of attitudes and biases basic to the jury system. Consequently, many lower-ranking enlisted men believe that the court-martial is simply an instrument of the commander; its members, the jury, are there to respond to his wishes. Whether this belief is founded in fact is irrelevant to the obvious lack of faith in the system.<sup>75</sup>

This lack of faith and the fact that the military jury, as it is now constituted, fails to meet the accepted standards of a traditional jury make reform an absolute necessity. There can be little doubt that the key to this reform lies in the removal of authority to appoint a jury and the adoption of a system of random selection. It is interesting to note that the great majority of military officers today are overwhelmingly in favor of some system of random selection of court-martial members.<sup>76</sup>

The ultimate solution would obviously be to

have random selection, totally without regard to the rank of the accused. This is the view of Senator Bayh in the military justice reform bill that he proposed several years ago. The senator's bill, which was not passed, had only one requirement for jurors: that each had served at least one year on active duty.<sup>77</sup> Military justice would undoubtedly be more civilianized, as was Senator Bayh's intent, if this approach were adopted. However, most military legal experts, both in and out of the service, hold that such a utopian view is not practical. They feel that military discipline cannot be effectively maintained if superiors are made directly answerable to their subordinates.<sup>78</sup> Regardless, it is essential that more enlisted men serve on military juries so that the accused can be more nearly judged by a jury of his peers.

In light of this view of military discipline, the solution that seems the most promising is that the accused serviceman, whether he is an officer or enlisted man, should be entitled to one-half of the court being composed of persons of his own or higher rank. The balance of the court would be made up of officers. In no case would the court have as a member a person lower in rank than the accused. The court members, regardless of rank, would be selected on a random basis without the influence of the convening authority.<sup>79</sup>

Another possible solution to this dilemma would be to establish a fixed number of members for each type court, with greater enlisted representation if desired by the defendant. Random selection of the jury would follow the guidelines set by the Federal Jury Selection and Service Act and the Uniform Jury Selection Act.<sup>80</sup>

Such representative juries would go a long way in improving military law. Rather than reduce discipline, randomly selected and more representative juries might well play a major role in increasing the integrity and effectiveness of military justice.

This deficiency and the proposed reforms

are by no means all that is necessary.<sup>81</sup> It is important to remember that since the adoption of the Uniform Code of Military Justice in 1950, continuing efforts have been exerted to make the present code a truly enlightened system, carefully balanced between the re-

quirements of discipline and duty in the military society, and the tenets of fairness and justice as set forth by the Constitution. If the code is to continue as an enlightened system, these efforts must not cease.

### National Defense University

#### Notes

1. Senator Birch Bayh, *Parade Magazine*, 1971, cited by Kenneth J. Hodson, "The Manual for Courts-Martial—1984," in *Military Law Review*, Summer 1972, p. 2.
2. Charles Morgan, Jr., "Justice on Trial," *Newsweek*, March 8, 1971, cited by Hodson, p. 3.
3. George D. Schrader, "Military Justice—A System for the Seventies," *Air University Review*, May-June 1972, p. 44.
4. Henry B. Rothblatt, "Military Justice: The Need for Change," *William and Mary Law Review*, Spring 1971, pp. 455-56.
5. Homer E. Moyer, *Justice and the Military* (Washington: Public Law Education Institution, 1972), p. 19.
6. Merlin H. Staring, "Foreword," *San Diego Law Review*, December 1972, pp. 1-8.
7. Sam J. Ervin, "The Military Justice Act of 1968," *Military Law Review*, July 1969, p. 77.
8. Moyer, pp. 14-15, citing Robinson O. Everett's *Military Justice in the Armed Forces of the United States* (Harrisburg, Pennsylvania: The Military Service Publishing Co., 1956), pp. 4-7.
9. *Ibid.*, pp. 11-19.
10. Charles M. Schiesser and Daniel H. Benton, "Modern Military Justice," *Catholic University Law Review*, Summer 1970, p. 492.
11. 11 USCMA 428, 29 CMR 244 (1960).
12. 232 U.S. 383 (1914).
13. 367 U.S. 643 (1961).
14. Moyer, p. 245.
15. *MCM*, par. 152. For an excellent description of current permissible search and seizure rules across the broad spectrum of the issue, see Murl A. Larkin and Joe H. Munster, Jr., "Military Search and Seizures," *JAG Journal*, Fall 1976, pp. 1-64.
16. For a thorough review of the military concept of probable cause, see Moyer, pp. 254-64.
17. John F. Munger, "Procedural Due Process in the Civilian and Military Justice Systems," *Arizona Law Review*, vol. 14, p. 357.
18. 24 CMA 156.
19. Burrus M. Carnahan, "U.S. v. Jordan: Foreign Searches, Military Courts and the Act of State Doctrine," *Air Force Law Review*, vol. 19, no. 4, 1978, p. 414.
20. Robert E. Quinn, "Some Comparisons between Courts-Martial and Civilian Practice," *Military Law Review*, October 1969, pp. 91-92. *MCM*, par. 152, provides that a search "may be authorized by commanding officer (including an officer in charge) having jurisdiction over the place where the property or person searched is situated. . . ." This practice has been upheld by the USCMA in *United States v. Carter*, 16 USCMA 277, 36 CMR 433 (1966).
21. *Ibid.*, p. 92. The practice of allowing oral application was upheld in *United States v. Hartsook*, 15 USCMA 291, CMR 263 (1965).
22. *Ibid.*, pp. 92-93.
23. Munger, pp. 361-62.
24. *Ibid.*, p. 360, citing Army Regulation 27-10.
25. UCMJ, Art. 31. Compulsory self-incrimination prohibited:
  - (a) No person subject to this chapter may compel any person to incriminate himself or to answer any question the answer to which may tend to incriminate him.
  - (b) No person subject to this chapter may interrogate, or request any statement from, an accused or a person suspected of an offense without first informing him of the nature of the accusation and advising him that he does not have to make any statement regarding the offense of which he is accused or suspected and that any statement made by him may be used as evidence against him in a trial by courts-martial.
  - (c) No person subject to this chapter may compel any person to make a statement or produce evidence before any military tribunal if the statement or evidence is not material to the issue and may tend to degrade him.
  - (d) No statement obtained from any person in violation of this article, or

through the use of coercion, unlawful influence, or unlawful inducement may be received in evidence against him in a trial by a courts-martial.

26. 384 U.S. 436 (1966). *Miranda* actually praised the Article 31 warnings.

27. 16 USCMA 629, 37 CMR 249 (1967).

28. Schrader, p. 45.

29. *Ibid.*

30. Moyer, pp. 357-73. See also Quinn, pp. 89-90.

31. See Randall R. Riggs, "Self-Incrimination in the Military Justice System," *Indiana Law Journal*, Fall 1976, pp. 203-22. The USCMA has continued to involve itself in this critical area. Recent decisions have gone far to secure the rights of the military accused. In *U.S. v. Dohle*, 24 CMA 34, the court ruled that the suspect's perception of his questioner's authority is enough to require activation of the Art. 31 warning. The high military court also ruled that the issuance of any order that would result in the self-incrimination of the suspect violates Art. 31, *U.S. v. Kinane*, 24 CMA 120. Finally, in *U.S. v. McOmber*, 24 CMA 207, the court held that once an investigator is aware of the accused's desire for counsel, he may not in the future question the suspect without affording counsel reasonable opportunity to be present.

32. U.S. Constitution, Amendment V, in part, "No person shall be held to answer for a capital, or otherwise infamous, crime unless on a presentment or indictment of a Grand Jury, except in cases arising in the land and naval forces. . . ."

33. Homer E. Moyer, "Procedural Rights of the Military Accused: Advantages over a Civilian Defendant," *Maine Law Review*, vol. 22, 1970, pp. 110-12.

34. *Ibid.*, pp. 112-14.

35. Schiesser and Benton, p. 513.

36. Moyer, "Procedural Rights," pp. 113-14. Mr. Justice Douglas suggested this in *O'Callahan v. Parker*, 395 U.S. 258 (1969). See also Jon W. Bruce, "The Pretrial Investigation: Some Practical Considerations," *JAG Journal*, September 1972, pp. 225-38.

37. UCMJ, Art. 27; *MCM*, par. 48.

38. UCMJ, Art. 19.

39. *MCM*, par. 6c. provides: "Physical conditions and military exigencies, as the terms are here used, may exist under rare circumstances, such as on an isolated ship on the high seas or in a unit in an inaccessible area, provided compelling reasons exist why trial must be held at that time and at that place. Mere inconvenience does not constitute a physical condition or military exigency and does not excuse a failure to extend to an accused the right to qualified counsel."

40. UCMJ, Art. 27; *MCM*, par. 48.

41. 407 U.S. 25 (1972).

42. UCMJ, Art. 20.

43. D. A. Message 101236Z (August 10, 1972) and AFM 111-1, par. 3c. (August 30, 1972), cited by Moyer, *Justice and the Military*, p. 389.

44. 348 F. Supp. 1073 (1972).

45. 390 U.S. 570 (1968).

46. 348 F. Supp., at 1080.

47. *Ibid.* For a criticism of this decision, see James Stroud, "Military Law—Right to Counsel," *American Journal of Criminal Law*, February 1972. I hold that the possibilities of greater punishment by a special court-martial are no more chilling to the defendant's exercise of his rights than the extensive civilian practice of plea bargaining.

48. 22 USCMA 298, 46 CMR 298 (1973).

49. 425 U.S. 25.

50. In reading its decision, the Supreme Court reasoned that the Sixth Amendment right to counsel did not apply since a summary court-martial was not a "criminal proceeding" as required in the Amendment (425 U.S. 25, 34). The due process guarantee of the Fifth Amendment was also rejected by reasoning that it was not the intent of Congress in establishing the military court system to grant counsel at a summary court-martial (425 U.S. 25, 43). For an excellent discussion of what I see as the fallacy of the Supreme Court's decision, see Jeffrey A. Bell, "*Middendorf v. Henry*: the Right to Counsel at a

- Summary Court-Martial." *Arkansas Law Review*, Summer 1977, pp. 345-57.
51. U.S. 25, 38.
  52. 3 MJR 443 (CMA 1977).
  53. *Ibid.*
  54. UCMJ, Art. 70; MCM, par. 102.
  55. UCMJ, Art. 38. Use of civilian counsel in no way affects the right to appointed military counsel.
  56. Murl A. Larkin, "Should the Military Less-Than-Unanimous Verdict of Guilt Be Retained," *Hastings Law Journal*, January 1971, pp. 239-42.
  57. UCMJ, Art. 16.
  58. 399 U.S. 78 (1970).
  59. 406 U.S. 404 (1972).
  60. UCMJ, Art. 25.
  61. *Ibid.*
  62. Munger, p. 369, citing Benson, "Military Justice in the Consumer Perspective," *Arizona Law Review*, vol. 13, 1972, pp. 607-8.
  63. *United States v. Hedges*, 11 USCMA 842, 29 CMR 458 (1960).
  64. *United States v. Crawford*, 15 USCMA 31, 35 CMR 3 (1964).
  65. For an excellent discussion of current issues relating to the military jury, see Gary C. Smallbridge, "The Military Jury Selection Reform Movement," *Air Force Law Review*, vol. 19, no. 4, 1978, pp. 343-82.
  66. C. Edward Rudloff, Jr., "Comments—Stacked Juries: A Problem of Military Justice," *Santa Clara Lawyer*, Spring 1971, p. 383.
  67. R. Rex Brookshire, "Juror Selection under the Uniform Code of Military Justice: Fact and Fiction," *Military Law Review*, Fall 1972, p. 85. In a study of Army general and special courts-martial during FY 1971, it was found that of the 30,646 defendants, 93 percent were convicted; of that figure, 43.4 percent pleaded guilty. Considering the 91.5 percent that opted for a trial by the military judge alone, and discounting the guilty pleas, only 6.5 percent of all cases involved a jury where there was even the possibility that command selection could affect the outcome, pp. 85-87.
  68. *Ibid.*, pp. 88-89.
  69. Joseph Remcho, "Military Juries: Constitutional Analysis and the Need for Reform," *Indiana Law Review*, Winter 1972, p. 223.
  70. *O'Callahan v. Parker*, 395 U.S. 258, 285 and 286 (1969).
  71. Ervin, p. 77.
  72. *Guaquairdo v. McElroy*, 259 F2d 927, 940 (1958).
  73. James W. Bishop, "The Quality of Military Justice," *New York Times Magazine*, February 22, 1970, p. 37, cited by Robert E. Quinn, "Courts-Martial Practice: A View from the Top," *Hastings Law Journal*, January 1971, p. 211.
  74. Hodson, p. 7.
  75. Remcho, p. 223.
  76. Brookshire, pp. 88-89.
  77. U.S., *Congressional Record*, p. S 3142.
  78. Rothblatt, pp. 468-69.
  79. Edward F. Sherman, "The Civilianization of Military Law," *Maine Law Review*, vol. 22, 1970, pp. 98-99.
  80. Smallbridge, p. 382.
  81. For an excellent discussion of the possible reform measures of the future, see Hodson, "MCM . . . 1984."

