



**Keith B. Payne**

## Action–Reaction Metaphysics and Negligence

On May 1 of this year, President George W. Bush called for a new strategic framework, one allowing the United States “to build missile defenses to counter the different threats of today’s world” and encouraging “further cuts in nuclear weapons.”<sup>1</sup> The president’s initiative signals Washington’s first truly significant departure from its Cold War strategic policy.

Despite dramatic changes in the international system, for eight years the United States has perpetuated the main themes of U.S. Cold War strategic policy. It embraced the Anti-Ballistic Missile (ABM) Treaty, and thereby the 1960s’ deterrence concept of mutually assured destruction (MAD), as the basis for U.S.–Russian strategic relations and arms control negotiations. Correspondingly, the United States perpetuated the legalistic, adversarial strategic arms control process that characterized the Cold War. When the central organizing principle of negotiations is to keep mutual capabilities for nuclear annihilation codified, prospects for political amity are limited. This process was incompatible with the new realities of the post–Cold War landscape, precluding any significant, new strategic arms agreement during the Clinton administration.

As described, the new strategic framework will include the possibility of U.S. unilateral nuclear reductions, in conjunction with the deployment of ballistic missile defenses (BMD). The president’s readiness to leave behind Cold War deterrence concepts and arms control processes is clear.

Obviously discarded, for example, is the belief that has been at the heart of U.S. Cold War arms control policy since the 1960s: that strategic missile defense must undermine deterrence stability and preclude nuclear arms re-

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109



ductions. As several critics of U.S. missile defense have rightly noted, “The SALT I and II negotiations were premised on the assumption that limitations on strategic offensive forces would not be possible without extensive constraints on strategic defenses.”<sup>2</sup> Bush’s call for both nuclear force reductions and missile defense deployment poses a direct challenge to this foundation of Cold War thinking.

**The supposed historical proof of the ‘inevitable’ superiority of the offense is nonsense.**

Much of the arms control establishment was in high dudgeon following the president’s speech. Great resentment greeted his challenge to Cold War–vintage sacred cows and conceptual shibboleths. Missile defense opponents again repeated the SALT I–era assertion that U.S. BMD deployment can only lead challengers to add to their offensive ballistic missile capabilities, thereby overshadowing U.S. defenses and leaving the United States more threatened than it was prior to

building the defense. The bottom line of this 1960s-era argument, of course, is that the United States should not start this “action–reaction” process by deploying national missile defenses. As Yogi Berra said, “It’s like déjà vu all over again.”

The supposed certainty of an action–reaction cycle in response to U.S. missile defense has been so popularized during the previous decades that the charge is asserted gravely as if gospel with every new BMD debate. The only change in today’s version of this prediction from its 1960s roots is that Russia is no longer identified as the only potential challenger sure to respond to U.S. defenses with an offensive missile buildup. China, North Korea, and others are now similarly certain to be driven to an unbeatable offensive reaction.

For example, a former senior official in the Clinton administration warned recently that, although the United States cannot perfect missile defense technology, “[e]ven if it were possible, the program would motivate a response from adversaries that would inevitably offset the defense.”<sup>3</sup> A recent commentary in the normally staid *Business Week* confidently predicted that, in response to U.S. missile defense, “China ... is bound to expand its arsenal. It certainly won’t stand by and let its small retaliatory capability be blunted by our defense system.”<sup>4</sup> A joint publication by the Federation of American Scientists, the Natural Resource Defense Council, and the Union of Concerned Scientists similarly asserts that U.S. missile defense “will almost certainly spur China to compensate by building more missiles, both to overwhelm the defense and to make this capability evident to the United States.”<sup>5</sup> Now, even North Korea will surely follow this action–reaction cycle: “North Korea can



be expected to step up the development and production of long-range ICBMs, inevitably with multiple warheads.”<sup>6</sup> Worse yet, according to a former U.S. State Department official, “With China increasing its missiles, India and Japan, and then Pakistan, would follow suit, inciting a worldwide arms race.”<sup>7</sup> Such confident predictions understandably scare those who believe they reflect more than just hackneyed speculation.

