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# NUCLEAR FREEZE?

by

COLIN S. GRAY

The idea of a nuclear freeze—more specifically, an immediate freeze—is thoroughly undesirable and should be resisted strongly. It is so easy to demonstrate the strategic folly of an immediate freeze that one is inclined to overlook the fact that the nuclear freeze movement is not really advancing strategic arguments but is, instead, talking politically, ethically, and emotionally. Much of the counterargument to the freeze-now proposal simply misses its target when it attempts to explain how the system of nuclear deterrence would be destabilized by an immediate freeze.

There are many freeze proposals in circulation, as there are freeze proponents with diverse perspectives.<sup>1</sup> By far the largest and most vocal segment of the movement, however, that which supports an immediate freeze, clearly serves Soviet strategic interests, in that such a freeze would threaten the ability of the US government to provide the strategic force posture necessary to maintain a strong and stable deterrent to war. Further, to the extent that a freeze would threaten the capability of the United States to support strategic arms programs, it would also threaten the nation's capability to design and adhere to strategically sensible arms control positions. On the other hand, the inhibitions that a freeze would place on Soviet programs are far less significant because it is the US land-based missiles and air-breathing vehicles that require modernization today if they are to achieve the desirable degree of survivability. In fact, the freeze movement itself impedes only the US side of the nuclear arms balance; there are no unofficial mass rallies in the Soviet Union,

because that nation's government has effectively suppressed grass roots peace movements.

The nuclear peace movement in the West, of which the freeze-now phenomenon is but one manifestation, has proved to be perilously and irresponsibly indifferent to the ways of Soviet life. At the same time, however, that so-called "peace movement" (as if anyone favored nuclear war) has been encouraged to some indeterminate degree by KGB money and organizational talent<sup>2</sup>—although, it should be added, careful investigation by the FBI and the CIA reportedly has failed to turn up evidence of Soviet success in directing, managing, or even manipulating the freeze movement.<sup>3</sup> Since the time of its birth as a state, the Soviet Union has sought to weaken its foreign enemies by encouraging their citizens to listen to their most humane and decent instincts and oppose military preparedness (Western preparedness, that is). If a deed is worth a thousand words, Comrade Andropov, in his repression of domestic Soviet "peaceniks," has shown beyond question what his attitude is towards the "peace movement" at home. In the Soviet catechism of realpolitik, the greater the relative military strength of the Soviet Union, as leader of the Socialist Commonwealth, the greater are the "peace forces."

Nuclear protest, then, can function only in the West. For reasons of political prudence, however, the Reagan Administration has declined to confront the nuclear freeze movement in a very forthright manner. It is not yet clear whether the movement will have a discernible effect on

the quantity and quality of US nuclear defenses, but too many protestors are pursuing a dubious ethic of absolute ends rather than an ethic of consequences and therefore should be prepared to acknowledge some responsibility for undesirable consequences. That only one side in the arms competition is subject to politically significant dissent is not conducive to a workable system of mutual deterrence.<sup>4</sup>

Assertions to the effect that nuclear protest in the United States could weaken the deterrent tend, of course, not to impress the protestors. Major reasons why proponents and opponents of the freeze-now idea talk past each other are that they do not agree on the current state of the East-West nuclear balance, and they have dramatically divergent concepts of deterrence.<sup>5</sup> To the extent that the advocates of freeze-now have thought about questions of military balance (and some certainly have), they assure us—with supporting quotations from distinguished experts—that “rough equivalence” is the contemporary state of play. So, they ask, why not freeze now? If pressed in debate, they tend to retreat to the assertion that this or that detail does not matter because there is stability in deterrence so long as both sides can produce “Apocalypse Now.” This is not to suggest, of course, that proponents of an immediate nuclear freeze are all devotees of a simple city-threatening theory of deterrence.

The freeze-now argument, then, is a difficult one to corral and bring to detailed account. Even if one can demonstrate how current imbalances would be perpetuated or aggravated by a freeze, one still has to deal with the claim that those imbalances do not really matter because the United States can, in any event, blow up Soviet cities.

**T**he nuclear freeze movement, aside from having become fashionable, feeds primarily on the fear of nuclear war.<sup>6</sup> Fear can be a survival aid—it can stimulate a body to take extraordinary steps to avoid or escape from danger. Unfortunately, fear also can paralyze. Fear of nuclear war is understandable, even healthy, but the fear that

prompts the freeze movement gives indication of missing links between emotion, reason, and action. The central intellectual fallacy in the nuclear freeze movement is that there is no plausible, let alone demonstrable, connection between freezing nuclear weapon systems now and reducing the risk of war.

