

The Threat of Weapons in Space

[This is a modified version of an article that first appeared in *Limes*, an Italian journal of geopolitics, in September 2004 (there translated into Italian). Although the discussion was aimed initially at students and scholars of foreign affairs and international law, the content of Professor Tannenwald's article will be of interest to all citizens, especially those concerned with the impact of science and technology on society.--Editor].

FEATURE

— by Nina Tannenwald, Brown University, USA

In the more than 60 years since the explosion of the first nuclear weapon, the “nuclear club” has grown from one nation to nine. In all that time, nuclear weapons have remained on the ground. No nuclear weapons—or, indeed, weapons of any kind—have been launched into orbit. Space remains a weapons-free (although not a military-free) zone.

If some leaders in the Pentagon get their way, that will change. While the world is preoccupied with Iraq and the “war on terror,” the United States is quietly moving forward with plans to develop “space control” and “global engagement” capabilities—euphemisms for weapons in space. Since 9/11, this issue and the related issue of ballistic-missile defense have receded from the headlines. These issues deserve much more public scrutiny and discussion than they have received so far.

At present, the military use of space is for communication and spy satellites (as well as the global positioning system that serves everyone). If this nation or any nation were to cross a threshold by launching weapons into space, it would provoke a competition for national superiority in space, one almost surely dominated by the United States. Even the deployment of ground-based antisatellite (ASAT) weapons would constitute a serious departure from current practice.

What is needed is a concerted international effort to develop a more comprehensive legal regime for space that will limit unconstrained weaponization. Otherwise, the military competition that will erupt in space will have serious destabilizing consequences for national and global security. Besides adding to existing threats of armed conflict, it will put at risk the vast array of scientific and commercial uses of space, and jeopardize the already existing extensive military use of space.

New international agreements embedded in international law are needed not only to limit what can be placed in orbit and what can be aimed at objects in space, but also to distribute more equitably the benefits of space activity. Space now serves enormous commercial, scientific, and military constituencies worldwide and can be assigned a huge dollar value. Without new agreements, the use of space may be largely shaped by the short-term interests of power rather than the long-term interests of the world's peoples.

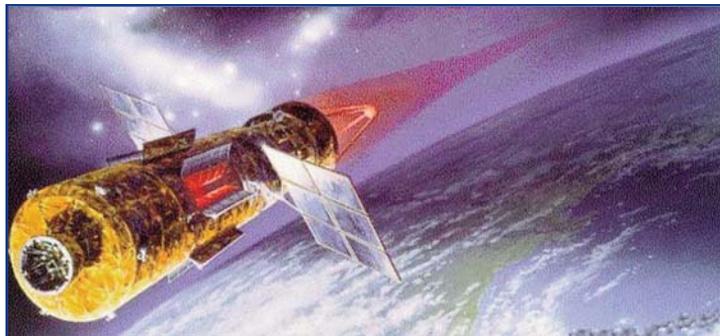
THE CURRENT CHALLENGE: LAW VS. POWER ON THE HIGH FRONTIER

The dominant challenge to the future of space lies in the existence of two competing visions of how activities in space should be organized, managed, and controlled. The first vision emphasizes the central role of law in preserving

space for “peaceful purposes,” promoting international cooperation in the use and exploitation of space for the benefit of all. This vision emphasizes the benefits of an international legal regime as the best way to balance the various interests in space, to manage the possible interference of activities, and to ensure that no single power can gain such dominance as to jeopardize access to space by others. Power is then constrained by law, and national interests are pursued with an assumption of mutual and reciprocal interests. This vision sets forth the logic of the current legal regime for space (however weak and incomplete), as reflected in a set of outer-space, arms control, and commercial treaties and agreements that began in the 1960s.