Our nuclear policy basically is one of deterrence; to take actions that are well known by the American people and well known by the Soviets and other nations, that any attack on us would result in devastating destruction by the nation which launched an attack against us. So the basic policy is one of deterrence.

President Jimmy Carter  
30 November 1978



**SOVIET PROFESSIONAL  
SCIENTIFIC AND  
ENGINEERING MANPOWER**

JILL E. HEUER

**T**HE scientific potential of a nation, its ability to solve future scientific and technological (S&T) development problems, is an important measure of its industrial and military strength. This scientific potential depends largely on the degree to which a nation has developed four aspects of its scientific and technical community.

- A nation must have enough research and development (R&D) institutions and the specialized equipment required for the performance of research.



- The research establishment must be manned by adequate numbers of qualified professional R&D scientists and engineers in the critical areas of research endeavor.

- The research and development programs of the nation and the efforts of individual R&D personnel must be organized and managed in the most effective and efficient manner and focused on the most important problems.

- The scientists and engineers must be kept informed of the S&T achievements of the rest of the world through a highly developed scientific and technological information system.

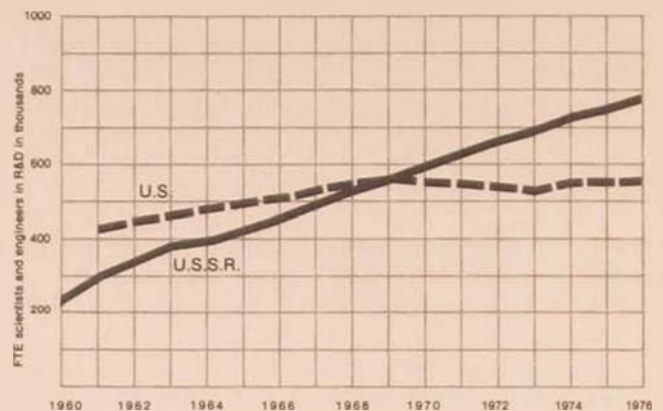
Underlying these parameters are those original ideas, the amount of scientific creativity possessed by scientists and engineers, which ultimately determine the extent to which a nation's scientific potential is realized.

CONCERN has been expressed repeatedly that the Soviet Union is exceeding the United States in scientific and engineering manpower and, hence, may eventually surpass us in R&D achievements. There is no difficulty in finding statistics that support such concerns.

The number of full-time-equivalent scientists and engineers employed in R&D in the Soviet Union surpassed the analogous figure for the U.S. in 1969-70 and stood well above the U.S. total in 1976 (755,000 versus 566,000). The number of *kandidat nauk* degrees (roughly equivalent to the U.S. Ph.D.) conferred in the Soviet Union reached a record level in 1976, while awards of Ph.D. degrees in the U.S., though exceeding the Soviet figure (about 33,000 versus 31,000), were on the decline from a peak in 1973. In the field of engineering, the comparisons are striking. In 1972 the Soviet Union employed 2,820,000 diploma engineers, while the U.S. employed only 1,243,000. This gap will probably widen, given relative numbers of first-level degrees being awarded

in this field (275,500 in the U.S.S.R. versus 39,100 in the U.S. in 1976).

There is at present no reliable way of estimating the number of students in specialties that are inputs into military-related R&D. The Soviet reporting system aggregates large groups of related specialties under single headings for statistical purposes. Some of these specialties clearly have military applications; others are of doubtful relevance to military interest. Five out of 11 Soviet engineering specialties have at least potential application

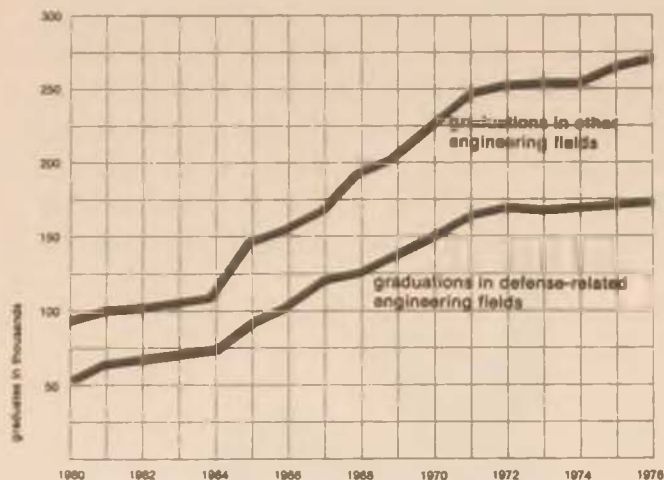


Sources: U.S.—Division of Science Resources Studies/STIA.  
U.S.S.R.—Updated information based on methodology in "Soviet Professional Scientific and Technical Manpower," R. Talley, DST-18305-049-76.

Figure 1. U.S./U.S.S.R. full-time-equivalent research and development scientists and engineers (U.S.: 1961, 1965, 1969-77; U.S.S.R.: 1960-1976) Note: The U.S. data for 1962-1964 and 1966-1968 are interpolated.

within the defense industry: metallurgy; machine and instrument building; electronics, electrical equipment building, and automation; radio engineering and communications; and chemical engineering. Between 1971 and 1976, enrollments in defense-related engineering fields increased at a slightly higher rate (1.0 percent) than between 1966 and 1970 (0.8 percent). Soviet graduates with these specialties comprise a manpower pool available for

use in the defense industry as needed. Since these specialties represent fields with broad economic application, it cannot be hypothe-



Source: Narodnoye Khozyaystvo and Narodnoye Obrazovaniye, Nauka, i Kultura.

Figure 2. U.S.S.R. graduations in defense-related and other engineering fields (1960-1976) Note: Adjusted for congruency with U.S. conception of engineering specialties.

sized that all students in these specialties will enter the defense industry. Again, these students will enter a pool of professional manpower *available* for use in the defense industry.

Comparisons such as these may be misleading, as can be illustrated with the often-cited example of engineers. Statistics on the numbers of engineers employed in the Soviet economy give an inflated impression of the amount of engineering activity going on in the U.S.S.R. Such impressions result because the Soviets count all persons who have received an engineering degree as engineers, regardless of their employment. Also, the Soviet definition of "engineering" includes such fields as cartography, geodesy, exploration for mineral deposits, forestry, wood-technology, hydrol-

ogy, meteorology, and agriculture,\* which would not be considered engineering in the U.S. Many engineers in the U.S.S.R. have received their undergraduate degrees through evening or correspondence programs, which are acknowledged to be inferior to full-time programs. It has been noted, for example, that correspondence program students typically can devote only 25 percent as much time to reading technical literature as can full-time students.<sup>1</sup> Furthermore, one may ask why the Soviet Union needs so many more engineers than the U.S., when it has a smaller economy. Doubts on the wisdom of training so many engineers have even been expressed by Soviet commentators. In 1974, after a tour of West German and Japanese tool manufacturing plants, G. Kulagin, director of the Machine-Tool Association imeni Sverdlov, stated that "one can hardly find justification for the fact that having 2.7 times the number of engineers as the US, we continue to train them in quantities several times higher than the Americans," and that "for equivalent volumes of production and introduction of new technology they use 3 to 4 times fewer designers and researchers than we do. Is this not simply a waste of precious engineering labor on our part?"<sup>2</sup>

The point, of course, is not that one should dismiss these Soviet manpower figures as hopelessly exaggerated. Rather, one must be cautious in drawing conclusions about Soviet and American potential for scientific advancement based on simple comparisons of a few manpower series at a point in time. Manpower series should be examined in the light of what is known of other indicators used to assess R&D capabilities. One such indicator is the number of Nobel Prizes received by various nations. A pertinent fact is that from 1946 to 1976 the U.S. accounted for 85 Nobel Prize laureates in chemistry, physics, and physiology/medicine,

\*In 1975 approximately 20 percent of all Soviet engineering graduates were trained in these fields.

out of a total of 171, while the U.S.S.R. accounted for only 7.<sup>3</sup> In short, this Soviet army of scientists and engineers may be a sign of systemic weaknesses as well as strengths.

THE U.S.S.R. continues to experience both surpluses and shortages of professional scientific and engineering manpower in several fields of training. Disproportions occur due to the changing demands of science and industry for specialists, misuse of available manpower, reliance during planning on staffing tables that unnecessarily inflate manpower needs, and shortages of material and staff support for professional manpower.

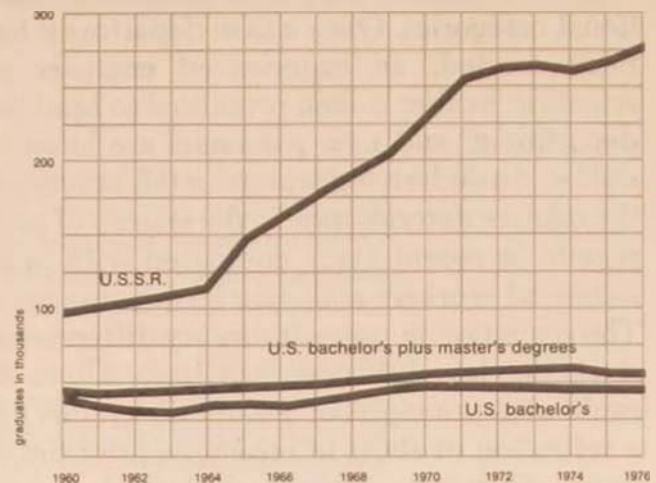
The Soviets' unusually high definition of their scientific and technical manpower demand has increased the number of these people being trained over the years. Since science and technology enjoy top priority in the Soviet Union, it follows that most professional manpower shortages would occur in new technologies. Shortages of qualified faculty are also reported, especially in Siberia and rural areas.

Industrial production enterprises still report acute shortages of advanced degree holders,<sup>4</sup> and experienced plant engineers and scientists continue to leave industry for the research institutes, where the work is more attractive and the pay higher.<sup>5</sup>

An additional problem, which aggravates shortages of engineers because it leads to their misuse, is a deficit of business and industrial administrators and executives. The Soviet Union has not trained adequate numbers of economists and administrators for industry. Without the economists to participate in economic and planning functions, the Soviets have often been compelled to use engineers in administrative positions that require no technical education. Several institutes of management have been set up recently to remedy this situation. Eventually, new cadres will permit

better employment of engineers who are now in administration.

Shortages and surpluses of scientific and



Source: U.S.—National Center for Educational Statistics and Division of Science Resources Studies/STIA and Science Indicators 1976, National Science Board, 1977.  
U.S.S.R.—*Narodnoye Khozyaystvo and Narodnoye Obrazovaniye, Nauka, i Kultura*.

Figure 3. U.S./U.S.S.R. engineering graduates annually (1960-1976) Note: Adjusted for congruency with U.S. conception of engineering specialties.

technological manpower are also caused by individual enterprise employment practices. The pressures to hire more professional S&T cadre than needed at an enterprise are strong, as is the reluctance to fire personnel in these categories. This practice can be partly attributed to the existence of an incentive to increase the enterprise's wage bill or the total amount of money allocated for wages and salaries. Many regulations governing the organization of wages and bonuses continue to reward enterprises that employ the largest possible staff. Premiums, including those affecting the director personally, are calculated, using the wage bill as a basis.

Another factor that causes disproportions of

manpower and which has contributed to the steady growth in the numbers of scientists and engineers is the common practice of organizing new departments, either directly or through reorganization of existing departments, employing these people in order to increase the wages and salaries for people in these occupational categories. Once a new department has been created, an experienced engineer or scientific worker is then promoted to head the department, and new personnel are hired to staff it. An underlying reason for this practice is the relative deterioration in the salaries of such people in recent years compared with most industrial workers and state farm employees. The reduction in wage and salary differentials since the late 1950s has not been a turn to egalitarian principles of distribution; rather it is a reflection of shifts in economic priorities in favor of traditionally neglected and low-paid sectors. As a result, the overall number of engineers and scientists in the country has grown continuously.