### Debunking the Myth

What should one think of this mechanistic prediction that U.S. BMD deployment will cause potential foes to add to their offensive missile arsenals that, in turn, will increase the missile threat to the United States and instigate a “worldwide arms race”? Its strength is its elegance. The logic could not be simpler: if we build defenses, opponents will not accept a diminution in their capability to threaten the United States with ballistic missiles. They will react by building more offensive missiles, thereby restoring their threat. Everyone understands this model of the arms race. In fact, so widespread is the belief in its predictive power that some refer to the action–reaction arms race cycle as the “first law of nuclear politics.”<sup>8</sup> For decades it has been employed as such a primary rule by opponents of missile defense.

The political nature of that use is often reflected in its inconsistency. The danger of missile defenses instigating an action–reaction arms race, if real, should apply as much to defenses against tactical- and theater-range missiles as to defenses against long-range missiles. Yet, its proponents typically level the charge nearly exclusively against the latter. Indeed, some frequently call for theater missile defenses as the “first priority” alternative to defenses against long-range missiles. In this case, when defenses against shorter-range offensive missiles are couched as the preferred alternative to strategic defenses, the great concern about instigating an action–reaction arms race curiously disappears.

As a political polemic, the argument that strategic missile defense will cause an arms race has an enormous advantage: for any specific future case, no one can demonstrate in a scientific sense that the contention is total nonsense. It deals with predictions of an opponent’s behavior. Thus, no one can “prove” that U.S. defenses will not initiate an action–reaction cycle. The prospects for such a cycle may be quite limited for a host of reasons, and those who continue to assert that U.S. defenses surely will lead to an arms race are likewise limited in their capacity to predict the future. These facts, however, typically do not reduce the absolute certainty with which many opposed to missile defense predict an arms race. They are, after all, simply restating what by now is a well-known “law” of international relations.



The elegance of the action–reaction arms race model and its constant repetition apparently overshadow the fact that, as a basis for actually predicting opponents’ behavior, it is highly speculative at best. The notion that it represents a “law” of international relations would be laughable if the subject were not serious. The use of this model for years against missile defense is evidence of the unfortunate fact that, if a vapid assertion is made loudly, often, and by

influential voices, it can become accepted wisdom, even a “law.” Mistakenly believing that a crude action–reaction model of the arms race is a “law” guarantees misplaced confidence in predictions based on it.

**Soviet missile capabilities increased by orders of magnitude following the ABM Treaty.**

MIT professor George Rathjens, an early “discoverer” of the action–reaction arms race model as applied to U.S. missile defense, has long since acknowledged its significant limitations.<sup>9</sup> Unfortunately, that acknowledgement has not stilled others’ hubris in the use of that model during U.S.

missile defense debates, including the current one. For example, in a recent article aptly entitled, “Don’t Know Much about History,” Stephen Schwartz claims that the action–reaction model was reflected “at every key juncture in the Soviet–American competition.” Therefore, says Schwartz, no one should doubt that the Chinese now will “respond to a U.S. missile defense system by deploying additional weapons.”<sup>10</sup> This grave prediction, of course, is supposed to close the question.

Beyond the telltale, selective use of the action–reaction arms race charge, what is wrong with it? In principle, nothing is amiss with the observation that one can trace some decisions to deploy or to upgrade forces to an action–reaction dynamic. This type of interaction to some extent certainly appears to have shaped U.S. strategic bomber programs and Soviet air defenses during the Cold War—the strengthening of Soviet air defenses spurred the modernization of U.S. strategic bombers. The problem, however, is that numerous other factors typically drive decisions about the forces a country will—or will not—develop and deploy. The Cold War action–reaction model has been elevated to a law or maxim despite the fact that it may be only partially in play, or be wholly irrelevant, to many armament decisions. When many factors can determine decisions about force acquisition, confident predictions based on a single, possible dynamic are likely to be misleading.

Although extreme caution should accompany any prediction of an arms race based on the action–reaction model, we are constantly treated to frightening predictions of absolute certainty: China and North Korea will respond to U.S. defenses with a buildup of offensive missiles, and U.S. de-



fenses will not be capable of coping with these new offensive forces. Two very specific predictions are imbedded in this mantra, and neither is certain. First, challengers will respond in a particular fashion, in this case by adding to their offensive missile arsenals. Second, that reply will overcome U.S. missile defenses.