A typical nuclear freeze advocate would appear to be doing two things: first, making a personal moral statement to the effect that nuclear weapons are “bad,” and, second, putting political pressure on the US government to “do something” about the risk of war by halting the modernization of its strategic forces.

Underlying the nuclear protest movement is the belief that the danger of war lies more in the increasing number of nuclear arms than in the misbehavior of governments. This is a fallacy of long standing. That the nuclear arms race would cause a Third World War is no more credible than the proposition that the arms race of the first decade of this century caused the First World War. States compete in armaments because they have political enemies abroad and they believe that they might have to fight them.<sup>7</sup> This is no less true for its being so devastatingly obvious.

There is every reason to believe that President Reagan’s strongly anti-Soviet foreign policy is popular among American voters. What is not so popular is the spectre of nuclear war—a spectre that would seem to

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loom larger in the context of a foreign policy that is willing to confront Soviet misbehavior. It is quite plausible, however, that Mr. Reagan has actually reduced the risk of nuclear war, by pursuing a foreign policy that is more comprehensible to friends and enemies alike than that pursued by Mr. Carter.

An important reason why the Reagan Administration has had such difficulty countering freeze rhetoric is that the country as a whole does not understand the trend in deterrence thinking that has emerged over the past several decades. The general public and even many opinion leaders appear to have an understanding of nuclear planning that would be more appropriate to 1950 than to 1983.<sup>8</sup> The so-called "war-fighting" theory of deterrence—which to some extent has been endorsed by the Reagan Administration, as it was by the Carter Administration in PD-59—sees very limited utility in threatening to blow away Soviet cities, and no utility at all in actually doing so. For reasons of prudence and credibility, the US government must view nuclear weapons as *weapons* for deterrence, not as instruments of a God of Wrath guaranteed to produce Armageddon. It is difficult to explain why the United States needs an MX ICBM, three varieties of nuclear-armed strategic cruise missiles, the Trident D-5 SLBM, the B-1B manned bomber, and survivable command, control, and communications—if the only mission for the strategic nuclear forces is to be able to flatten two or three hundred Soviet cities when the lanyard is tugged.

The freeze-now movement tends to have a fundamentally different view from that of the Reagan Administration with regard to what is and what is not an adequate nuclear deterrent.<sup>9</sup> Further, when one side is far less worried by Soviet intentions and capabilities than by the potential of the nuclear arms race itself to produce armed conflict, it is difficult to conduct a debate on the subject, as opposed to two monologues. Of course, it is only fair to point also to the difficulty that some freeze proponents have in communicating with people who give the appearance of being indifferent to "the dangers

of the arms race." The truth of the matter is that most experts on East-West strategic relations are genuinely concerned about the pace and character of the arms competition as well as Soviet intentions, but the freeze, as an issue, tends unhelpfully to oversimplify and polarize debate.

Public debate about the merits and demerits of freezing now is more theater than it is analysis. Exactly how and why arms races should lead to war remain mysteries. I have been a student of arms races for many years and remain unconvinced that arms races *cause* wars.<sup>10</sup> Over the years, a plausible argument—that an arms competition aggravates political relations already strained in some basic respects—has been pushed to the point at which it has become a poor argument, with assertions that *the arms race* is the danger.

It must also be recognized that politicians often confront a choice of evils. Even if it were true to state that there is grave danger in the nuclear arms race, the question remains, would there be less, or more, danger if the United States declined to compete? The Reagan Administration is not seeking to minimize the danger of the arms race; rather, it is saying that there is strategic instability today because of another danger—a strategic imbalance in the Soviets' favor—and the United States must compete vigorously over the years to come if that imbalance is to be corrected.

Those who delve into the scholarly bog of the causes-of-war literature discover that there are no true experts on the subject.<sup>11</sup> Wars have multiple, indeed redundant, causes, and no theory has been developed, to date, that can produce plausible order out of the chaos of history in that regard. Freeze-now advocates want to halt the arms race and curtail the development of new technology, but—if history is any guide—it can be shown that some wars might not have come to pass had status-quo powers (those favoring the peace then in existence) competed more vigorously in an arms race with which they were confronted. Further, it can be argued that the curtailing of technology in general is a poor idea, is not really enforceable, and is

most unlikely to increase security. Given that the United States and the Soviet Union are locked in a long-term competition for relative influence (really, as Edward Luttwak has argued, "the Superpowers are in the protection business"<sup>12</sup>) and that high technology, and particularly the mass production of high technology, is the American long suit, then sweeping arms-control prohibitions on technological development are very likely to function to the disadvantage of the West.