Misuse of engineers' time also creates a need for additional cadre. Time spent in typing, drawing graphs, attending meetings, composing correspondence, and engineering administration is considerable and often leaves as little as 10 percent of the work week for substantive engineering activity. In addition, absenteeism due to personal leave, responses to summonses from courts and investigative agencies, and party obligations is a serious problem; at many industrial enterprises, losses of working time run as high as 15 to 20 percent of the total.<sup>6</sup> Thus, for fear of finding themselves short-handed, managers commonly try to keep as many employees as possible in reserve. Losses of substantive working time also result from interruptions in material and technical supply necessary for the performance of scientific research. Difficulties in obtaining scientific

instruments and laboratory equipment, as well as an enormous amount of equipment downtime in research institutes, cause delays and periods of relative inactivity.

Other misuses of S&T manpower have further aggravated the surplus/shortage problem such as the employment of diploma engineers outside their fields of specialization or as technicians or skilled labor and the employment of *praktiki*<sup>\*</sup> in engineering and technical positions.

Thus, while definite specialist shortages exist in the U.S.S.R., the main problem appears to be in the effective planning and use of the vast manpower pool, which, if corrected, would eliminate disproportions currently experienced.

NOTWITHSTANDING the tremendous strides the Soviet Union has made in R&D over the past 20 years, the economy remains essentially labor-intensive, as opposed to capital-intensive, despite generous and regular capital improvements. Analysis of present trends in Soviet S&T manpower and educational policies indicates that the current requirement is to turn from extensive (e.g., growth in the numbers of workers and increase in investments) to intensive factors (e.g., raising the productivity and improving the organization of work involving research workers, professors, and students). As Western students of Soviet R&D efforts try to gauge future R&D achievements in the Soviet Union, it will be important for them to keep in mind both the qualitative and quantitative aspects of professional R&D manpower and put these factors in perspective with other R&D indicators.

Dayton, Ohio

<sup>\*</sup>Persons employed in a job for which they have no formal training but are qualified by on-the-job experience.

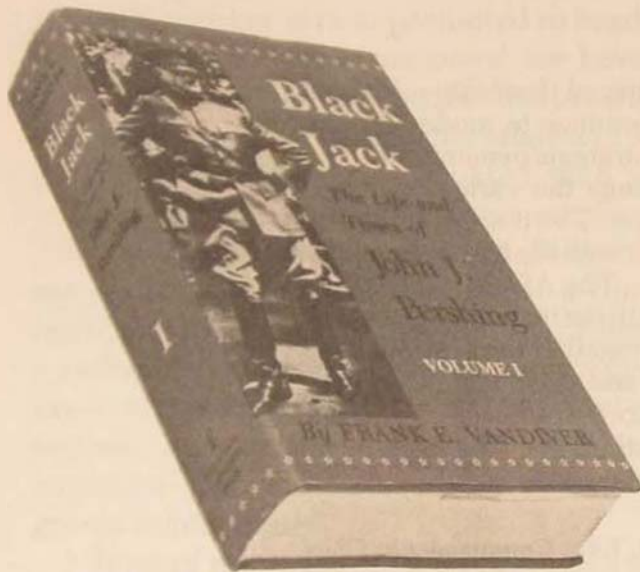
## Notes

1. M. Anuchin, *Izvestiya*, 6 January 1973, p. 5.
2. G. Kulagin, *Trud*, 10 January 1974, p. 2.
3. National Science Board, National Science Foundation, *Science Indicators 1976, 1977*, p. 195.
4. S. Zhititskiy, *Ekonomicheskaya Gazeta*, August 1975, p. 15.
5. D. Orechkin, *Izvestiya*, 21 October 1972, p. 1.
6. *Ekonomika i Organizatsiya Promyshlennogo Proizvodstva*, March-April 1978, pp. 75-87. Source: *Current Digest of the Soviet Press*, vol. 30, no. 16, 1978, p. 5.

If we are to retain in the Triad the recognized *flexibility which the manned penetrator provides*, we must continue to modernize our current fleet and develop a new manned strategic penetrator for the 1990's and beyond. . . . We must continue the various *upgrade* programs now scheduled for *the B-52 fleet*. The most extensive of these will be equipping *170 B-52G* aircraft with the high technology air-launched cruise missile [ALCM]. . . . The ALCM achieves its greatest effectiveness *when combined* with the manned penetrator. The ALCM-bomber combination brings together the best values of the bomber—flexibility, predictability and dependability—with the needed values of the ALCM—cost-effectiveness, added penetrativity, and great accuracy. Together, *the ALCM-bomber partnership* represents a significant advancement in our deterrent capability.

General Richard H. Ellis, Commander in Chief  
Strategic Air Command  
Remarks to AFA symposium, Los Angeles, 1978

## **R** books and ideas



### GENERALSHIP

MAJOR GENERAL I. B. HOLLEY, JR., USAFR

**W**HY should Air Force officers bother to read biographies of an Army officer who died before many of them were born? General of the Armies John J. Pershing, whatever his stature in history, never displayed

any unique sensitivity to the larger implications of the airplane as a weapon. But to neglect two recent biographies† of a highly successful leader of men for that reason would be to miss an unusual opportunity for professional enhancement. As Montgomery of Alamein observes in his *History of Warfare*,<sup>1</sup> generalship is the art and science of command; a science because it must be studied theoretically, an art because the theory must be reduced to practice. Great captains are made, not born, and the making involves hard study, wide reading, and self-conscious introspection; nobody becomes a truly great commander who has not first studied and pondered the art and science of war.

Ambitious officers who aspire to the upper reaches of command will find the two biographies under review here a treasure-trove of insights on the making of a leader. The two authors approach their task in quite different fashion: Vandiver, a widely published historian who is chancellor of Rice University, loves a good story and tells it with brisk enthusiasm; Smythe, a Jesuit scholar who has written eighteen articles on Pershing as well as this first volume of his as yet unfinished biography,<sup>2</sup> is more spare in his prose but has a knack for capturing remarkably revealing facets of his man in capsule episodes sensitively perceived. Read these volumes, then, pencil in hand, and make a record for future reflection. There is much to be harvested here. For example, after describing Pershing's boyish awe on seeing General Grant at West Point, Vandiver remarks: "Few things reveal more about a man than the hero he will follow."

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†Frank E. Vandiver, *Black Jack: The Life and Times of John J. Pershing*, 2 vols. (College Station, Texas: Texas A&M University Press, 1977, \$35.00), vol. I, xxii and 594 pages, vol. II, 584 pages, maps, illustrations, bibliography.

Donald Smythe, *Guerrilla Warrior: The Early Life of John J. Pershing* (New York: Charles Scribner's Sons, 1973, \$10.95), ix and 370 pages, maps, illustrations, bibliography.

Both authors recognize that Pershing's tour as professor of military science with the ROTC at the University of Nebraska was a profoundly formative period of his life. In retrospect the general himself concluded that "every officer should have some experience at a university." There he met people who were seriously interested in ideas, he broadened his horizons by studying law in addition to his regularly assigned duties, and he acquired a circle of friends in political life who enhanced his education substantially in that sphere. Above all, he came to appreciate how important it was for regular officers to serve with citizen soldiers in peace, the better to cope with wartime armies where such soldiers provide the bulk of the manpower. In contrast to his success at Nebraska, as a tac officer\* at West Point Pershing was a failure. In his zeal for perfection, he drove too hard. But the experience was not all loss; he learned that there are limits beyond which men will not be pushed. He never made the same mistake again.

Very early in his career Pershing recognized the importance of cultivating a wide circle of acquaintances. Typically, after a chance encounter with a rising young New York politician, Theodore Roosevelt, he took the trouble to keep the friendship green. But this studied effort was not confined to influential figures above him who might advance his career; he was no less alert to those below. At West Point, for example, he began noting those cadets who held promise for future appointments, a practice which paid off twenty-odd years later when the assignment of so many commanders in the American Expeditionary Forces (AEF) was his responsibility.

In Cuba Pershing grew still further, demonstrating a capacity for sustained hard work even when ill, coolness under fire, and a willingness to stick his neck out when it served a genuine military purpose to do so. (At the close of hostilities, Captain Pershing had over a

million dollars worth of unvouchered equipment charged against him as quartermaster; he was more interested in seeing that his troops had what they required than he was in protecting his flanks with a mass of paper receipts.) He was avowedly ambitious, but as a truly professional soldier he sought the opportunities and responsibilities of high command and not merely promotion. When tempted with a jump to flag rank by filling a position in the War Department's Bureau of Insular Affairs, he opted instead for a field command in the Philippines at his current grade.

At Zamboanga, on the edge of the wild hinterland of unsubdued Moro tribesmen, Pershing plunged in and studied his new subjects with zeal. He soon demonstrated such a grasp of native folkways that he was entrusted, though only a captain, with command of an expedition of 700 men, a force normally led by a colonel. In a few brief forays during which he subdued a number of renegade Moro chieftains, Pershing demonstrated that he possessed that rare gift, the ability to lead men in battle. His secret was certainly not charisma, for he was often described by subordinates as cold and aloof, a man not given to praise. But he was economical with lives, a leader who measured success not in the number of battles won but those avoided. He became a master at psychological warfare, subduing the enemy's will before he launched his assaults.

One episode that perfectly illuminates why Pershing's men admired him, if they did not love him, occurred at the close of his expedition to disperse the dissident Moros around Lake Lanao. On returning with his exhausted troops to his base at Camp Vicars, he was denied entry because his men had been exposed to cholera. With characteristic dispatch, Pershing resolved that difficulty by ordering all the stay-at-homes into a separate tent camp while his weary veterans took over the more comfortable regular quarters.

Duty as an official observer in the Russo-Japanese War in 1905 afforded Pershing a

\*Editor's note. Tactical (or tac) officer: an officer responsible for the military side of a cadet's education.



*Cadet John J. Pershing (above) was appointed to the United States Military Academy from Missouri in 1882. . . . Nearly two decades later (1901), Pershing was an Army captain in the Philippines.*





*In 1916, Pershing, by then a brigadier general, was in command of the expeditionary force sent to Mexico in pursuit of Francisco "Pancho" Villa. Promoted to major general that same year and sent to France the next, "Black Jack" Pershing here leads U.S. cavalry troops across the Rio Grande.*



unique opportunity to acquire an appreciation for the logistical implications of modern warfare as he watched Japanese staff officers direct an enormous volume of color-coded supply containers in a steady stream from wharfside transports to the front lines. On the battlefield he saw large formations of all arms engaged in operations on a scale impossible in the tiny peacetime U.S. Army. Although Vandiver tells us Pershing observed the widespread use of barbed wire and machine guns, he fails to provide his readers with a documented assessment of just how fully Pershing actually comprehended the momentous implications of these and other similar technological innovations which received a thorough testing in the Russo-Japanese theater of action. The experience did shape Pershing's tactical thinking profoundly, however. When promoted to flag rank and given a brigade at Fort McKinley in the Philippines, he insisted on combined arms maneuvers to develop that sense of teamwork so necessary to combat readiness. In the rainy season he gave examinations on tactical problems to all of his officers and had their work graded.

Don Smythe's sensitivity to subtle nuances in depicting human relationships is nicely illustrated in his account of Pershing's behavior after his promotion from captain to brigadier over the heads of many former superiors. Instead of waiting for his old colonel to call on him, as protocol would require, he telephoned and asked if he, Pershing, could come pay a visit. This gracious gesture, trivial in itself, was genuinely appreciated and helped soften the blow implicit in their sudden reversal of status. For thoughtful readers, such episodes are what make biography worthwhile. Again and again Smythe reveals facets of Pershing's mind as he matured into an effective leader of men. We are not surprised to learn that he was a glutton for hard work; more helpful is the information that he habitually boned up on the minutiae of a new assignment so as to impress his new superior with his command over the smallest

details. Or, again, the reader is given pause by the suggestion that early in his career Pershing recognized that "inefficiency is inevitable where human beings are concerned." (Smythe, p. 58)

Vandiver's determination to dig out every last shred of evidence at times may seem to surfeit the reader with detail, but woven into those details one finds a multitude of revealing insights. For example, as a cadet Pershing found French difficult, and he had never really mastered the tongue. Then, in 1910 when on leave in France, he had an unexpected layover of a month because of a sudden change in orders. Instead of confining this unanticipated gift of time to sightseeing, he applied himself to an intensive course in French conversation. His objective was to improve his capacity to perform as an observer; he could not have anticipated that his application would make a vital difference when President Wilson selected him as commander of the AEF some seven years later.

Pershing's selection to command the Mexican Punitive Expedition in 1916 not only gave him opportunities to enlarge his experience as an operational commander, it also provided a useful test for technological advances such as the field radio, the motor truck, and the airplane, which were still novelties to the Army. In addition, the Mexican terrain afforded a brutal arena for service tests. Although the few available underpowered 10,000-foot-ceiling airplanes soon failed when confronted with 12,000-foot mountain passes, Pershing saw enough of them to learn that they could be decidedly valuable in reconnoitering during the pursuit of an elusive enemy.