The second vision is one of national dominance, as projected by the former U.S. Space Command (SPACECOM).[1] With the United States increasingly reliant on space for both commercial and military-support activities, SPACECOM has argued that because U.S. satellites are vulnerable to attack, the United States needs to dominate space militarily. SPACECOM's Vision for 2020 (set forth in 1997)[2] argued that the protection of space requires superior U.S. space warfare capability and proclaims the U.S. military to be “stewards for military space.” As Air Force General Joseph W. Ashy, a former commander of SPACECOM, argued, the United States “will engage terrestrial targets someday—ships, airplanes, land targets—from space. We will engage targets in space, from space.... [The missions are] already assigned, and we've written the concepts of operations.”[3] SPACECOM also claimed that the United States has to establish a military presence in space in order to preempt possible efforts by other nations to do so.

(continued on page 2)



Space-based laser offers a powerful pulse of energy to destroy missiles in flight. Image credit: U.S. Air Force.

Although this was once purely SPACECOM doctrine, in recent years it has been endorsed by civilian defense officials, who have begun to implement changes in Pentagon doctrine, organization, and budgets aligned with the second vision of space, which is sometimes called the “global engagement strategy.” The January 2001 Rumsfeld Commission report on the management of U.S. space assets, produced by a study commission chaired by Donald Rumsfeld before he became Secretary of Defense, signaled his strong support for the need to project force in space to counter presumed threats to U.S. military security there. Although that report stopped short of directly advocating space weapons, no one could miss the point. In late September 2001, the U.S. Quadrennial Defense Review,[4] a wide-ranging assessment of U.S. defense policy, called for beefing up military space surveillance, communications, and other applications of Earth-orbiting spacecraft, all consistent with the present regime. But it went further, underscoring the need to deny use of space by adversaries, and arguing that U.S. vulnerabilities in space must be met with aggressive development of added space capabilities.

Most tellingly, the Department of Defense’s *Nuclear Posture Review*,[5] portions of which were leaked in March 2002, reportedly advocated the use of satellites to enhance conventional and nuclear strike capabilities.

In October 2002, SPACECOM merged with the U.S.

**S t r a t e g i c
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which controls U.S. nuclear forces, to create a single entity responsible for early warning, missile defense, and long-range strikes. The Pentagon requested \$1.6 billion dollars over FY 2003-

2007 to develop space-based lasers and so-called kinetic kill vehicles to intercept and destroy ballistic missiles (as well as satellites). In November 2003, the Air Force released a report which, for the first time, offered detailed descriptions of planned antisatellite weapons. This suggests quiet movement toward the deployment of weapons in space.[6]

Providing further evidence of high-level support for the global engagement strategy, the current Bush administration’s decision to withdraw from the thirty-year-old Anti-Ballistic Missile (ABM) treaty in June 2002 appeared to be driven less by technical needs of missile-defense testing (since much testing could be done within the terms of the treaty, and deployment of a feasible system is not imminent) than by a desire to sweep away inconvenient legal obstacles to projected U.S. power in space.

Most recently, in October 2006, President Bush released a new national space policy that stresses U.S. unilateral freedom of action in space. The U.S. must be able to “deny, if necessary,

adversaries the use of space capabilities hostile to U.S. national interests.” Although not explicitly stated in the document, this is an opening for the development and use of weapons in space. The new policy also warns that “the United States will oppose the development of new legal regimes or other restrictions that seek to limit or prohibit U.S. access to or use of space.”[7]

According to much of the rest of the world, and especially China, this vision of national dominance is incompatible with the currently established legal regime in space. For over 40 years, the international community has repeatedly reaffirmed that space should be preserved for peaceful purposes, should be available to all, and should be weapons-free. Hence the relevant options appear to reduce to two: an active contest over national superiority in space, or an elaborated legal regime, one that goes beyond the current regime and is designed to prevent decisive predominance in space by any one country.

A contest over national superiority in space could extinguish the equal right to use space that all nations now enjoy, creating instead a *de facto* regime of control over access and use by the first nation to successfully deploy space-based weapons or weapons on the ground that target satellites. Given the immense value of outer space and its resources, other nations might develop their own antisatellite weapons designed to break this monopoly. Countries that lacked the capabilities to build such weapons might purchase them. Space-based weapons would also generate

instability due to the incentives for preemptive attack that powerful but vulnerable weapons systems seem likely to create.