One cannot, on the basis of the record to date, have great confidence in the ability of US policymakers to predict accurately the technological requirements for strategic stability in the future. A weapon technology that is forbidden or severely disciplined by treaty today could turn out to be the very technology that would prove invaluable tomorrow.

Who could be trusted to select the "right" technologies to limit or proscribe? Indeed, arms control treaties are designed for so many reasons that have nothing to do with prudent strategic planning (at least in the West) that Western governments would find it extremely difficult to choose wisely what to forbid and what to leave unfettered.<sup>13</sup> This is not a complaint against democracy, it is simply a recognition of reality. A government would be hard-pressed to know what technology can be limited today without endangering the future.

**I**f it is true, as claimed, that the freeze-now movement wants above all else to reduce the risk of war, it has chosen the wrong set of targets. The Kennedy-Hatfield Freeze Resolution of 10 March 1982 stated fallacy as fact. It alleged in its preamble that "the nuclear arms race is dangerously increasing the risk of a holocaust."<sup>14</sup> And it went on to assert that "a freeze followed by reductions in nuclear warheads, missiles, and other delivery systems is needed to . . . reduce the risk of war."<sup>15</sup> These claims are either wrong or, to be generous, have yet to be demonstrated to be facts. In other words, the very basis of the freeze-now idea may be fallacious.

As an idea, a nuclear weapons freeze is neither good nor bad; what matters are the details of timing, coverage, verification, and sanctions in the event of noncompliance.<sup>16</sup> For example, a nuclear freeze in a period of clear American strategic superiority would be beneficial for stability. The cause of peace and security is advanced if a democracy interested in preserving the status quo has a major military lead over a totalitarian rival not sharing that interest. And one should not apologize for referring to strategic superiority—the Soviet General Staff knows what it means and what can and cannot be done with it, even if American politicians do not.<sup>17</sup>

The Reagan Administration is correct in its claim that the Soviet Union has achieved a strategic nuclear advantage over the United States. Moscow has not, however, achieved the kind of superiority that somewhat casual official American characterizations occasionally seem to imply. The Soviet Union today is a long way from a condition of *strategic superiority*—that is, possessed of the ability to achieve political ends by the use, or threat of use, of military means at bearable cost. One should be skeptical of the political or military value of marginal advantages in the nuclear age, but the true story of the strategic balance today is not really one of only marginal advantage. The vulnerability of US land-based ICBMs and C<sup>3</sup>I assets, and the doubtful survivability and penetration capability of the B-52 force, comprise, in some scenarios (admittedly not all), a very useful strategic advantage for the Soviet Union.

It must be admitted that the quality of the current nuclear policy debate has been degraded by people who oppose, as well as by those who favor, freezing nuclear weapon stockpiles. The Reagan Administration has encouraged the view that it is important that the nuclear arsenals be markedly reduced in size, a view unmistakably expressed in the initial US START position in 1982.<sup>18</sup> This view, which is astrategic, virtually endorses the mindless focus on weapons that flaws the nuclear protest movement. Since there has to be a nuclear deterrence system, security lies

probably not in the realm of small and simply structured nuclear forces, but in large and diverse nuclear forces. Sizable reductions in nuclear systems could be either dangerous or of little consequence—certainly they would do nothing to reduce the risk of war.<sup>19</sup> Assertions by the Administration that major cuts in nuclear forces are important for peace are as implausible on strategic and technical grounds as are the similar claims made by freeze-now proponents.

If one argues as a politician and not as a strategist, then one may find some value in cutting strategic nuclear force levels. Such a cut, no matter how modest, can be retailed as “a step in the right direction” to those people who believe that, in all matters concerning nuclear weapons, fewer is necessarily better.

But if strategic stability is the goal, then one must be concerned with ensuring that US weapons pose the type of threat to the Soviet Union that Soviet leaders most fear, and pose problems for Soviet war planners that are incapable of solution.<sup>20</sup>

**B**efore summarizing the arguments for and against an immediate freeze of nuclear weapons, it may be helpful for readers to be reminded of those matters on which there is no genuine debate, even though there often appears to be evidence to the contrary. Both sides of the controversy generally are sincere in their desire to reduce the risk of war.