Not the least significant aspect of Vandiver's treatment of the Mexican episode is the account he provides of the relationship between Pershing and his aide, Lieutenant George S. Patton. For those who aspire to high command, it is certainly worth noting that even while enduring the rigors of a winter campaign in Mexico, Patton, ever the dedicated profes-

sional, found time to write papers on tactics which Pershing, no less the true professional, took time and trouble to criticize with care.

Perhaps the most fruitful by-product of Pershing's Mexican adventure was the forbearance and loyal silence he observed in the face of shifts in administration policy. This loyalty doubtlessly weighed in the balance when Wilson selected Pershing soon after the declaration of war in 1917 to head the American Expeditionary Forces in France. Vandiver reproduces in full Secretary of War Newton D. Baker's directive to Pershing outlining the scope of his duties. Unfortunately, he fails to do the same for an overlapping set of instructions prepared by General Tasker Bliss, thus foregoing an opportunity to contrast military and civilian conceptions of the task at hand. Indeed, one of the criticisms this reviewer would lay against Vandiver is his tendency to assess Pershing's peers through the general's eyes rather than objectively from alternative sources. This is notably so in his treatment of Generals Leonard Wood and Tasker Bliss, who are condemned by innuendo rather than evidence. Similarly, when the War Department undertook the necessary but politically unpopular task of closing down a multitude of obsolete company-sized Indian frontier bases, Vandiver describes the effort as a "monstrous blunder" when it hit the bailiwick of Senator Frances E. Warren of Wyoming, Pershing's father-in-law. But these occasional lapses are quickly forgiven as one reads on in the rich tapestry of detail the author provides for serious students of the chemistry of command.

Vandiver is particularly effective in sketching the problems confronting a commander who must preside over the expansion of an army of thousands as it grows to one of millions. A supply system geared in time of peace to the needs of company-sized garrisons scattered about the nation would manifestly require a massive overhaul and infusions of imaginative leadership before it could function

effectively. So, too, an army which seldom assembled formations larger than a regiment in peacetime would be hard put to develop leaders, both commanders and staff officers, capable of employing divisions, corps, and armies operationally against the enemy. Just moving a division (28,000 men and some 8000 animals) from point A to point B and supplying them without faltering posed problems enough to tax veteran campaigners, let alone a hastily assembled army of largely inexperienced citizen soldiers. The solution, Pershing realized, was to establish a system of schools akin to the Command and General Staff College at Fort Leavenworth, even if it meant drawing off large numbers of desperately needed officers for training after the AEF divisions arrived in France and prepared to move into place on the front. The high value Pershing placed on schooling as opposed to other forms of training at a time when he was under great pressure not to divert scarce officer strength from the operational units affords a good index of his true appreciation for professionalism.

One of the great challenges confronting officers in a rapidly expanding army in wartime is the need to grow intellectually and adjust psychologically to an abruptly altered way of life. Major James G. Harbord was a student in the Army War College in April 1917. One month later he was Chief of Staff of the AEF. Overnight promotions required significant shifts in attitude and in habits of thought. Officers who had spent weeks in tracking down a fifteen cent shortage in their peacetime property accounts were now expected to plan the expenditure of millions without batting an eye. Moreover, as the scale of everything grew larger, old, familiar, tried and true techniques of personal leadership would no longer work as they did in the company or battalion. Vandiver skillfully brings out Pershing's perception of this shift and describes his efforts to restructure his staff to take account of the new conditions.

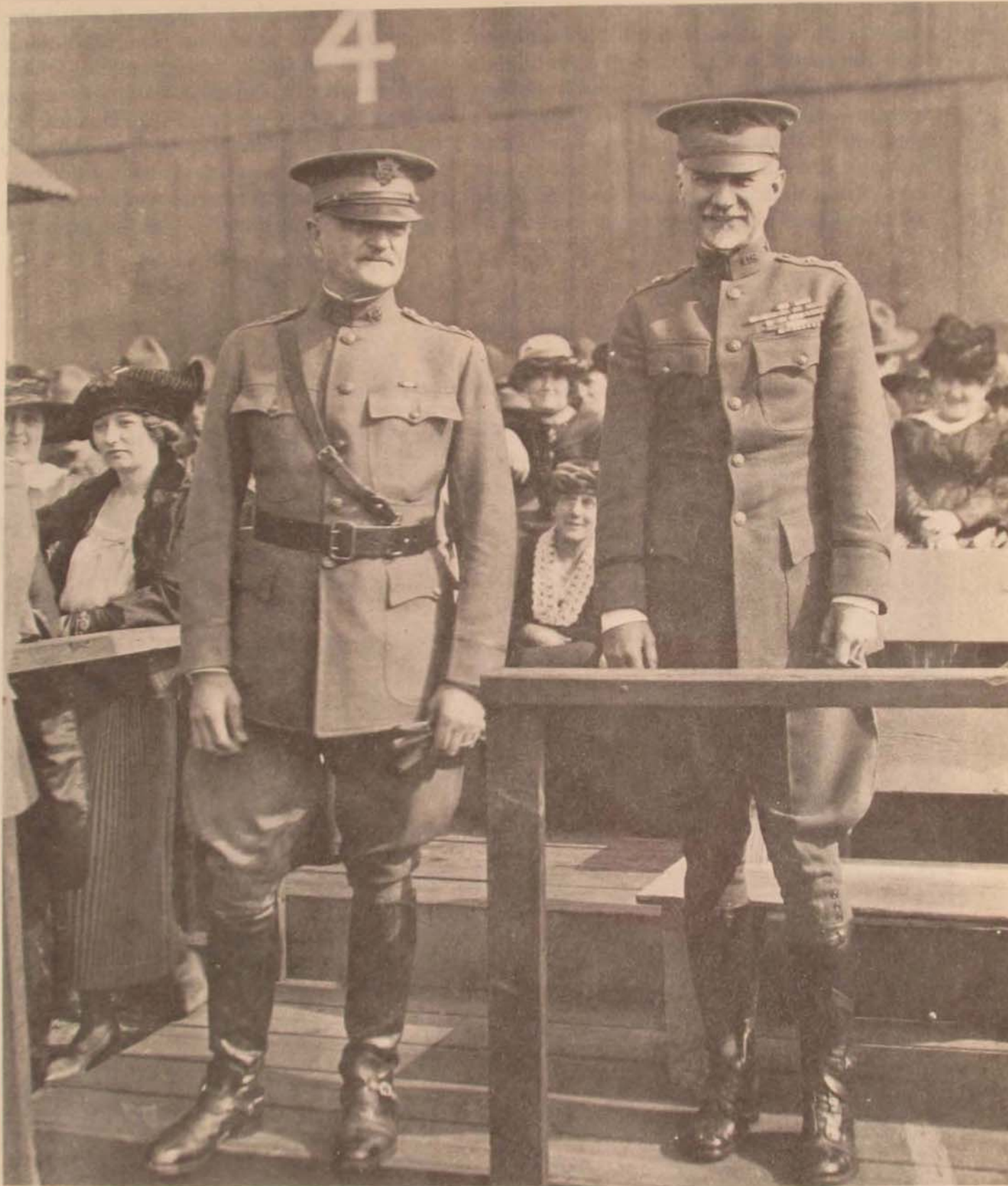
The need to delegate ever more authority did not, of course, diminish the importance of



*General Pershing and his staff (left), accompanied by French General Pelletier, disembark from a channel transport on their arrival in France, 1917. . . General Pershing, Commander in Chief of the American Expeditionary Forces (AEF), along with Major General B. B. Buck and Brigadier General F. W. Sladen, inspects Seventh Infantry troops at Vaucouleurs, France, 7 September 1918.*



*Generals John J. Pershing and Peyton C. March, AEF artillery commander and later chief of staff (1918), attend a ceremony welcoming arriving airmen at Bolling Field, D.C., on 21 October 1920.*



personality or the human dimension of command, although it may have limited the number of individuals who came into direct contact with the man at the top. Vandiver offers the reader a whole series of revealing episodes in which we see the mind of the supreme commander in action. His strength of character is deftly implied in an account of Pershing's excoriation of General Siebert for the manifold deficiencies in his newly arrived First Division. His chewing out was brought up

short by one of Siebert's staff, Captain George Marshall, who rebutted the attack in cold anger, pointing to the unfairness of criticizing Siebert, who had been away from the division on orders. Instead of retribution, which everyone present expected, Marshall earned Pershing's respect as a man of character. An aspiring commander might well ask himself, "Would I have accepted such contradiction from a junior before a roomful of observers—even if he were right?" That he probably

*Pershing, with spurs properly in place, inspects the balloon hangar at Brooks Field, Texas, 1922.*



would not is strongly suggested by Marshall's comment years later, "I never had another commander I could do that with." (Vandiver, vol. II, p. 798)

In all studies of the AEF, the theme of amalgamation, which is to say the efforts of the French and British to absorb American manpower into their armies rather than allow the AEF to function as an independent command, is a dominant one. Vandiver traces Pershing's battles for autonomy with great care. The

major outlines of the contest are well known; his contribution is to show the personal qualities Pershing brought to bear in this running battle with the French and British military and civil authorities. He shows how skillfully the general appropriated the ideas of others and made them his own, an essential of high command. He also shows how Pershing wisely based his case on the need for an independent American army as essential to the proper motivation of his troops rather than his

*General John J. Pershing, with ever-impeccable military bearing even though in mufti, poses beside his equestrian portrait in February 1929, age 69.*



own understandable pride in personal command. There are insights, too, on Pershing's technique within the conference room; his formula for successful negotiations seemed to involve, first, a lucidly clear conception of the objective sought and, second, unfailing courtesy combined with inscrutable patience.

Pershing's relations with his division commanders also provide subject matter of great interest. When the first fourteen commanders came over ahead of their troops to get a preview of the war by visits to the French and British fronts, he required each of them to write a report on how he planned to improve divisional training back home in the light of his experiences on the front. The character of the replies received helped him decide which of these generals were suited to lead divisions into battle.

As long as Pershing believed a general was helpable, he did what he could to further his abilities as a commander. Those who appeared beyond redemption he relieved, even when they were lifelong friends and classmates. Sometimes his efforts at cultivating a better quality of generalship took bizarre forms. To one diligent but intellectually rigid commander he gave a copy of Tolstoy's *War and Peace*, suggesting that it might "develop your imagination." His faith in the value of reading history was apparently substantial. His sarcastic dismissal of one failing commander was to observe that "he has not yet gone as far as Caesar's *Commentaries* in studying the history of war." For all his ruthlessness in removing failing commanders, when dealing with men who broke under the strain of combat, Pershing showed remarkable sensitivity, taking great pains to protect their dignity. From direct personal experience he knew that battle consumes generals as well as frontline soldiers; after each major push, he would visit his divisional commanders in their headquarters and scrutinize them closely for manifestations of crippling exhaustion, emotional let-down, and the like. Even successful commanders

sometimes need to be replaced when the crisis is over.

Vandiver effectively depicts the crushing emotional and moral burdens on the supreme commander himself. These ranged from hardening his heart when reflecting on the 100,000 hospital beds scheduled to receive casualties from the Meuse-Argonne offensive to stiffening his resolve when flatly refusing to obey an order from Marshal Foch that would have handed the main American forces over to a French general while transferring Pershing to an unimportant quiet sector of the Front. One senses something of the general's secret for successful command in Vandiver's account of his ability to dismiss all worry on retiring at night and thus assure himself a refreshing sleep. Above all, Pershing struggled against that infectious disease, inflated ego, which threatens so many who achieve lofty rank. His formula, when beset by the adulation of cheering crowds, was to remind himself that the honors were not really for him personally; he was but a symbol for the debut of the United States as a world power. A real hero recognizes that pride goeth before fall, as Pershing had occasion to remember when given a skittish horse to ride in the victory parade through the streets of London and again when the "Pershing for President" boom quickly faded back home.

Inevitably, Pershing's career after 1919 was anticlimactic, but Vandiver's treatment of his role as Chief of Staff is somewhat disappointing. While the author asserts that the general wanted to accept the office to put across his ideas for a "democratic army," we are never told just what he meant by this. Nor do we find any real assessment of how adequately he filled the office. Vandiver does bring out, however, Pershing's most important, if seldom recognized, contribution to national defense long after retirement: in 1939 on the eve of World War II he urged Roosevelt to make George Marshall Chief of Staff and later to retain him in that office for the duration rather than place



him over the armies invading Europe, a field command Marshall sorely wanted. "I know of no one at all comparable to replace him as Chief of Staff." (II, pp. 1093, 1095) The captain who spoke up in defense of General Siebert and the commander who accepted the rebuke were clearly both professional soldiers who recognized quality when they saw it.