This latter part of the mantra is akin to Stanley Baldwin's famous dictum, "The bomber will always get through." In a recent French repudiation of U.S. missile defense goals, President Jacques Chirac took Baldwin's maxim, broadened it, and made it even more definitive: "[In the] struggle between sword and shield, there is no instance in which the shield has won."<sup>11</sup> Consequently, according to this simple logic, defense is hopeless. Foes simply will overwhelm U.S. missile defenses by adding to their offensive missile arsenals in response.

### The Historical Record

From the late 1960s to the present, the first-order response to U.S. missile defense initiatives by political opponents has been to assert this logic with confidence, pointing to all historical evidence as proof. The supposed historical proof of the "inevitable" superiority of the offense, however, is nonsense. Defensive measures have frequently, and for long stretches of history, dominated the offense. Athens's defensive walls, for example, precluded a bloody invasion by Sparta in the Peloponnesian War. The defensive walls of Constantinople provided security for nearly a thousand years. British air and naval defenses shut down the planned Nazi invasion of the British Isles, Hitler's "Operation Sea Lion." Of course, Karl von Clausewitz considered defense in general to be the stronger form of warfare. Obviously, the lethality of nuclear weapons would necessitate extremely effective defenses if comprehensive protection for cities against a large-scale ballistic missile attack by a peer challenger were the goal. Complete security, however, is not the declared U.S. goal, and whether powerful new defensive technologies, such as "exotic" beam weapons, will make this type of defense possible in the future is not known; but it hardly can be ruled out as if by some inevitable law of history. Historical evidence supports neither the assertion that offense must dominate defense nor the argument that an action–reaction arms race cycle is inevitable. In fact, predictions based on the action–reaction model have often proven to be far different from the subsequent course of events.

That model, for example, provided much of logic behind the 1972 ABM Treaty. Opponents of missile defense claimed at the time that an action–reaction arms-race dynamic "is precisely what fuels the arms race"<sup>12</sup> and that



“the action–reaction phenomenon, with the reaction often premature and/or exaggerated, has clearly been a major stimulant of the strategic arms race.”<sup>13</sup> The typical prediction, therefore, was that U.S. BMD deployment would stimulate a “new round in the arms race,” but that the limitation of BMD by the ABM Treaty would provide the basis for precluding the further buildup of Soviet offensive missiles. U.S. “inaction” with regard to missile

**The action-reaction model may be only partially in play, or wholly irrelevant.**

defense would, it was argued, lead to Soviet “inaction” vis-à-vis additional offensive missile capabilities.

The logic of the action–reaction model in this regard was elegant: if the United States built missile defenses, the Soviets would deploy unbeatable additional offensive missile capabilities in response, leaving the United States no more secure following its deployment of defenses. In contrast, if the United States forewent missile defense, the Soviets

would have no incentive to add to their offensive missile forces, and negotiated offensive limitations could go forward. BMD opponents contended that, in the absence of “destabilizing” U.S. missile defenses, the Soviets could agree to offensive missile limitations, and the action–reaction cycle would be broken.

This supposed linkage between U.S. missile defense and Soviet incentives to build new offensive capabilities, based on the action–reaction arms-race model, was clearly a primary rationale for the ABM Treaty. As Henry Kissinger stated at the time:

By setting a limit to ABM defenses, the [ABM] [T]reaty not only eliminates one area of dangerous defensive competition, but it reduces the incentive for continuing deployment of offensive systems. As long as it lasts, offensive missile forces have, in effect, a free ride to their targets.<sup>14</sup>

Subsequent developments, however, were the reverse of the BMD opponents’ confident predictions, demonstrating the fragility of the action–reaction model. In the absence of U.S. missile defense, the Soviet Union pursued the greatest buildup of strategic offensive missile capabilities in history. The number of deployed Soviet intercontinental ballistic missile (ICBM) warheads increased from 1,547 in 1972 to 6,420 in 1985, and Soviet submarine-launched ballistic missile (SLBM) warheads increased from 497 in 1972 to 2,307 in 1985.<sup>15</sup> Foregoing missile defense hardly checked the Soviet Union’s incentives to expand its missile capabilities. In fact, they increased by orders of magnitude following the signing of the ABM Treaty. As Harold Brown, President Jimmy Carter’s defense secretary, concluded in 1979,