- There is no debate about nuclear war itself—there is general agreement that it would be a catastrophe and a tragedy.

- There is no debate (save among some theologians and naive idealists) about the necessity for nuclear strategy. Since nuclear weapons cannot be disinvented, there must be a strategy for their threatened employment. In other words, there is general agreement on the necessity of nuclear deterrence and, *ipso facto*, on the need for the United States to have a credible plan for the strategic use of nuclear weapons.<sup>21</sup>

- There is no debate about the need to achieve peace with security at the lowest prudent cost. (Given the relatively modest expense of nuclear forces in contrast with that of nonnuclear forces, and given the vital roles

of nuclear forces in US strategy, the last place the United States should choose to assume risks in its defense preparations is with respect to strategic nuclear forces.)

- There is no genuine debate about the need for a US plan for the controlled, limited employment of nuclear weapons. Could anybody favor planning only for a spasm of uncontrolled, unlimited nuclear weapons' use?<sup>22</sup>

- There is no debate, of merit, over the issue of the difficulty of controlling a nuclear war. It is my contention that policymakers have no prudent choice other than to strive for the capability to control nuclear use, notwithstanding the force of the arguments advanced, for example, by Desmond Ball and John Steinbruner.<sup>23</sup>

- Also, there is no debate of substance over the necessity for planning to win, or prevail in, a nuclear war. Could a planning staff be instructed to plan for stalemate or defeat? The idea is absurd.

The idea of an immediate nuclear freeze is one of the least promising arms control ideas advanced over the past 20 years. Nonetheless, many Americans—probably a majority, provided the question is phrased appropriately—appear to disagree with that assessment. And freeze sentiment is politically important, perhaps as much for the Soviet anticipation that it generates with regard to the softness it may encourage in Western policy as for any actual effect that it might have on policy.

What is the case for freezing now? Briefly, proponents claim:<sup>24</sup>

- The freeze movement puts pressure on the Reagan Administration to achieve progress in arms control.

- The freeze movement signals that there is a large US constituency that approves of progress to halt the nuclear arms race.

- A freeze would buy time for negotiations, so that attempts to limit and reduce weapons are not outrun by new military technologies.

- A freeze would preclude deployment of new weapons, such as cruise missiles, that would make verification of arms control agreements very difficult (if not impossible).

- A freeze would “head off at the

pass" destabilizing new counterforce weapons—such as the MX and the Trident D-5.

- A freeze would help stabilize deterrence and hence strengthen US security, because it would halt many aspects of the arms competition at the point of nuclear parity.

- A freeze would preclude testing and deployment of "destabilizing" new weapons which, through their threat to shift the balance of military power, could lead to arms race instability and crisis.

- A freeze would prevent further production of Soviet nuclear weapons that would threaten the United States and its allies.

- A freeze would save tens of billions of dollars that could be devoted to meeting social needs or strengthening conventional defenses.

The principal arguments against the freeze are as follows:

- A freeze of existing nuclear forces would lock the United States into a position of military disadvantage and vulnerability. (It would freeze solutions, but not problems.)

- A freeze would not reduce the risk of war, because the arms race reflects rather than causes political hostility.

- A freeze would weaken US security and increase the risk of war by preventing deployment of new US weapons (MX, Trident D-5, ALCM, SLCM, B-1B) that are needed to support the strategy derived from the chosen theory of deterrence.

- A freeze would halt US weapon programs without halting Soviet counter-measures. The US bomber force would be frozen, but Soviet air defenses would not; US sea-based deterrent forces would be frozen, but Soviet antisubmarine warfare programs would not; and so forth.

- A freeze would undercut fatally US bargaining leverage in the INF negotiations and START. It would eliminate the new programs that are needed if concessions are to be extracted from the Soviet Union.

- A freeze negotiation with the Soviet Union would be extremely complex and would almost certainly fail because it would attempt to accomplish too much.

- A freeze could not be verified adequately, given the negotiable range of verification measures and the proclivity of the Soviet Union to lie and cheat.

- A freeze would undermine the US role as principal security guarantor in NATO.