Both these biographies under review merit the attention of thoughtful professionals. Smythe has so much to offer one can only hope he will soon publish the concluding volume of his biography. His treatment is quite different from Vandiver's; the two authors complement one another more than they compete. The strength of Vandiver's treatment lies in his

concern with Pershing the man; the cumulative impact of the many vignettes he has assembled is a real human being, very much alive and a far cry from the stick figure which emerges from Pershing's own far less skillful published autobiographical effort. This reviewer found the two studies taken together a well-rounded portrait of a complex human being as well as significant contributions to the art of generalship.

*Duke University*

#### Notes

1. General Sir Bernard Montgomery, *History of Warfare* (Cleveland, Ohio: World Publishing Company, 1968), pp. 19-21.
2. Smythe's book ends with the declaration of war in 1917.

#### Acknowledgment

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# DEBATING DETERRENCE

HERMAN S. WOLK

IN the mid-1960s, Soviet leaders initiated a substantial buildup of strategic nuclear weapons. In February 1978, Secretary of Defense Harold Brown, in his annual defense report to the House Armed Services Committee, noted that a "standoff or stalemate" existed in the strategic nuclear balance between the United States and the Soviet Union.<sup>1</sup>

Numerous essays, monographs, and books have been published dealing with the subject of alleged strategic parity between these two superpowers. Western military analysts have expressed fear that, if the present trend continues, the Soviet Union will eventually gain strategic superiority. Such a situation, they contend, could be potentially disastrous for the United States because it would give the Soviets tremendous leverage in international political and military confrontations. Nuclear blackmail could become a reality.

In early 1977, Georgetown University's Center for Strategic and International Studies published Francis P. Hoerber's monograph, *Slow To Take Offense: Bombers, Cruise Missiles, and Prudent Deterrence*.† As a result of the cancellation of the B-1 bomber, Hoerber's monograph may appear obsolete, but such happens not to be the case. Aside from the possibility that at some time in the future a successor to the B-52 may yet materialize, this effort provides an excellent discussion of the characteristics of the air-launched cruise missile (ALCM) and the land-based intercontinental ballistic missile (ICBM) force. Hoerber's competence and rationality prevail over the complexity of the issues he confronts. *Slow*

*To Take Offense* is a significant contribution to a field that historically has attracted more than its share of polemics and diatribes. The author's argument for a strategic nuclear deterrent that does not rely on hair-trigger response and that can react to a variety of challenges would appear to appeal to a wide segment of the American public.

His unemotional, tightly reasoned analysis—written and published prior to the cancellation of the B-1—argues that the strategic trend in favor of the Soviet Union can be ultimately checked by development, production, and employment of a new manned bomber and air-launched cruise missiles. The B-52, Hoerber emphasizes, was developed in the post-World War II period and cannot last beyond the 1980s, even if upgraded. The long-range strategic bomber is the only part of the Triad (bombers, land-based ICBMs, and missile-launching submarines) with a conventional capability. This ability to deliver conventional weapons could conceivably abort conflict escalation in various confrontation situations.

Also, the manned penetrating bomber possesses a counterforce ability—as opposed to countervalue targeting, which threatens the civilian population—and is recallable. The threat of assured destruction (primarily destruction of enemy cities), according to Hoerber, "is not adequate to the deterrent needs of the country, since such an apocalyptic response would be inappropriate in many cases." (p. 11) Thus, the quick reaction of ICBMs could be an important disadvantage. The bomber has flexibility in limited strategic operations and in conventional use and complicates enemy planning for a surprise or pre-emptive attack.

The air-launched cruise missile, Hoerber notes, should not be considered a potential substitute for the bomber. However, a strong ALCM research and development program

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†Robert L. Pfaltzgraff, Jr., and Jacquelyn K. Davis, *SALT II: Promise or Precipice?* (Miami, Florida: Center for Advanced International Studies, 1976, \$2.50), 45 pages, appendices.

should be emphasized. He observes that advanced bomber deployment and development of the ALCM should go forward, unencumbered by a Strategic Arms Limitation Talks (SALT) agreement "that is not verifiable with high confidence and does not insure equivalence." (p. 121)

The question of a potential SALT II agreement is the subject of an important monograph by Robert L. Pfaltzgraff, Jr., and Jacquelyn K. Davis, *SALT II: Promise or Precipice?*† The authors contend that the Soviet's deployment of heavy ICBMs (SS-17, SS-18, and SS-19) means that any SALT II agreement must provide the United States with the ability to develop strategic programs necessary to prevent additional erosion of the American strategic position.<sup>2</sup> Pfaltzgraff and Davis favor deployment of a supersonic bomber; equipping B-52s with cruise missiles, air-launched ballistic missiles, or short-range attack missiles; and development and deployment of an advanced missile such as MX.

Hoeber, Pfaltzgraff, Davis, and numerous other American and European defense experts and observers are gravely concerned over the significant increase in the Soviet's strategic nuclear capability—and also, it might be noted, in the vast increases in Soviet and Warsaw Pact conventional forces. Particular concern has focused on the Soviet's SS-18, an ICBM with a throw-weight about six times as large as Minuteman III. The SS-18 poses a severe threat to the U.S. land-based missile force.

The continued growth of Soviet strategic nuclear forces in relation to U.S. strategic

power could eventually symbolize a shift in strategic superiority to the U.S.S.R. This circumstance might portend developments in international political and diplomatic affairs highly unfavorable to the United States.

The hard truth as seen by these authors is that the Soviet Union, rather than accepting strategic parity, is driving hard toward superiority in strategic military power, an objective set by Russian leaders in the 1960s. They argue that the United States requires a determined strategy to redress the balance and provide for effective American and Western security.

About 25 years ago, the late, distinguished American military and strategic authority Bernard Brodie wrote that in the decades ahead the U.S. strategic nuclear deterrent would have to be the "constant monitor." He meant that it must be refurbished and always be the best. This is because it is the single capability that if allowed to seem to deteriorate in relation to the Soviets', the result could conceivably be catastrophic to the United States.

Hoeber, Pfaltzgraff, and Davis have drawn the issues and sounded a cautionary signal, warning of what they believe to be drift in American strategic policy and programs.

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Headquarters USAF*

#### Notes

1. *New York Times*, February 3, 1978.

2. For a useful, selective SALT bibliography, see Richard Dean Burns and Susan Hoffman, *The SALT Era: A Selected Bibliography* (Los Angeles, California: Center for the Study of Armament and Disarmament, 1977), \$2.50, 43 pages.

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†Francis P. Hoeber, *Slow To Take Offense: Bombers, Cruise Missiles, and Prudent Deterrence* (Washington, D.C.: Center for Strategic and International Studies, 1977, \$3.95), 136 pages, appendix, tables.

# IDEALS, INTERESTS, AND ARMS CONTROL

MARK N. KATZ

THE only legitimate reason for a nation to pursue arms control measures is because its national security would thereby be enhanced. As a consequence, no nation can expect other nations to pursue arms control measures unless their national security is enhanced also. In order for arms control agreements to succeed, then, the interests of all parties must be advanced. It would be folly for any nation to agree to an arms control measure that would harm its security, and hence no government would knowingly sign an agreement against its own interests. Nor is it wise for one state to try to deceive another by calling for arms control agreements but actually preparing for war; with satellites and other modern surveillance techniques, a state's true intentions and capabilities cannot long be concealed. The nation attempting deception would quickly find that its intended victim's euphoric sense of security would give rise to a deeper sense of insecurity than before the arms control agreement was signed. The betrayed party would soon build up arms, and further invitations for arms control negotiations would only lead to increased distrust.

In short, arms control agreements will be successful only if they are based on mutual trust and serve to enhance the national security of all nations involved. Arms control, then, can serve as a means to further national security. It cannot, however, serve as an end goal of international politics. The nature of mankind is such that a part of it will always seek domination over the rest. Pursuit of arms control as an end by one well-meaning nation will only encourage more aggressive nations to use it as a means to greater power and even

domination. To pursue arms control as an ideal divorced from political reality is to sacrifice one's interests and security. If the United States, then, is to pursue arms control, those responsible for conducting our foreign policy must have a clear understanding of the political reality that such agreements are to operate in and must be vigilant to ensure that American security is indeed enhanced.

The motivations for American foreign policy, however, are mixed. While the U.S. consciously seeks to safeguard its security and economic interests abroad, only the most cynical would deny that one of the primary motivations for American foreign policy is idealism. Especially in this century, Americans have repeatedly tried to change the nature of world politics, and of the world itself, by convincing the world of the justness of our values not only for ourselves but for all nations. Woodrow Wilson's League of Nations, Franklin Roosevelt's United Nations, and even Jimmy Carter's human rights campaign are only a few examples of the hope of recasting the world in our own form. Three recent books continue this American tradition. One is a Council on Foreign Relations 1980's Project study entitled *Controlling Future Arms Trade* by Anne Cahn, Joseph Kruzel, Peter Dawkins, and Jacques Huntzinger. Another is *NPT: Current Issues in Nuclear Proliferation*, compiled by Susan Ridgeway of the Center for the Study of Armament and Disarmament at California State University at Los Angeles. The third is the Stockholm International Peace Research Institute's *Weapons of Mass Destruction and the Environment*, actually written by Arthur H. Westing, an American botanist.

IN the section of *Controlling Future Arms Trade*,† written by Anne Cahn and Joseph Kruzal, the outcome of continued heavy flows of conventional arms to the Third World from the major powers is discussed. They see this trend eventually leading to widespread conflict that the U.S. would be unable to control. Particularly ominous, they believe, is the transfer of new technologies such as precision-guided munitions (PGMs) and possibly even cruise missiles. The weapons now being transferred are highly complex, and supplier assistance is required to maintain them in operating order. A Third World state presumably would not undertake military action that its supplier found objectionable. The withdrawal of supplier assistance would lead to an immediate and long-term decline in military power, as occurred when Egypt and Somalia split with the Soviet Union. New technology weapons, however, are much simpler to operate, the authors believe. Third World states could maintain them on their own. This might be an inducement to more aggressive action. Further, a threat to cut off assistance by the supplier may not be as credible if resupply from another major power of similar weapons was readily available and could be integrated more easily.

Cahn and Kruzal present a persuasive case that increased arms shipments to the Third World make undesirable conflict there much more likely if only because these nations did not previously have the means to fight more and create crises that the superpowers might unwillingly be drawn into. However, the solutions that they, along with Dawkins and Huntzinger, offer to avoid such conflict are rather less than convincing. Cahn and Kruzal feel that unilateral American restraint would induce other powers to act similarly. Yet recent

events in the Horn of Africa have shown that the lack of U.S. assistance to Somalia did not prevent massive Soviet arms shipments to Ethiopia. Colonel Dawkins proposed that economic incentives be rearranged in the West to diminish the desire to supply arms. He believes that an ambitious NATO standardization program could absorb all the weapons that would otherwise be sold to the Third World. This, however, does not take into account the tremendous economic dislocations that would result in Western European economies, the fact that the Soviets sell weapons for primarily political and not economic reasons, and the basic desire of Third World nations to buy arms. Jacques Huntzinger's proposals for arms-import restraint by developing nations themselves depend on the cooperation of all regional actors. Yet, in every region there is at least one actor, feared by others, who refuses to limit the acquisition of arms.

Another proposal is to link security assistance with economic assistance. A recipient would receive more of the latter as a reward for accepting less of the former. However, it should be clear by now that there are relatively few governments in the Third World that are more concerned with their nation's development than with their own survival and strength. While development funds are considered desirable, arms are considered essential. The one solution that might be effective in controlling Third World conflict over the next generation or two—an agreement among the supplier nations to strictly control arms transfers—is avoided because the authors consider a solution by the great powers imposed on smaller ones to be immoral. The reader is led to doubt the authors' sincerity since they obviously would not support conventional arms control at the expense of Third World sovereignty.

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†Anne Hessing Cahn, Joseph Kruzal, Peter Dawkins, and Jacques Huntzinger, *Controlling Future Arms Trade* (New York: McGraw-Hill, 1977, \$5.95), 210 pages.

None of the authors recognize that the problem of arms transfers is only part of the much greater problem of growing conflict in the Third World. For the U.S., the only major politico-military competition for them is not with the superpowers but with one another and with internal opposition. This is a fact that the U.S. cannot change, but should American foreign policy-makers choose to ignore it, then they must be charged with actually encouraging the Soviet Union to become the major arbiter of Third World disputes. And if a halt in U.S. security assistance programs only serves to encourage the more rapid development of indigenous Third World arms industries, then the U.S. may not be able to regain any of its influence among these nations at all and be forced to live in a considerably more disordered world than we would like.