A more elaborated legal regime

would be aimed at preventing destabilizing conflicts over the use of space. The present U.S. position, if seriously pursued, would pit the United States against everyone else, and the support of even close allies could be in question. A push for space dominance by the United States could, in fact, be counterproductive to national interests. Traditional military support activities (including space-tracking, early warning, communications, reconnaissance, weather, and navigation) would be in jeopardy. Commercial and scientific activities in space would also be at heightened risk. In a conflict, terrestrial components of space activities could become objects of attack, while attacks against satellites could litter space with speeding debris that might rip into commercial satellites and space vehicles, disrupting commercial and scientific activity and communications on the ground.

Although the Air Force, the lead agency in space, and its supporters aggressively assert their views, it may be premature

(continued on page 3)

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to assert that what they advocate is U.S. policy. Funding for space weapons has not yet followed rhetoric. Even in the Pentagon, opponents of weapons in space may outnumber advocates. Many in the military—as well as NASA officials and their supporters in Congress—are aware that the interests of the United States in space are much broader than the Air Force presents and that the weaponization of space could add risk to other uses of space. Congressional support for space weapons programs is difficult to assess but does not appear to be deep or widespread. (Space weapons tend to be popular among Congressional conservatives but not among Democrats or moderates. Support for an antimissile system, on the other hand, is broader.)

Serious questions remain as to whether the threats to U.S. satellites are really as great as the Air Force argues, and whether, even if the threats are real, expensive and difficult space-based weapons would really be the most effective way to deal with them. In many cases, those wishing to hurt the United States will likely find it much easier, and more effective, to attack terrestrial targets.

The risks brought on by a competition for national dominance in space would be substantial for many nations, but especially for the United States. The United States is by far the nation most reliant on space for its military and economic well-being. It has an estimated 850 satellites, both military and commercial, in orbit, a number that is expected to increase considerably during the next 10 years. Although, in the short term, the U.S. technological and financial edge in space will grow, ultimately the United States will see that advantage diminish. A policy based on the assumption of indefinite dominance is an unwise policy.

The choice between a competition for national superiority and a strengthened legal regime that preserves and balances the interests of all in space will have profound consequences. If the United States aggressively moves weaponry into space, it will almost surely provoke other nations to pursue countermeasures, with destabilizing consequences for global and national security. In addition, by encouraging nations who do not currently have an interest in placing weapons in space to develop such an interest, the U.S. will guarantee the loss of the advantages it seeks to protect. An arms race in antisatellite weapons is one of the dangers, as China's first successful test of an antisatellite missile on January 11, 2007, suggests (the U.S. last conducted a test in 1985). Of even greater concern to nations such as Russia and China, however, is the U.S. use of space systems to augment its nuclear and conventional strategic strike capabilities. From the perspective of these nations, a U.S. decision to expand strategic capabilities into space would represent the collapse of the Cold War bargain of strategic stability based on mutual vulnerability. A military competition in space could thus invigorate a high-tech arms race and could renew emphasis on doctrines of nuclear warfare.

Finally, a military competition in space would largely extinguish the role of law in space in favor of a regime of power. Despite the appeal of bald power to advocates of "space control," the much broader interests of the United States in space lie in the promotion of the rule of law. The United States has a long history of advocacy of the rule of law both at home and in global affairs, in the latter case promoting the development of rules

that would secure U.S. interests in an interdependent world. When presented with the choice, it is likely that most users of space—including the satellite communications industry, those involved in military support operations, and the scientific community, including NASA—would prefer the more stable protection provided by the rule of law to the uncertain and potentially disruptive protection of complex, untested weapons systems. In sum, the United States and the international community have a strong interest in preventing a destabilizing military competition in space through the timely negotiation of a more elaborated legal regime for space.