“When we build, they build; when we stop building, they nevertheless continue to build.”<sup>16</sup>

Clearly, factors unrelated to U.S. missile defense and unaccounted for by the action–reaction model drove Soviet decisions regarding the buildup of its offensive missile capabilities powerfully. Reality dashed sanguine U.S. expectations, based fully on the action–reaction model, of Soviet offensive moderation following the ABM Treaty’s signing; the model proved hopelessly inadequate as the basis for these predictions. Indeed, according to Colonel General Nikolai Detinov, a key player in Soviet arms control policy throughout the period, the Soviet leadership never accepted U.S. logic in this regard. Rather, Washington’s proposal for an ABM treaty came as a “pleasant surprise” because it allowed Moscow to devote resources fully to its planned buildup of ICBMs. Consequently, as William Odom concludes in his unparalleled study of the Soviet military, “Thus the ABM [T]reaty appeared to have allowed a considerably larger number of offensive nuclear weapons in the Soviet arsenal than there would have been without it.”<sup>17</sup> The ABM Treaty actually facilitated the Soviet ICBM buildup. This outcome, of course, was the reverse of what BMD opponents had predicted with such confidence.

Nevertheless, when President Ronald Reagan set in motion the next great missile defense debate with his 1983 Strategic Defense Initiative, missile defense opponents again predicted with absolute certainty the same frightening action–reaction cycle. “The Soviet Union would be certain to respond, by developing countermeasures and increasing its offensive forces to ensure that the U.S. defense could be penetrated.”<sup>18</sup> Furthermore, again, they asserted that the ABM Treaty was necessary for success in offensive force reductions by arguing that

limits on missile defenses are the necessary base for negotiated limits on offensive strategic missiles. ... The ABM Treaty is even more critical today, as the focus of negotiation shifts from limitations to reductions in strategic arms. It is clear that there will be no strategic arms reduction (START) agreement unless the ABM Treaty is maintained, and limits on defenses will be even more essential as the United States and the Soviet Union negotiate subsequent agreements for deeper reductions.<sup>19</sup>

As four former senior officials warned at the time, “Star Wars, in sum, is a prescription not for ending or limiting the threat of nuclear weapons, but for a competition unlimited in expense, duration and danger. ... [I]t is possible to reach good agreements, or possible to insist on the Star Wars program as it stands, but wholly impossible to do both.”<sup>20</sup>

**Confident predictions based on a single, possible dynamic are likely to be misleading.**



Subsequent developments, however, again proved the inadequacy of the action–reaction model and the hubris of predictions derived from it. On October 5, 1991, in the context of a relatively robust U.S. missile defense program and congressional endorsement of BMD deployment in the Missile Defense Act of 1991, Soviet president Mikhail Gorbachev announced, “We are ready to discuss U.S. proposals on nonnuclear defensive systems. We propose to study the possibility of creating a joint system to avert nuclear missile attack with ground- and space-based elements.”<sup>21</sup> Shortly thereafter, at the June 1992 Washington summit, President Boris Yeltsin and President George Bush agreed to a START II framework for nuclear force reductions, including the elimination of ICBMs with multiple warheads; simultaneously, they agreed to work toward cooperation on global missile defenses. The subsequent Ross–Mamedov talks made surprising progress toward this goal until derailed by the Clinton administration in 1993. Most importantly for this discussion, this progress was made while Russia and the United States successfully concluded START negotiations that would, for the first time in history, lead to agreed reductions in strategic offensive forces.

### **Complexity Is Reality**

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Once again, the action–reaction model proved to be completely inadequate as a basis for prediction. Following the signing of the ABM Treaty, the promises of missile defense opponents based on the model went unrealized, and the actual course of events moved in a dramatically different direction. Reality this time brought simultaneous progress toward missile defense and offensive reductions, the reverse of what BMD opponents had starkly and confidently predicted in the late 1960s and in the 1980s. The inadequacy of the action–reaction model as employed by most BMD opponents has been increasingly manifest for decades; those who now continue to repeat confident promises derived from it appear to be engaging in strategic negligence.