These are problems that have not been dealt with at all in *Controlling Future Arms Trade*, for they have not yet even been recognized as problems. If the U.S. is to prevent growing conflict in the Third World, though, American foreign policy must address the underlying political reasons for such conflict. Third World conflict will not go away if we naively cut off arms shipments in the hope that nations will not fight if they cannot have our weapons. The entire problem requires much more thorough study than has yet been given to it.

**N***NPT: Current Issues in Nuclear Proliferation*† is not a monograph but a selected bibliography. Nevertheless, it is useful to examine because the compiler, Susan Ridgeway, has included works representing virtually every aspect covered by the growing literature on nuclear proliferation. Most striking in the bibliography are the extensive listings

of technical and legal approaches to halt the spread of nuclear weapons. It should be apparent by now, though, that technical constraints hardly pose a barrier to any state determined to acquire nuclear weapons. The knowledge required to construct an atomic bomb is becoming increasingly widespread, thanks primarily to Western publishers. The restrictions that the International Atomic Energy Agency hopes to enforce can hardly stop any nation determined to obtain the necessary material for a bomb. Indeed, if a nation is patient, it can take away small quantities of plutonium waste from nuclear power plants operating within its borders without detection. While technical limitations might deter some states that are not really interested in acquiring nuclear weapons, they are not an effective means of halting nuclear proliferation.

Nor do legal limitations promise to halt nuclear proliferation. Even the Nonproliferation Treaty (NPT) allows any signatory state to withdraw from its provisions by merely declaring its intentions to do so only three months in advance. Further, the treaty provides for no sanctions against nations withdrawing from it either legally or illegally. The threat of not having nuclear energy plants sold to a nonsignatory is hardly credible. Indeed, a nation determined to acquire nuclear weapons might possibly sign the treaty to give the impression of peaceful intentions in order to obtain greater access to nuclear material. Even nations such as Brazil and Pakistan, which insist on not signing the NPT, have been successful in purchasing all manner of nuclear technology. The legal approach to nuclear nonproliferation, then, can only give a false sense of security to those who unwisely place their faith in unenforceable utopian measures.

What the literature on nonproliferation has

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†Susan Ridgeway, compiler, *NPT: Current Issues in Nuclear Proliferation* (Los Angeles: California State University, 1977, \$2.00), 57 pages.

not addressed at all are the political motivations for a nation to acquire nuclear weapons. On reflection, it will be found that there are only two basic motivations: 1) a government fears that its national security will be endangered unless it obtains nuclear weapons, or 2) a government has aggressive desires that are so ambitious that the possession of nuclear weapons is necessary to fulfill them. No other motivations can exist other than these two basically offensive and defensive political ones. While technical or legal approaches to nonproliferation may marginally affect them, they do not reach the heart of nations' concerns, which are political.

Nevertheless, a world with even more nuclear powers than exist now would not be in America's interests, especially if an irrational government could launch a nuclear war that the U.S. might be drawn into. But to prevent the proliferation of nuclear weapons, the U.S. must direct its foreign policy to the political motivations of those nations likely to acquire them. To prevent the acquisition of such weapons by nations that fear their security or even survival might be at risk without them, the U.S. could guarantee the defense of such nations from attack. For those nations with aggressive designs on others, the U.S. could make clear to them that any nuclear attack they might launch on anyone would be considered as sufficient grounds for the U.S. to retaliate in kind. These are strong proposals—ones which are not to be found in the writings on nonproliferation listed in this bibliography. While they may not be the best ones possible and would require the exercise of will in U.S. foreign policy that has been noticeably lacking recently, they do at least address the basic political causes of the nuclear proliferation problem. Any solution that is to be effective

must do this also, unlike the multitude of technical and legal proposals that do not and as a result are completely unworkable.

**I**N *Weapons of Mass Destruction and the Environment*,† Dr. Arthur Westing speculates on the damage that would occur to plant and animal life if nuclear, chemical, biological, geophysical, and other weapons were used in forested and other wilderness areas. While the author makes a compelling case that the damage would be overwhelming, he does not address the obvious question of how likely a nation taking part in nuclear war would be to target an opponent's forests. It would appear that if two nations were ever so enraged by each other as to risk their own destruction through engaging in nuclear war, more valuable targets such as population, industry, and military installations would be destroyed first. Dr. Westing implies that the most important burdens of a future major war would fall on plants and animals, and hence weapons of mass destruction should be banned. His lack of attention to the human costs seems strange.

Dr. Westing believes that the more nuclear and other highly destructive weapons that the superpowers possess, the more likely it is that they will be used in war. Hence, the best means of preventing a major war would be to eliminate nuclear weapons. This sort of proposal to end war, which has been advanced by many others also, deserves critical examination. The absence of nuclear weapons did not prevent such highly destructive wars as the Thirty Years War, the Napoleonic wars, the American Civil War, World War I, and World War II, to mention but a few. Since 1945,

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†Stockholm International Peace Research Institute, *Weapons of Mass Destruction and the Environment* (New York: Crane, Russak, & Co., 1977, \$12.95), 95 pages.

however, no major war has occurred. Nuclear weapons have been in existence for only a short period historically, so one cannot say definitively that they have deterred a major war. But what would the world be like if there were no nuclear weapons? Without them, the two superpowers could not threaten each other, or anyone else, with total and immediate destruction in return for undertaking unacceptable aggressive actions. If the U.S. could not threaten the Soviet Union in such a manner, how could we hope to prevent aggressive actions on their part? In fact, such actions could not be prevented as easily and would probably have to be stopped through a massive commitment of men and materiel such as was necessary to halt a much smaller Germany in two world wars. Without nuclear weapons, the ability to prevent a major war is greatly reduced, and, if such a war were to come about, the destruction to population, industry, military installations, and even forests would very likely be greater than through nuclear war.

ONCE again, a proposal has been made to enhance peace that does not address the basic political problems it hopes to solve. Nuclear weapons are to be eliminated in order to prevent war. But nuclear weapons are a means of conducting war and not the cause of it. Eliminating them will not alter the political fact that nations have conflicting goals for which they would prefer to go to war rather than meekly allow other nations what they desire in order to avoid violence. To eliminate war the basic causes of conflict among nations must be eliminated. Historically, this has proved impossible, and wars continue. But if the causes of war cannot be eliminated, the best means of decreasing their likelihood is to instill such a tremendous fear of the consequences of war

that even aggressive nations would willingly avoid it. Nuclear weapons, it cannot be denied, have instilled this fear of war to an intense degree and thus have served a useful purpose in preventing the all-out war that they have the potential to unleash.

All three of these works seek to point out potential dangers to the interests of American foreign policy that will occur unless something is done to eliminate them. Yet the solutions they all propose are highly idealistic, the authors displaying both insensitivity to their effect on American interests and ignorance of their inappropriateness to the political reality that exists in the world. The problems posed by the transfer of conventional weapons, the proliferation of nuclear weapons states, and the growth of the nuclear arsenals that already exist will not be solved through naive proposals calling for the halt in transferring or the elimination of such weapons. The conflicting goals that exist among nations will doom the idealistic pursuit of such solutions to failure. The problems these weapons pose is an outgrowth of this conflict in international relations, which has proved to be insoluble. Only through the recognition that this basic conflict is a permanent factor in international relations can arms control negotiations hope to orchestrate the mutuality of fear that exists into agreements mitigating some of the common dangers that various weapons present. It is a curious phenomenon that Americans continue to advance highly idealistic and woefully unrealistic solutions to the world's problems when the pursuit of such solutions in American foreign policy has repeatedly resulted both in failure to achieve our ideals and in harm done to our interests. The history of this century has shown that only through a foreign policy that advances American interests can we hope to transform some of our ideals, such as the control of arms, into reality.

*Massachusetts Institute of Technology*



# POTPOURRI

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**Crisis in Command: Mismanagement in the Army** by Richard A. Gabriel and Paul L. Savage. New York: Hill and Wang, 1978, 242 pages, \$10.00.

Richard Gabriel and Paul Savage are former U.S. Army officers who now teach political science at Saint Anselm's College in New Hampshire. Their book, *Crisis in Command*, is a searing, iconoclastic appraisal of the Army during and after the Vietnam War. They regard the United States Army in Vietnam as having bordered on "an undisciplined, ineffective, almost anomic mass of individuals who collectively had no goals and who, individually, sought only to survive the length of their tours." They contend that the Army failed to maintain unit cohesion, and they cite as evidence of that atrophied condition a high rate of drug use among troops, attempts to assassinate officers, combat refusals, and skyrocketing desertion rates.

What will delight some and enrage others, however, is that Gabriel and Savage indict the officer corps for the Army's enervation. They argue that too few officers shared combat risks with their troops and that too many officers refused to protest certain stupid, dangerous, or unethical military practices. Principally, because the Army officer corps is suffused with an "entrepreneurial disposition" or with managerial behavior that may be "pathological to the military system," they conclude that "there is no formal code of moral behavior which defines acceptable behavior for a member of the officer corps"; thus, the officer corps is "unsure of itself and its standards of conduct, unable to enforce basic discipline, overmanaged with superfluous staff, and held in contempt by their troops."

Clearly, there are problems with the book. It is at times simply too polemical; at other times it is needlessly repetitive. Gabriel and Savage are not entirely clear about the relationship between society and the military, although they appear to subscribe to Samuel Huntington's views. Essentially, they maintain that the American military must develop an officer corps "whose standards of honor, duty, and responsibility transcend, but do not threaten, the social values of the larger social order."

The authors contend that the Army must undergo a "moral renaissance" but that it cannot reform itself. Accordingly, they make some recommendations—principally, an officer's code and a revamped

Inspector General, which they hope to see enacted. In a word, they want to see honor restored to the officer corps.

Because of its unrelenting criticism of the Army officer corps, this work of Gabriel and Savage will be dismissed as mere carp and cavil by a few soi-disant defenders of the Army. And that is too bad because this book deserves a wide audience and a fair hearing. Soldiers and scholars alike will find *Crisis in Command* a provocative and seminal book.

Dr. James H. Toner  
*Department of History and Government*  
*Norwich University*

**Decent Interval** by Frank Snepp. New York: Random House, 1977, 590 pages, \$14.95.

It is never easy to look defeat in the eye, admit failure, and learn from the experience. In *Decent Interval* Frank Snepp provides a painfully detailed account of the final tortured weeks of the Saigon regime as it collapsed while Washington lay paralyzed by Watergate. Having lived the experience as chief CIA strategy analyst in Saigon, Snepp describes both the failings of South Vietnamese leadership and, of more immediate concern to us, the interaction between the deteriorating military situation and the residual American presence in South Vietnam.

The distended United States Embassy in Saigon was the umbilical cord that sustained South Vietnam and passed vital information concerning the course of events there back to U.S. decision-makers. Under the sternly anti-Communist leadership of Ambassador Graham Martin, State Department, Department of Defense, and Central Intelligence Agency staffs (both in Saigon and at isolated consular posts) labored to respond to the impending disaster. The stirring successes and glaring failures of the individuals and groups who made up this U.S. presence form the heart of this book.

It cuts across the warp and woof of bureaucratic responses. Snepp describes CIA growth in Vietnam from gross inadequacy in the early years of U.S. involvement to the opposite extreme with some agents on the scene skillfully concealed from public view in their bright red Ford Pintos. He describes the flow of misinformation designed to make Saigon seem more worthy of aid. He cites the ambassador's refusal to start contingency planning for the evacuation in order to avoid panic and for the U.S. Defense Attaché Office's seizure of the initiative at the eleventh hour.

The crescendo of the narrative is in the evacuation. Concern was less for the Americans; they would either make it out or risk internment until the end of hostilities, which was all too imminent. The life and death issue was the fate of the thousands of Vietnamese who had helped the Americans and, by their commitment to us, signed their death warrants in the eyes of the Communists. Here, with the heroic exception of a few individuals, the American record was deplorable. Most of the Vietnamese who had worked for the U.S. were left behind, and, in the evacuation panic within the CIA station, records were left intact that identified many of them.

Frank Snapp wrote *Decent Interval* as an "after-action report," but the CIA refused to let him undertake it in an official capacity. He, thus, published it without permission and was sued by the Justice Department for breach of contract and violation of trust.

Despite the controversy about its publication, the fact remains that, once the reader gets past the slight aroma of sour grapes, *Decent Interval* is a valuable study of a bureaucracy's response to an unanticipated emergency.

Lieutenant Colonel John J. Kohout III, USAF  
*Strategy Division*  
*DCS Operations, Plans and Readiness*  
*Hq USAF*

*Lindbergh Alone* by Brendan Gill. New York: Harcourt Brace Jovanovich, 1977, 216 pages, \$11.95.