There are some weaknesses in the arguments of both sides, but on balance it would be difficult to invent an arms control idea less likely to accomplish its stated purposes than the freeze. Still, the political strength of an idea often bears little relation to its inherent merit. Freeze-now is a dangerous idea for the following reasons: It appeals to an uninformed but seemingly commonsense view of the world that "halting the arms race" somehow reduces the risk of war. It tempts the government to seek to outbid the protest movement by seizing the moral high ground of the rhetoric for disarmament, and then may require the government to have to provide some real-world evidence of its claimed devotion to peace—even though the entire debate has little to do with the needs of stable deterrence. And it tempts politicians to ride the coattails of the idea, even though freeze-now is at best not relevant to US security problems.

There is only one way for US policymakers to answer the freeze-now movement: Tell the truth about US nuclear strategy and about the concept of deterrence that directs the design of that strategy and the selection of particular weapons.<sup>25</sup> The government invites political trouble over an MX ICBM, or over civil defense, if it does not explain to the people—in clear, basic language—why those particular programs are needed in order to produce the necessary deterrent effect in Soviet minds. If the public listens, does not like the government's policy, and decides it prefers to freeze now, then so be it—that is the risk that attends a free market in ideas.

#### NOTES

1. For a useful introduction to a range of pro-freeze and freeze-related arguments, see Randall Forsberg, "A Bilateral Nuclear-Weapon Freeze," *Scientific American*, 247

(November 1982), 52-61; *Congressional Record*, Vol. 128, No. 106 (5 August 1982), pp. H5224-H5264, and No. 106, Part II, p. H45277-H5360; Edward M. Kennedy and Mark O. Hatfield, *Freeze! How You Can Help Prevent Nuclear War* (New York: Bantam, 1982); and Daniel Ford, Henry Kendall, and Steven Nadis, *Beyond the Freeze: The Road to Nuclear Sanity* (Boston: Beacon Press [for the Union of Concerned Scientists], 1982).

2. This is not to suggest that the freeze movement was created, or has been sustained, by the KGB. On Soviet interest in nuclear protest in the West, see Vladimir Bukovsky, "The Peace Movement and the Soviet Union," *Commentary*, 74 (May 1982), 25-41.

3. See Judith Miller, "U.S. Nuclear Protests Found to be Affected Very Little by Soviet," *The New York Times*, 10 December 1982, pp. A1, A15.

4. One of the more irresponsible commentators on nuclear policy, Jonathan Schell, acknowledges this disparity but dismisses its significance. See *The Fate of the Earth* (New York: Knopf, 1982), pp. 229-30. Schell's irresponsibility lies in his willingness to abandon a system of security that rests in part on nuclear deterrence, which works (albeit not without risk), in favor of some heroically vague concept of a global political community. For an appropriate critique of Schell, see Michael Kinsley, "Nuclear Holocaust in Perspective," *Harper's*, 264 (May 1982), 8-11.

5. For a full explanation of this point, see my study *Nuclear Strategy: The Range of Choice*, Information Series No. 103 (Fairfax, Va.: National Institute for Public Policy, December 1982).

6. Jonathan Schell has written that fear, "having dictated the foundation of the system . . . would stand guard over it forever after, guaranteeing that the species did not slide back toward anarchy and doom." (*The Fate of the Earth*, p. 222). Schell's writing, of course, far transcends the objectives of the freeze. On fear and human behavior, see Michael Mandelbaum, *The Nuclear Revolution: International Politics before and after Hiroshima* (New York: Cambridge Univ. Press, 1981), chap. 8.

7. An arms competition cannot be understood outside its distinctive political, economic, social, and cultural setting. For an admirable example of the kind of historical depth necessary for such understanding, see Paul Kennedy, *The Rise of the Anglo-German Antagonism, 1860-1914* (London: Allen and Unwin, 1980).

8. On the evolution of US nuclear strategy, see Aaron L. Friedberg, "A History of the U.S. Strategic 'Doctrine'—1945 to 1980," *The Journal of Strategic Studies*, 3 (December 1980), 37-71; Henry S. Rowen, "The Evolution of Strategic Nuclear Doctrine," in *Strategic Thought in the Nuclear Age*, ed. Laurence Martin (Baltimore, Md.: The Johns Hopkins Univ. Press, 1979), pp. 131-56; and Desmond Ball, "U.S. Strategic Forces: How Would They Be Used?" *International Security*, 7 (Winter 1982-83), 31-59.