Why have missile defense critics been so wrong in their predictions? In short, numerous factors drive armament decisions, and the simplistic action–reaction formulation does not account for most of them.<sup>22</sup> For example, the theory ignores such basic factors as:

- competing foreign policy goals and defense requirements,
- inter- and intraservice rivalries,
- bureaucratic politics,
- the specific character and style of political and social systems,
- electoral politics,
- resource availability or limitations,





- organizational momentum, and
- technological innovation/limitation.

Even highly personal and idiosyncratic factors can drive armament decisionmaking. Adolf Hitler, for example, canceled the V-2 program on the basis of a bad dream he had about the missile. Only the combined efforts of Albert Speer and Wernher von Braun got the program back on track.

When observers ignore these potentially significant factors in favor of a simplistic rendition of the action–reaction model, grossly inaccurate predictions likely result. Such factors, singularly and in combination, have frequently produced patterns that bear no resemblance whatsoever to the crude action–reaction model typically expressed by missile defense critics. They can lead to action–inaction, inaction–reaction, and noninteractive armament decisions.

For example, Soviet heavy-bomber capabilities did not develop in accord with the action–reaction model. Neither the significant buildup of U.S. national air defense throughout the 1950s and 1960s, nor their virtual elimination in the 1970s, drove the Soviet heavy-bomber threat in this fashion. No apparent, great Soviet strategic bomber buildup corresponded to the U.S. defensive buildup, nor did dramatic change follow U.S. elimination of its strategic air defenses. In other words, no action–reaction cycle occurred. In fact, the most obvious Soviet strategic bomber modernization programs that did occur—the Bear G, Bear H, and the Blackjack—came after the United States no longer had an appreciable strategic air defense capability.

Since the late 1990s, the United States has been on an obvious track toward some form of BMD, as numerous Russian officials have noted. Yet, Russian offensive ballistic missile capabilities are in the process of a relatively rapid drawdown, not an action–reaction buildup.

Of course, perfectly logical and understandable reasons for these deviations from a simplistic action–reaction cycle exist. In 1960, for example, Nikita Khrushchev made missiles, not bombers, the centerpiece of Soviet nuclear strategy. The Soviet Union never produced heavy strategic bombers in significant numbers; it focused instead on heavy ICBMs. More recently, the collapse of the Soviet Union and Russia’s economic difficulties have limited (but not eliminated) Moscow’s capability to deploy new offensive missile capabilities. That such factors can be significant to armament decisions is, of course, the point.

**China’s force structure decisions cannot be understood using such a crude model.**



## Cautious Predictions

Following President George W. Bush's announcement of a new strategic framework, which includes missile defense, commentators reissued dire predictions about the action–reaction arms race sure to follow. They point with supreme confidence to a crude action–reaction model as if it were a “law” of international relations, offering predictions that exclude the many other dynamics that frequently underlie armament decisions. These current predictions reflect no deeper apparent appreciation of the actual complexity of armament decisionmaking than have similar past predictions, and they are no more likely to be accurate.

Are China, North Korea, and other rogue states likely to react to U.S. missile defenses by undertaking an unbeatable offensive–defensive missile competition, as now is claimed with such certainty? Any answer, of course, is speculative, and humility should govern all efforts to anticipate future foreign decisionmaking.

Nevertheless, some basis exists for expecting that the mechanistic action–reaction model will not apply here any more than it has in celebrated cases of the past. As two prominent specialists on the Chinese military have observed, for example, no one can understand China's force structure decisions using such a crude model. “Rather, an understanding of such variables as domestic political, technological, historical, and cultural factors provide[s] far greater insight and predictive capacity about the drivers that shape China's doctrinal and force structure decisions.”<sup>23</sup> The significance of these variables, of course, is not unique to China, which is why the action–reaction arms race model is so broadly inadequate.

Notably, China has been in the process of improving its ICBM force for years, possibly since the 1970s. For more than a decade, Chinese officials have clearly intended to replace or supplement China's reported current ICBM arsenal of approximately 20 operational DF-5As with the introduction of the DF-31 and DF-41 ICBMs now in development and (in the case of the DF-31) undergoing testing.<sup>24</sup>

U.S. missile defense plans may of course affect China's ICBM improvement programs, but multiple reasons for Chinese offensive missile modernization have long been in play in the absence of U.S. defenses. These reasons apparently include the natural process of updating old systems with newer ones; the requirement for greater ICBM force survivability and flexibility; and movement toward a Chinese nuclear doctrine that calls for “limited, counterforce, war-fighting capabilities” as the basis for deterrence and coercion across a wide range of contingencies, including intrawar deterrence.<sup>25</sup> China is already well on the road toward modernization of its offensive missile force, at least in part for logical reasons ignored by the action–reaction model.