THE CURRENT LEGAL REGIME

Why have I referred above to the need for a more elaborated legal regime in space? Because the current legal regime is increasingly fragmented and inadequate to meet the challenges of the intensifying use of space. It consists of several key but very general principles expressed in five space treaties adopted since 1967 and an arms control treaty, along with general international law and the practices of the spacefaring nations. The legal regime also includes various agreements covering the commercial uses of space, such as rights to use the geostationary orbit, and agreements establishing intergovernmental organizations in areas such as telecommunications, civil aviation, and weather. The general principles include that space should be reserved for "peaceful purposes" and that no nation can claim dominion over any part of it. However, because only a small handful of countries are now able to operate in space, these principles have not really been tested; they remain largely aspirational. The definition of "peaceful" is contested and unclear, environmental protections for outer space are weak, and there is no agreed-upon operational definition of the concept of "province of all mankind," a term used in the Outer Space Treaty.

With regard to "peaceful uses," the current legal regime imposes some limits on military activity in the vacuum of near-Earth space, and prohibits all military activities on the moon and other celestial bodies. Although nations through the UN have declared that outer space should be reserved for "peaceful purposes," the space powers have interpreted this to permit "passive" military support activities such as surveillance, communications, and detection of missile launches or nuclear explosions on Earth. The language of the major treaties was carefully worded so as not to prohibit the passage of nuclear ballistic missiles through space. In truth, despite a huge and growing use of space for commercial and scientific purposes, military use is still dominant. This includes the very beneficial use of satellites to monitor U.S.-Soviet (now Russian) arms control agreements.

So, despite some important prohibitions on military activity in space, the current legal regime leaves significant gaps. It prohibits the stationing of weapons of mass destruction, including nuclear weapons, in space, but allows the deployment of antisatellite weapons on the ground and the placement of conventional weapons in orbit. Nothing prohibits the launching of nuclear weapons from Earth into space for the purpose of destroying incoming missiles. Indeed, as permitted by the 1972

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ABM treaty, the U.S. and the USSR did briefly deploy nuclear-tipped missile defense interceptors (in North Dakota and around Moscow, respectively).

The most ominous recent step in the direction of further militarization of space is the U.S. withdrawal from the ABM treaty. This removed a thirty-year bilateral prohibition on placing antimissile defenses in space, opening the way for the deployment in space of conventional and “exotic” weapons (those employing, for example, lasers or particle beams).

THE FALSE ANALOGY BETWEEN THE HIGH SEAS AND THE “HIGH FRONTIER” OF SPACE

Taking advantage of the gaping holes that now exists in the legal regime to prevent the weaponization of space, advocates of space weapons invoke an analogy between the high seas and the “high frontier” of space to justify their position. Space, they say, is like the high seas, the parts of the oceans outside any nation's control. Under the traditional “freedom of the seas” principle, nations may not claim sovereignty over any part of the high seas but are free to use them, including for military purposes. Analogously, supporters of space weapons argue, the United States should be free to place weapons (of any kind) in space, just as it can keep a fleet of submarines and warships patrolling the high seas. *Pax Britannica* is the favored image: Just as Great Britain ruled the waves in the nineteenth century under a freedom of the seas principle, so too can the United States rule space today. Just as commercial shipping needed navy escorts in the past, continues the argument, commercial satellites in space will need military protection and escorts in the future.

The analogy has a glib appeal, but it is simplistic and misleading. In fact, freedom of the seas is no longer a useful guiding principle for the high seas, much less for space. As ocean law experts have found, the concept may have been appropriate for the nineteenth century world in which it arose, but is inadequate for managing complex challenges to the oceans in today's highly interdependent world. Basically a principle of *laissez-faire*, it

is open to unilateral interpretation, leaving the high seas vulnerable to overuse, pollution, and military activities that may preempt other uses. Space, like the high seas, is not limitless. It does not have an infinite capacity to absorb activities. The tiny tube of space available for geostationary satellites and the increasing quantity of debris in near-Earth space place serious physical limits on space activities. In addition, military activity in space, just as on the high seas, could preempt other uses.