"It is a paradox," writes Brendan Gill, "characteristic of great men that the nearer we come to them the more mysterious they seem to be." Though the mystery of Charles A. Lindbergh was not of his own making, the man who found himself at the center of American controversy and adulation for nearly fifty years is as much an enigma as ever.

Gill, however, has done as much as any author since Lindbergh's transatlantic achievement to make the man seem a bit more lucid and real. In a delightful narrative of few more than 200 pages, Gill provides his reader with an intimate glimpse at the man whose energy and accomplishment have been the marvel of the western world for more than half a century.

In a very readable prose style reminiscent of his *New Yorker* journalism, Gill reveals a substantial amount about a man who chose to reveal so little about himself. It was not the author's intention to write another biography of Charles Lindbergh—better than half a dozen of those already exist—

rather, it was "to observe an unknown young man at one moment in history, and to examine the forces that led him to act as he did."

Gill expends considerable effort to correct what he perceives to be mistaken public impressions of Lindbergh; even fifty years after the event itself, it seems that Lindbergh's passion for self-fulfillment and his private personal nature are still misunderstood by those who admired him so intensely. A considerable portion of the book, for example, is devoted to Lindbergh's acrimonious relationship with the press. "Not only would reporters favor a good story over an accurate one," the author writes, "their idea of a good story often prompted them to invent a new Lindbergh, different from one day to the next. . . ." Though he was hounded throughout his life by the press and for a time chose to leave the country because of it, Lindbergh's approach to publicity was far from naive. While he opposed personal aggrandizement of any kind, Lindbergh welcomed publicity for the causes he chose to champion.

Gill draws extensively on Lindbergh's own writings and relies heavily in many sections on a copious exchange of letters between Lindbergh and his mother. In doing so Gill illuminates an aspect of Lindbergh's character that few other authors, including Davis, Mosley, Van Emery, and Tracy, seem to have seen. Though he sought public attention for aviation and a number of other causes, Lindbergh remained an intensely private man, portrayed by Gill as a classic loner. In his moments alone, the aging aviator, who was once the best known and most admired person alive, would write almost continuously and nearly all of it about himself.

Charles Lindbergh's three autobiographies reveal little about his inner self; though they are well written, they are strangely superficial and evasive in nature. His diaries, journals, and letters, however, are another matter. And it is Brendan Gill who, for perhaps the first time, allows the aviation enthusiast and Lindbergh-admirer to examine the boy-hero's character and personality through his own writings. Gill himself admits, though, that there is much that remains unclear about the man who was first to fly the Atlantic alone. And until the million or so pieces of Lindbergh's personal memorabilia are carefully examined and catalogued at Yale's Sterling Library and a half dozen other places, no definitive biography can be written.

What Gill has produced for the aviation historian as well as for the layman who thrives on twentieth-century nostalgia is a minor literary masterpiece. He blends a marvelous working knowledge of

*Charles A. Lindbergh (left) was sworn in as brigadier general, United States Air Force Reserve, by Secretary of the Air Force Harold E. Talbott, at the Pentagon on 7 April 1954.*



Lindbergh's writings and achievements with more than seven dozen photographs—many of them previously unpublished—into a handsome collector's volume. While it is neither exhaustive nor definitive in biographical terms, *Lindbergh Alone* is unquestionably the finest addition to a growing body of Lindbergh literature in recent years.

Captain James S. O'Rourke, USAF  
Department of English  
United States Air Force Academy

**Autobiography of Values** by Charles A. Lindbergh, edited by William Jovanovich and Judith A. Schiff. New York: Harcourt Brace Jovanovich, 1978, 423 pages. \$12.95.

**Charles A. Lindbergh: An American Life** edited by Tom D. Crouch. Washington, D.C.: National Air and Space Museum, 1977, 119 pages, \$7.95 hardback, \$2.95 paperback.

Undoubtedly, Brendan Gill's *Lindbergh Alone* is the most attractive and probably the best written of that spate of books precipitated by the fiftieth anniversary of Lindbergh's transatlantic flight. Indeed, *Lindbergh Alone* is handsome enough in layout and design—if not in bulk and gloss—to serve as a coffee-table book. However, two others from that anniversary flow of books deserve at least passing attention.

As Gill makes clear, Lindbergh for all his insistence on privacy was almost constantly writing, of himself and of his enthusiasms. Nearly to the day of his death he was turning out reams of manuscript, the bulk of which is attested to in part by the voluminous Lindbergh archive at the Sterling Memorial Library, Yale University ("over six hundred linear feet of letters, business papers, family records, photographs, etc."). *Autobiography of Values* is a gathering from that vast lode but derives principally from the more than two thousand pages of manuscript that Lindbergh turned over to his publisher-editor William Jovanovich during the last month of his life, just before he returned to his home in Maui, Hawaii, to die in late August 1974.

Jovanovich and his coeditor, Judith A. Schiff, have done quite a workmanlike job with the burden they accepted and compressed that mass into a 400-page tome. One likes to think that, had he lived to complete the task himself, Lindbergh would have compressed still more and inflicted greater order on these wide-ranging musings on a multifaceted life of

more than seven decades. The book is not an autobiography in the chronological sense; rather it records Lindbergh's philosophical responses, his "values," as aviator, scientist, adviser to enterprise and government, soldier, conservationist, and writer. Much of it is fascinating, as were the mind and range of the man, but it is an exceptional book of this length that delights from beginning to end; here each reader or skimmer can be his own anthologist, for there is surely a plenty for all interests and tastes of those who admired the great man.

*Charles A. Lindbergh: An American Life* is in effect both a symposium proceedings and an academic-type *festschrift* (i.e., a collection of learned articles in honor of an esteemed colleague); the book commemorates the fiftieth anniversary of the transatlantic flight, as presented at the National Air and Space Museum (NASM) on 20 May 1977, and it celebrates the achievements of the flyer in informed, documented essays. Typical of the *festschrift*, it also presents a selected 15-page bibliography, including four tight pages of the "selected" writings of Lindbergh himself.

If it all sounds rather formidable, it is not in the least. Indeed, it is a slight book of only 120 pages, many of which are devoted to photographs of Lindbergh covering perhaps 60 years of his life and wide-ranging activities; Lindbergh must have been the most photographed man of his time, and the selection here is good if not always as fully captioned as one could wish. The essays are well presented and predictably laudatory; several of the writers (notably John Grierson, Richard Hallion, and Wayne S. Cole) reflect a personal working relationship with Lindbergh himself, as do the feeling introductory comments of NASM Director Michael Collins.

Probably the book contains as much as one would care to absorb through a one-day sitting, but, typically, it gives only a fractional image of the man himself. If one would see Lindbergh at his best—certainly at his *writing* best—it is still necessary to return to his Pulitzer Prize-winning autobiography of 1954, *The Spirit of St. Louis*.

J.H.M.

**The United States since 1945: The Ordeal of Power** by Dewey W. Grantham. New York: McGraw-Hill, 1976, 298 pages, \$6.95.

In his survey of recent United States history, *The United States since 1945: The Ordeal of Power*,

Dewey Grantham writes that "the United States had entered a new and radically different stage in its historical development." The author then proceeds, essentially in outline form, to organize and interpret the years since 1945, the goal of which is to give the reader a "better understanding of history."

Notwithstanding the fact that any survey book is just that—a survey—the author does manage to cover the major political, economic, diplomatic, social, and cultural events of the era. Domestic politics, such as campaigns and elections, is well covered as are other major internal events. Dr. Martin Luther King, Jr., and the entire civil-rights movement are treated with clarity, accuracy, and perception. The Kennedy years, especially the assassination, are handled with dignity and compassion. Johnson and the antiwar movement as well as Nixon and Watergate are expertly treated.

Regretfully, valuable bits of information that might spark a student's interest are left out, as is usual in a survey. One example, Grantham accurately discusses George F. Kennan's containment doctrine of the Cold War era. The famous long cable and his anonymous article in *Foreign Affairs* are mentioned, but the reader is never told that Kennan used a pseudonym or that in later years he rejected this position.

Other, more significant material was omitted from this survey, also. With the exception of Vietnam, there is very limited coverage of U.S. involvement with the Third World. In Latin America the Cuban missile crisis, the Panama riots, and the Dominican fracas of the 1960s are highlighted, but our relations with other nations including Brazil and Mexico are disregarded. Africa fares even worse. While American involvement with Africa has been somewhat limited, Grantham chooses to ignore our growing commitment. Surely our relations with the emerging nations are worthy of a few pages.

One final objection must be made and that is with the paucity of maps in the book. In essence, this volume of the trilogy called the Modern American Series is an adequate but not particularly inspiring survey text that requires supplemental materials.

Dr. Robert H. Terry  
Associate Professor of  
International Relations  
York College of Pennsylvania

Lauren Elder's nightmare experience of pain, horror, fear, and excitement is vividly depicted by Miss Elder herself and Shirley Streshinsky. Although the reader knows the fate of the three Cessna passengers from the outset, the story of the plane crash on a peak of the High Sierra is told with a spellbinding flair.

The two-day adventure contains suspenseful rising action, dramatic crisis, and a gradual lull as facts are explained in the falling action. The style is as crisp and clear as the cold, sharp air of the High Sierra. The tone is excitement: "... carefully, slowly, [I] lowered myself over the edge. I slammed my boot toe through the ice and felt a surge of excitement as it held." The language fluctuates with the tone to build a feeling of detachment and yet a strange camaraderie with the heroine of the drama: "The gash was deep. Layers of flesh parted, neatly, to reveal the unmistakable glistening whiteness of bone and gristle. My bone. My gristle." The tension is eased at crucial points by comic relief: "... a gust of cold air blew up under my skirt ... chilling my bare behind. ... *What if somebody across the way has binoculars and is wondering what this silly woman is doing crawling bare-assed down the face of one of the highest mountains in the West?*"

The book will provide enjoyable reading if accepted at face value as a real-life adventure. The Air Force reader may be disappointed if he expects details of the rescue efforts by the Federal Aviation Administration or Air Force Rescue Coordination Center or data about the plane, its flight, or flight path. Although the survivor has some flying knowledge, she is not a pilot and does not tell her story from a pilot's point of view. Rather, focus is placed on the survival actions of Lauren Elder through the long freezing night and her thoughts and actions during the descent from the 12,360-foot mountain crest.

Lauren Elder's rudimentary survival knowledge saved her life because she had the will to survive. Two facts are emphasized: the will to survive is of paramount importance in any fight for existence; and whatever survival and first-aid skills one possesses should be refreshed occasionally.

Roberta Chambers  
Air University Review

**And I Alone Survived** by Lauren Elder with Shirley Streshinsky. New York: E. P. Dutton, 1978, xi + 188 pages, \$7.95.

**Aspects of Sino-American Relations since 1784** edited by Thomas H. Etzold. New York: New Viewpoints, 1978, 173 pages, \$10.00 hardback, \$5.95 paper.

China's acceptance of full diplomatic relations with the United States on 1 January 1979 certainly marks the beginning of something new. Just what, one cannot say, but this book contributes much to general understanding of our past relations.

Dr. Thomas Etzold, Professor of Naval Strategy at the Naval War College, has here edited six scholarly essays on aspects of Sino-U.S. relations, each of which can be read usefully, separate from the others. The initial essay on nineteenth-century contacts suggests that Americans then "overidealized and overcriticized China," an observation equally apt for today. A second chapter, "Almost Unwelcome Immigrants," traces the unconscionable discrimination against Chinese immigrants from exploitation to enclosure in urban ghettos, the successor response to institutionalization of racism in the plantation and the reservation.

How the U.S. reacted to earlier and fundamental shifts in power in East Asia is treated in chapters on the Open Door and Sino-Japanese-U.S. relations at the Paris Peace Conference in 1919, a study of limited commitment and uncertain policy.

Asserting that the Korean War "led to an American military stance that was at once unexpected, unintended, and unwanted," Professor Etzold's chapter on U.S. strategy 1948-1951 concludes that U.S. actions during these three years did, in fact, increase the liability of the U.S. in Asia for the ensuing three decades. The final chapter is an incisive and insightful analysis of U.S.-Chinese relations over the past sixty years, a period marked by "self-absorption" on the Chinese side and "fear-filled confusion and ignorance" on the American side.

Recommended reading.

Dr. James H. Buck  
Air War College  
Maxwell Air Force Base

**Gyro! The Life and Times of Lawrence Sperry** by William Wyatt Davenport. New York: Charles Scribner's Sons, 1978, xi + 282 pages, index + appendices, \$12.95.