In addition, an action–reaction arms race with the United States in the high-technology realm of missiles versus BMD would seem to be unattractive to China, North Korea, or any other rogue state. These countries have other plausible areas of potential strength where competition with Washington might seem more fruitful: the willingness to absorb civilian and military losses; to accept risks; to impose draconian measures on the civilian population (as Mao put it, China’s capacity to “eat bitterness”); to stay the course in a bloody regional conflict; or, in China’s case, to put masses of population under arms.

Many commentators suggest that the U.S. development of offensive warhead technology in the 1960s helped move the Soviet Union away from its nationwide ABM aspirations for fear of an unwinnable offensive–defensive competition with the United States. China’s or North Korea’s expectations of a serious U.S. commitment to missile defense may lead them away from ICBMs as a basis for dealing with Washington. Can such an “action–inaction” cycle initiated by U.S. BMD be predicted with absolute confidence? No. Such an outcome, however, is not obviously less likely than the arms race promised anew by BMD opponents; and it may be more so. A serious effort at understanding the full panoply of factors likely to animate decisions in this regard should precede any confident predictions. Positing action–reaction as a law, of course, relieves any need for such understanding.

**H**igh-tech competition with the U.S. would seem an unlikely road for these countries.

A starting point in this examination is the fact that the U.S. annual defense budget is more than eight times larger than the annual Chinese defense budget and more than 250 times larger than the North Korean defense budget.<sup>26</sup> Meanwhile, the U.S. government appears to have such a large, prospective budget surplus that the debate in Washington has been over how much money (more than a trillion dollars) should be returned to the taxpayer in the form of tax cuts. In contrast, North Korean defense spending takes place amid recent and widespread starvation, skyrocketing infant mortality, and plunging life expectancy. These conditions are not conducive for starting an arms race with the United States in any traditional meaning of the phrase.

A relatively high-tech competition with the United States involving the significant exploitation of space and technologies in which the United States excels would seem an unlikely road for these countries. In this arena, the United States is in a class by itself. The Soviet Union, with its enormous capabilities, ultimately concluded that it could not compete adequately with



the United States in these areas. Are we now to believe that China and North Korea will choose to pursue a race that so plays to U.S. strengths? To paraphrase Br'er Rabbit: Please don't throw us in that briar patch.

Dismissing the possibility of some form of Chinese or North Korean offensive reaction to U.S. missile defense obviously is beyond what evidence can bear. Nevertheless, given the conditions described above, and the manifest inadequacy of the action–reaction model, the current crop of gravely repeated predictions that U.S. missile defense can only lead to an unbeatable

**Predictions of a worldwide arms race are as credible as tarot card reading.**

buildup of Chinese or North Korean offensive missiles and a “worldwide arms race” should be given about as much credence as tarot card reading or some other metaphysical fortunetelling. Self-serving, and occasionally coached, Chinese and North Korean statements that they will respond in just such a fashion hardly constitute proof to the contrary.

In conclusion, a national review should be underway concerning the U.S. strategic framework most appropriate for contemporary security, including the role for BMD. Such a review, in fact, was long overdue. This national debate about BMD, however, will not be the first. Our awareness of the past four decades should discipline the predictions that are and are not now accorded credibility. During the first great BMD debate of the late 1960s, the inadequacy of a simplistic action–reaction arms-race model was not yet blatantly obvious; neither was the misleading nature of confident predictions based on it. Now the opposite is true. The time to move beyond metaphysics and negligence has arrived.