There are still other arguments invalidating the analogy between the high seas and the high frontier of space. The military threat posed by space weapons could become even greater than that posed by weapons on or under the high seas. Transit of space by orbiting weapons is not nearly as “innocent” as transit over the oceans, given the speed and vulnerability of space weapons. Satellites are not like ships at sea needing escorts. The proposed U.S. role in space would be far more overwhelming than the role of Britain during the nineteenth century, which involved a significant element of restraint. Exacerbating the threat posed by space weapons is the logic of deterrence left over from the Cold War era and still dominating U.S. military planning.

It is difficult to avoid the conclusion that, in reality, what the Air Force and its supporters actually want is a version of *mare clausum* (closed seas), in which the United States controls space to the full extent of U.S. power. Their use of the freedom of the seas analogy is, in the end, disingenuous: The aspect of the nineteenth century British experience they are actually most enamored of is the notion of empire, not the freedom of the seas principle. Doctrines centering on control and domination are theories of empire and war, not theories of free trade and commerce.

The solution to the future of space is not to continue using an easy but outdated analogy—which fails to effectively address the problem of modern weapons on the ocean, let alone in space—but rather to develop a new, more appropriate regime for space—a regime of laws and norms. New guiding principles, more suited to the conditions of the 21st century, are needed.

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WHAT TO DO? A SPACE SANCTUARY REGIME

An extended, elaborated regime for space will require a shift away from a framework based largely on a freedom of the seas analogy and the notion that security is achieved through deterrence to one based on principles of comprehensive security, equal protection in space, and equity in the use of space resources. A broader definition of security would go beyond a purely military approach to include resource and environmental issues, as well as economic and development concerns. Such an approach is crucial for space, which affects many (in some ways, all) nations and the planet as a whole. Military, environmental, and economic issues are tied together in space. Just to give an example: Testing ASAT weapons in space could produce thousands of pieces of space debris, making it riskier to put commercial, scientific, or military satellites into low-Earth orbits.

Policies for space will also need to reflect principles of reassurance rather than threat and deterrence. They will need to address the issue of uneven distribution of security and protection among nations. The United States possesses capabilities to wage war vastly out of proportion to what other nations possess. This huge asymmetry creates incentives for opponents to wage a different kind of warfare. Now, when nuclear weapons proliferation, terrorism, and unconventional warfare—rather than attack by another country—pose the major security threats, traditional concepts of deterrence and confrontation are increasingly dysfunctional and even counterproductive. The long-term stability of the space regime depends on its being organized as a regime of collective protection—of both nations and assets—rather than as a regime of nationally organized threat and deterrence.

Principles of equity, accountability, and fairness in the use of resources will also need to be central elements of an elaborated space regime. Space is indeed the “province of all mankind,” and the international community should have a say in the uses to which space is put and the benefits that flow from space. At a minimum, these principles imply that there must be limits to freedom of use, especially for warfare. The rules of space will need to reflect a global rather than national public interest, not merely the interests of a few spacefaring governments and corporations.

These principles will need to be given content through specific operational rules. What is and is not a “peaceful purpose” needs to be made clear, and, looking further into the future, limits on freedom of exploration beyond Earth need to be established. Though total demilitarization of space will remain the aspiration of many nations and groups, it is unlikely that this will happen. Instead, it is likely—indeed almost inevitable—that space will continue to be used for passive military purposes. This will require a clear definition of “passive.”

A regime that recognizes some military use of space but not its weaponization is often called a “space sanctuary” regime. It would prohibit the testing and deployment of weapons in space

as well as ASAT weapons deployed on Earth. It would formalize what has been, for nearly fifty years, an informal understanding among nations. Despite the lack of progress on arms control in space since the 1950s, the most remarkable feature of the current regime for space has been the tradition of restraint in weaponizing space. The international community has repeatedly reaffirmed support for nonweaponization as a norm in numerous UN resolutions and diplomatic statements. The time may be at hand to formalize the notion of space sanctuary.