9. See Gray, *Nuclear Strategy: The Range of Choice*.

10. See Colin S. Gray, "The Arms Race Phenomenon," *World Politics*, 24 (October 1971), 39-79; and Mandelbaum, *The Nuclear Revolution*, chaps. 4-5.

11. Geoffrey Blainey, *The Causes of War* (New York: Free Press, 1973), is readable and no less, or more, plausible than other texts on the subject. A less readable text that has some merit is Keith L. Nelson and Spencer C. Olin, Jr., *Why War? Ideology, Theory, and History* (Berkeley, Calif.: Univ. of California Press, 1979).

12. "On the Meaning of Victory," *Washington Quarterly*, 5 (Autumn 1982), 18.

13. It has long been an article of faith among American policymakers that strategic forces must be survivable. This

canonical belief sits oddly with an ABM Treaty that effectively precludes the active defense of retaliatory forces—and in the context of negotiated controls on strategic offensive arms which limit rigidly the number of targets, or aim points, but permit dramatic increases in the number of warheads pertinent to the hard-target counterforce mission.

14. Kennedy and Hatfield, *Freeze!*, p. 169.

15. *Ibid.*

16. The Soviet record of disdain for the fine print, not to mention the spirit, of arms control treaties, is as plain as the Western record of supine acquiescence in the face of such misbehavior. This author is a little tired of technical discussion of the verifiability of arms control agreements; I would like to hear some political argument concerning what the United States should do when noncompliance is discovered. For fear of imperiling East-West political relations in general, the US government tends to permit itself, de facto, to be coopted by the Soviet Union as a partner in its illegal behavior. The United States has allowed itself to become captive to the arms control process. See David S. Sullivan, *The Bitter Fruit of SALT: A Record of Soviet Duplicity* (Houston: Texas Policy Institute, 1981).

17. Useful recent discussions include John Erickson, "The Soviet View of Deterrence: A General Survey," *Survival*, 24 (November-December 1982), 242-51; "A Garthoff-Pipes Debate on Soviet Strategic Doctrine," *Strategic Review*, 10 (Fall 1982), 36-63; Keith B. Payne, *Nuclear Deterrence in U.S.-Soviet Relations* (Boulder, Colo.: Westview, 1982), particularly chaps. 6 and 7; and John J. Dziak, *Soviet Perceptions of Military Power: The Interaction of Theory and Practice* (New York: Crane Russak [for the National Strategy Information Center], 1981). A good selection of representative Soviet texts, drawn from 1917 to the present, is Harriet Fast Scott and William F. Scott, eds., *The Soviet Art of War: Doctrine, Strategy, and Tactics* (Boulder, Colo.: Westview, 1982).

18. For the US START position in 1982, see "Text of President Reagan's Address on Nuclear Policy and East-West Ties," *The New York Times*, 10 May 1982, p. A14.

19. See Colin S. Gray and Keith B. Payne, *SALT: Deep Force Level Reductions*, H1-3195-RR, Final Report (Croton-on-Hudson, N. Y.: Hudson Institute, March 1981), Part I; and Richard Burt, "Arms Control and Soviet Strategic Forces: The Risk of Asking SALT To Do Too Much," *The Washington Review*, 1 (January 1978), 18-33.

20. See Benjamin S. Lambeth, "Uncertainties for the Soviet War Planner," *International Security*, 7 (Winter 1982-83), 139-66.

21. See Colin S. Gray, "Nuclear Strategy: A Regrettable Necessity," *SAIS Review*, 3 (Winter-Spring 1983), 13-28.

22. There is no shortage of critics of the proposition that the United States should plan for limited nuclear use. For example, see Ian Clark, *Limited Nuclear War* (Princeton, N.J.: Princeton Univ. Press, 1982).

23. Desmond Ball, "Can Nuclear War Be Controlled?" Adelphi Paper, No. 169 (London: International Institute for Strategic Studies, Autumn 1981); and John Steinbruner, "Nuclear Decapitation," *Foreign Policy*, No. 45 (Winter 1981-82), pp. 16-28.

24. I am grateful to Barry Schneider of the National Institute for Public Policy for his exhaustive research in the pro- and anti-freeze literature. (He shares no responsibility for the opinions expressed in the text.)

25. I have developed this point in considerable detail in "Dangerous to Your Health: The Debate Over Nuclear Strategy and War," *Orbis*, 26 (Summer 1982), 327-49.