### Notes

1. “Text of President Bush’s Speech,” *New York Times*, May 1, 2001, [www.nytimes.com/aponline/national/01](http://www.nytimes.com/aponline/national/01), accessed May 1, 2001.
2. Thomas K. Longstreth, John Pike, and John Rhineland, *The Impact of U.S. and Soviet Ballistic Missile Defense Programs on the ABM Treaty* (Washington, D.C.: National Campaign to Save the ABM Treaty, March 1985), 4.
3. Jan Lodal, “Pledging ‘No First Strike’: A Step Toward Real WMD Cooperation,” *Arms Control Today* 31, no. 2 (March 2001): 6.
4. Stan Crock, “It’s Rocket Science—And That’s Not Good,” *Business Week*, May 14, 2001, 64.
5. Bruce Blair et al., *Toward True Security: A U.S. Nuclear Posture for the Next Decade* (Cambridge, Mass.: UCS Publications, 2001), 10.
6. Walter Pincus, “The First Law of Nuclear Politics: Every Action Brings Reaction,” *Washington Post*, November 28, 1999, B2.



7. Craig Eisendrath, "Missile Defense System Flawed Technically, Unwise Politically," *Philadelphia Inquirer*, May 23, 2001.
8. Pincus, "First Law of Nuclear Politics," 2.
9. See George Rathjens, Abram Chayes and J. P. Ruina, *Nuclear Arms Control Agreements: Process and Impact* (Washington, D.C.: Carnegie Endowment for International Peace, 1974), 1.
10. *Bulletin of the Atomic Scientists* (July/August 2001), 11.
11. Justin Vaisse, "French Views on Missile Defense," *U.S.–France Analysis*, April 2001, 3, [www.brook.edu/fp/cust/analysis/missd.html](http://www.brook.edu/fp/cust/analysis/missd.html), accessed May 9, 2001.
12. Senate Committee on Armed Services, *Authorization for Military Procurement, Research and Development, FY 1970*, 91st Cong., 1st sess., 1969, 1233 (testimony of Herbert York).
13. George Rathjens, "The Dynamics of the Arms Race," *Arms Control Readings From Scientific American* (San Francisco: W.H. Freeman and Co., 1973), 181.
14. Senate Committee on Armed Services, *Military Implications of the Treaty on the Limitation of Anti-Ballistic Missile Systems and the Interim Agreement on Limitation of Strategic Offensive Arms*, 92 Cong., 2d sess., 1972, 121 (statement by Henry Kissinger).
15. See John Collins and Peter Glakas, *U.S./Soviet Military Balance, Statistical Trends, 1970–1982*, 83-153 S (Washington, D.C.: Congressional Research Service, August 1983); John Collins and Bernard Victory, *U.S./Soviet Military Balance, Statistical Trends, 1980–1987*, 88-425 S (Washington, D.C.: Congressional Research Service, April 15, 1988), 11, 15.
16. Arms Control and Disarmament Agency, *The Soviet Propaganda Campaign Against the U.S. Strategic Defense Initiative* (Washington, D.C.: Arms Control and Disarmament Agency, 1986), 8.
17. See William E. Odom, *The Collapse of the Soviet Military* (New Haven: Yale University Press, 1998), 71.
18. Matthew Bunn, *Foundation for the Future: The ABM Treaty and National Security* (Washington, D.C.: Arms Control Association, 1990), 6.
19. *Ibid.*, 7.
20. McGeorge Bundy et al., "The President's Choice: Star Wars or Arms Control," *Foreign Affairs* 63, no. 2 (Winter 1984/85): 273, 277.
21. "Full Text of Statement Made by President Mikhail Gorbachev on Soviet Television on 5 October," TASS, October 5, 1991, in FBIS, *Daily Report: Soviet Union*, October 7, 1991, 2–3.
22. For an early and still useful discussion of this point, see Colin S. Gray, *The Soviet American Arms Race* (Lexington, Mass.: Lexington Books, 1976), 12–55.
23. Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to Credible Deterrence," in National Intelligence Council, Federal Research Division, Library of Congress, *China and Weapons of Mass Destruction: Implication for the United States*, November 5, 1999, CR 99–05 (April 2000), 12.
24. *Ibid.*, 35, 46–48.
25. *Ibid.*, 47–55.
26. See Center for Defense Information, *Fact Sheet Last of the Big-Time Spender: U.S. Military Budget Still the World's Largest and Growing*, May 1, 2001, [www.cdi.org/issues/wme/spendersFY02.html](http://www.cdi.org/issues/wme/spendersFY02.html), accessed May 14, 2001.