A prohibition on weapons in space would permit ballistic missile trajectories through space but not weapons “parked” in space. This means that, according to the space sanctuary rules suggested here, antimissile defense would have to be Earth-based, not space-based. A second core rule of the regime would be a prohibition on interference with space assets. Satellites that perform “peaceful” and security-related functions, including agreed-upon military support activities, together with their ground-based support installations, would be declared off limits to attack. Interference with such space assets would be viewed as aggression, and violation would incur strong sanctions or penalties. Most nations would have a strong interest in preserving the immunity of their space assets from attack. Self-interest and the

“Doctrines centering on control and domination are theories of empire and war, not theories of free trade and commerce.”

threat of retaliation would help sustain the rule.

Yet it’s easy to abuse a noninterference rule (such as freedom of the seas). Freedom for one party to do what it wants can mean freedom to disregard the interests of other parties. So it will be important to spell out what activities are to enjoy noninterference. In space, this means clear rules about the limits of military support activities, which are currently unconstrained. The central issue here is the role of satellites in supporting Earth-based weapons. Satellites are assuming an ever-growing role in the application of weapons based on Earth. Some of their uses as “gunsights in space”—such as identification and location of targets for long-range precision attack, missile guidance, and conduct of offensive ground operations—can be considered highly aggressive. Thus, without clear constraints, space could be used to magnify the lethality of ground-based weapons, including nuclear weapons.

The need for clarification is becoming urgent because of conflicting interpretations of the current legal regime, especially between the United States and China, as to what types of military support activities are “peaceful.” Even without weapons in space, we badly need rules on the limits of satellite-based sens-

(continued on page 6)

ing and observation in support of military activities. These rules will need to be designed to reassure all parties that space surveillance practices used to verify compliance with treaties are not part of a clandestine ABM or espionage effort. Other countries, especially Russia and China, will need reassurance that the United States is not seeking space capabilities in order to launch a disarming first strike, and that U.S. ABM deployments are not a cover for aggression. The new rules also need to prevent the surreptitious weaponization of space, as well as the domination of space by military activities at the expense of other uses. This may entail some form of cooperative monitoring effort and joint early warning of missile launches. With enough commitment and hard work among the major powers, new rules could be formulated, with all needed technical details, to provide the core of a space sanctuary regime.

How do we get there from here? To date, the United States has adamantly opposed any negotiations on prohibiting space weapons in the Geneva-based Conference on Disarmament, the UN's multilateral arms-control forum. The United States holds that existing arms control agreements are adequate. Thus, the creation of an improved regime for space will likely require interested nations, non-governmental organizations, commercial enterprises, and other parties to simply move forward in alternative forums to create new principles and propound new norms for space. Following the model of the land-mines campaign, elements of civil society and a few conscientious nations must lead the way. Then new norms can begin to blossom, constraining both political activity and activities in space.

Because the United States has multiple interests in space, perhaps it will eventually discover that it is better to join the effort than to watch from the sidelines—although there is little prospect of this in the present Bush administration. Current U.S. opposition to arms control in space is tied closely to this administration's desire to reserve the option of deploying weapons there. Still, even the anti-treaty Bush administration decided in 2001 to join the 1982 Law of the Sea Treaty, seven years after it went into effect (although the Senate has yet to ratify it).

CONCLUSION

The challenge the international community faces in space today is the imminent collapse of a nearly 50-year tradition of restraint with regard to military activities in space. U.S. plans for "global engagement" represent the abandonment of any concept of restraint in favor of a regime of unilateral assertion of power, largely in disregard of the interests of others. If pursued, such a

strategy will undermine the fragile existing legal order in space that is widely supported by the rest of the world. This will place in jeopardy not only the interests of other nations in space, but the multiple interests there of the United States itself.