Lawrence Burst Sperry, who was sometimes called "Gyro" (particularly by Glenn Curtiss), is often confused in the public mind with his also-famous father, Elmer Ambrose Sperry, founder of the Sperry Gyroscope Company. But Lawrence Sperry made significant contributions to the early development of aviation in his own right—as an inventor,

entrepreneur (his Lawrence Sperry Aircraft Company "spun off" from his father's company in 1917), and pilot. Among Lawrence Sperry's patents, some of which are shown in the 50+ pages of appendices of the book, are the first bank-and-turn indicator, automatic pilot, pack parachute, and retractable landing gear. During World War I, Lawrence Sperry worked extensively on and patented a weapon then called an "aerial torpedo." Today, we would call it a cruise missile.

Author William Davenport has written a well-researched, insightful, personal biography of Lawrence Sperry. The book is necessarily more anecdotal than exhaustive because of its brevity and possibly also because of the relative dearth of detailed information available in the 1970s about a man who died at age 30 in 1923. Nevertheless, the book is absorbing and extremely readable. It is also remarkably free of technical errors. Furthermore, Davenport has succeeded in bringing to life the personalities of Lawrence Sperry, his parents, his sister and two brothers, his wife, and some of his close associates. Lawrence Sperry was a contemporary of and knew Eddie Rickenbacker, Billy Mitchell, and Jimmy Doolittle, who wrote the Foreword to the book. The twenty pages of photographs add to an already expertly developed sense of the period in which the events described in the book occurred.

The book's one defect is that it tends to leave the reader hanging. It stops rather abruptly with Lawrence Sperry's funeral and some of the tributes published at the time. Sperry was survived by both his parents, his sister and two brothers, and by his wife and two children—all of whom had become real persons to the reader. This reviewer would have appreciated an epilogue giving a little more information about these relatives than their death dates.

Lieutenant Colonel M. Bruce King, USAF  
Air War College  
Maxwell AFB, Alabama

**Tanks and Other Tracked Vehicles in Service** by B. T. White with illustrations by John W. Wood. London: Blandford Press, 1978, 155 pages, \$8.95.

*Tanks and Other Tracked Vehicles in Service* provides a less expensive substitute for *Jane's Weapon Systems* and *Brassey's Artillery of the World*. It is a survey of "the more important or interesting military tracked vehicles today" and lists equipment by country and type: main battle tanks,

light tanks, armored personnel carriers, self-propelled guns (both field and air defense artillery), and combat support vehicles.

The author presents an account of what he considers to be current trends in tank armament, mobility, and armor protection. This introduction is followed with colored drawings of each piece of equipment and a single page, double column account of the history, operation, and description of the significant characteristics for each item. There are three appendices: the first gives a "few cross-sectional drawings of modern tracked fighting vehicles"; the second, a brief description of the latest camouflage colors and tactical markings in use; and last, tabulated data on a majority of the vehicles in the book, including their weight, length, height, armament, engine type, horsepower, speed on road and in water, range, and crew size.

The principal shortcoming of the book is that the author gives physical descriptions of the vehicles rather than those characteristics that directly affect their combat capabilities. For example, the gun sizes for the main battle tanks are given but not their range, muzzle velocity, or ammunition types. Although the tabulated data compensate somewhat for the superficial descriptions in the text, this information is provided only for selected vehicles. Consequently, the information given on some important items, such as the Roland missile system (which will be the principal short-range missile system in France, Germany, and the U.S.), is incomplete. The cross-sectional drawings are of little value because there are only seven of them and because the main battle tanks selected (the M48 and the T54A) are obsolete.

The colored drawings are excellent. Also, this book is one of few that includes anything on the important recovery and combat support vehicles. Its main selling point, however, is the cost, which is 25 to 33 percent that of its competitors. *Tanks and Other Tracked Vehicles* would be a useful addition to any line officer's library, but its limitations may necessitate frequent trips to the library to consult *Jane's* or *Brassey's*.

Major E. Paul Semmens, USA  
Department of History  
United States Air Force Academy

**Evolution of the American Military Establishment since World War II** edited by Paul R. Schratz.  
Lexington, Virginia: George C. Marshall Research Foundation, 1978, 125 pages, \$4.00.

The George C. Marshall Research Foundation, headquartered at Virginia Military Institute, has recently ventured into publishing. Through its library, museum, student/scholar aid, and now the publication of books, this foundation at Marshall's alma mater serves to perpetuate interest in the man and his era. *Evolution of the American Military Establishment since World War II* is its first publication. This short volume results from a conference held at the Marshall Foundation in 1977, to celebrate the thirtieth anniversary of the National Security Act.

Editor Paul R. Schratz has capably organized this volume to provide either a memoir or an analysis for each element of the military establishment. With its superb prologue by Dr. Schratz and a provocative epilogue by the conference chairman, General Andrew J. Goodpaster, the book is complete and lends itself to use in military staff and war colleges.

In his prologue, Dr. Schratz urges the reader to examine the thought and experience of the past 30 years on the basis of today's needs. Only then, he argues, can good history be useful.

As to some of the details, General Maxwell Taylor reflects on the entire defense scene while General Lauris Norstad interprets the National Security Act. Taylor's comments on the Joint Chiefs under Charles Wilson are fun to read. It appears that the chiefs pined away during the Eisenhower era, longing for some of that Forrestal or Marshall decisiveness. Comparing Wilson's lack of confidence with McNamara's assertiveness is part of the wit in Taylor's "Reflections."

General Norstad reminisces about the National Security Act and the incessant staffing of papers and positions that took place during the battles over the unification issue. But Norstad is at his best describing relations with the Europeans while he headed NATO, particularly one day when he convinced Harold Macmillan to change Her Majesty's "defence-cuts" plans over a platter of Dover sole and Colchester oysters. Norstad credits much to the strength and wisdom of the frustrated and troubled Forrestal.

Dr. Rudolph Winnacker examines evolution in the role of the Secretary of Defense, while the historical growth of the Army, Navy, Air Force, and Marines is effectively presented by Dr. Robert W. Coakley, Vice Admiral Edwin B. Hooper, Herman S. Wolk, and Brigadier General Edwin H. Simmons.

In his article on the Army, Dr. Coakley aptly describes the full circle taken from preparing for a European war to fighting localized insurgencies and back to the European scenario. From the triangular to the pentomic to the Reorganized Army Division

(ROAD),\* the web of Army doctrine is traced, and flexible response provides the beam to which the web clings.

Admiral Hooper fairly discusses the Navy in a period when trauma was the order of the day and urges us to examine our bureaucratic structures and other sacred cows carefully.

Mr. Wolk considers the golden age of the Strategic Air Command (SAC) and the extraordinarily successful marriage of the Air Force to technology. Wolk reserves a few kind words for General Thomas D. White, saving a few less-kind ones for General

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\*To give more artillery support and hence more conventional staying power.

Curtis LeMay, and closes with chauvinistic references to air power as the decisive phalanx of war.

Dr. Robert J. Watson also deals with the Joint Chiefs of Staff while Paul H. Nitze considers the roles of the past seven presidents.

General Goodpaster concludes the volume optimistically with an eye toward a second thirty years, which may hold even greater opportunity and promise than the first. I can recommend this book as a commemorative yet functional addition to the reading lists at the staff and war colleges as well as to the libraries of all students of the U.S. military.

Major Theodore M. Kluz, USAF  
*Air University Review*

"We obviously, constantly assess the quality of our own nuclear weapon systems as times change, as technological advances are made, and as a change takes place in the Soviet Union's arsenal. We keep our weapons up to date; we improve our communications and command and information systems, but we will maintain, basically, a deterrent policy rather than to change the policy itself."

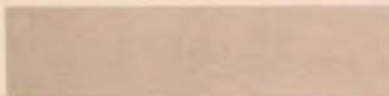
President Jimmy Carter  
30 November 1978



# **R** the contributors

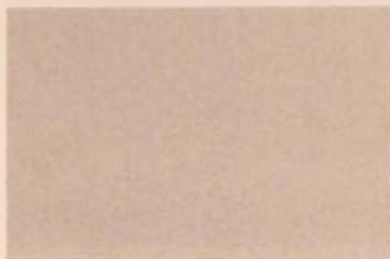


Donald M. Snow (B.A., M.A., University of Colorado; Ph.D., Indiana University) is Associate Professor of Political Science and Director of International Studies, University of Alabama, Tuscaloosa. Dr. Snow is the author of *The Shadow of the Mushroom-Shaped Cloud: Basic Ideas and Problems of Nuclear Deterrence* and *Introduction to Game Theory*, both published by the Consortium for International Studies Education.



Colonel William J. Taylor, Jr., USA, (B.A., University of Maryland; M.A., Ph.D., American University) is Professor of Social Sciences

and Director of the Debate Council and Forum at the United States Military Academy, West Point, New York. His service has been with reconnaissance, tank, and rifle battalions in Germany, Korea, and Vietnam. He has been an assistant professor of Middle Eastern Studies, West Point; Visiting Academy Professor to the National War College; Instructor, International Law and History of Modern Europe and America; and Associate Professor and teacher, National Security Seminar, 1970-74, 1976-77. Colonel Taylor is the author or co-author of many publications and policy papers.



Lieutenant Colonel John J. Kohout III (USAFA; Diplome de l'Institut, Institut d'Études Politiques, Paris), prior to his recent assignment to Hq USAF, was USAF Research Associate, Institute of War and Peace Studies, Columbia University. He was Chief, Mission Development Branch, 42d Bomb Wing, Loring AFB, Maine, and has flown B-52s, C- and EC-47s, and T-29s. Selected an Olmsted Scholar in 1985, he subsequently served at Clark AB, Philippines, and Tan Son Nhut AB, Republic of Vietnam. Colonel Kohout taught at the USAF Academy, serving as chairman of French courses and executive officer of the Department of Foreign Languages and liaison officer at the French Air Force Academy. He is a graduate of the Armed Forces Staff College.



Major Felix F. Moran III (B.S., Washington State University; M.A., California State University, Sacramento) was an instructor pilot for C-5s at Dover AFB, Delaware, prior to his present assignment at Air Command and Staff College as a student. Most of his Air Force career has been in flying C-141s, with assignments at Laredo AFB, Texas, for pilot training, Robins AFB, Georgia, Norton AFB, California, and in Thailand; he also served with Security Police at Griffiss AFB, New York. Major Moran is a graduate of Squadron Officer School.



Jill E. Heuer (B.A., M.A., Northwestern University) is an analyst in the Foreign Technology Division, Wright-Patterson Air Force Base, Ohio, where she previously served as a translator of Russian. She is currently completing a major study on Soviet manpower to be published this year. She has studied and traveled in the Soviet Union with the Foreign Study League and formerly worked with the Central Intelligence Agency, Washington, D.C.



Major General Irving B. Holley, Jr., USAFR, (Ph.D., Yale University) has taught in the Duke University Department of History since 1947. He is a visiting professor at the National Defense University, and serves as mobilization assistant to the Commander, Air University (ATC). After serving in the Army Air Forces during World War II, he taught for two years at the Industrial College of the Armed Forces. He has also been Visiting Professor in the Department of History at the U.S. Military Academy, 1974-75. Professor Holley is a member of the advisory boards of *Aerospace Historian*, *South Atlantic Quarterly*, and *Air University Review*; a trustee of the American Military Institute; a member of the NASA advisory committee on history; and chairman of the advisory committee on history to the Secretary of the Air Force. His published works include *Ideas and Weapons*, a study of doctrine, and *Buying Aircraft: Air Materiel Procurement for the Army Air Forces*.



Herman S. Wolk (M.A., American International College) is Chief, General Histories Branch, Office of Air Force History, Headquarters USAF. Formerly a historian at Headquarters Strategic Air Command, in 1974-75 he was a member of the Office of the Secretary of Defense Special Project on the History of the Strategic Arms Competition. He has published many articles and essays on military history and is a contributing author to *Evolution of the American Military Establishment since World War II* (George C. Marshall Research Foundation). Mr. Wolk is a Fellow of the Inter-University Seminar on Armed Forces and Society.



Mark N. Katz (M.A., Johns Hopkins University School of Advanced International Studies) is a graduate fellow in defense policy and arms control at the Massachusetts Institute of Technology. He has held positions with the Department of State, the Arms Control Association, and, most recently, the Department of the Treasury. His article "How Should the U.S. Respond to the Spread of Soviet Influence in the Third World?" appeared in *Air Force Magazine* (August 1978).



The Air University Review Awards Committee has selected "Who Are Those Guys?" by Donald L. Clark, Assistant to the President and a lecturer in political science at Montana State University, Bozeman, as the outstanding article in the May-June 1979 issue of the Review.

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# AIR UNIVERSITY **review**

SEPTEMBER-OCTOBER 1979



*On War, Time, and the  
Principle of Substitution*