U.S. unilateralism will not be quietly accepted by the rest of the world. One way or another, a new regime for space will emerge. The existing regime cannot survive. Either it will be transformed by agreement into a more elaborated regime that balances various interests in space by establishing new guiding principles and propounding new norms, or it will be transformed by default into a regime of power and an arena of military competition dominated (in the near term) by the United States.

Today, there are more spacefaring countries that are in a position to influence the issue than there were in the 1960s and 1970s—and to thwart U.S. freedom of action through various kinds of interference, such as jamming satellite signals. These countries must take the lead in making the United States see that security in space will be more effectively achieved through a rule-based system than through deployment of destabilizing weapons systems. The rest of the world is not rushing to weaponize space. Instead, other countries appear ready to pursue new rules to govern space activity. In the long run, the best way to protect commercial, scientific, and security interests in space will be through stability of the rule of law, rather than through unilateral assertions of military power.

For further information on the weaponization of space, see the websites of the Union of Concerned Scientists at <http://www.ucsusa.org>, and the Center for Defense Information at <http://www.cdi.org>. Both these groups support arms control in space.

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AND ON ANOTHER PLANE...

Out in space two alien forms are speaking with each other.

The first alien says, "The dominant life forms on the earth planet have developed satellite-based weapons."

The second alien, who looks exactly like the first, asks, "Are they an emerging intelligence?"

The first alien says, "I don't think so....They have them aimed at themselves."

— Thanks to CleanLaffs.com

Weapons in Space: Should Anyone Care?

EDITORIAL

— by Dwight E. Neuenschwander, Southern Nazarene University

On January 31, 1950, an important meeting took place in the White House between President Harry Truman, Secretary of State Dean Acheson, Atomic Energy Commission Chairman David Lilienthal, and Defense Secretary Louis Johnson. It had been only five-and-a-half years since the atomic bombings of Hiroshima and Nagasaki, but during the previous year the Soviets had detonated their first fission bomb. A small number of influential voices were pressuring the President to authorize the development of hydrogen bombs. That decision was the purpose of the January 31 meeting at the White House.

Truman listened as Lilienthal described the reasons for not building the H-bomb. He had barely started when the President cut him off with the question, “Can the Russians do it?” When his visitors nodded yes, Truman said, “In that case, we have no choice. We’ll go ahead.” Upon leaving the White House, Lilienthal glanced at his watch. The President had given him seven minutes. Lilienthal wrote in his diary that Truman was, “clearly set on what he was going to do before we set foot inside the door.”[1] The first hydrogen bomb was detonated by the USA on November 1, 1952, vaporizing the Pacific island of Eugelab. The Soviets exploded their first hydrogen bomb the following year. A nuclear arms race was on.

Right or wrong, Truman’s decision was made with little *public* discussion. Before his decision, some meaningful discussion had taken place behind closed doors. The General Advisory Committee (GAC), chaired by J. Robert Oppenheimer, studied the consequences of this proposed “Super” bomb. The GAC unanimously recommended that the United States not build the weapon, noting that only a metropolitan city would present a target size comparable to the bomb’s damage radius, reducing the weapon to an engine of genocide. The public living in those cities had scarce opportunity to participate in any dialogue on whether to build these weapons that would result in similar weapons being aimed at them.

It seems the same closed-door, decision-making process is unfolding yet again, this time on whether to place weapons in orbit above the earth. Space has routinely been used for military communication and reconnaissance, but weapons have never yet been stationed in space. That seems about to change.

According to one of the few articles on this subject, which appeared in the May 18, 2005 issue of *The New York Times*, General Lance Lord recently told Congress that the Air Force believes, “We must establish and maintain space superiority. Simply put, it’s the American way of fighting.” The *Times* also quoted Captain David C. Hardesty of the Naval War College faculty as saying, “There seems little doubt that space-basing of weapons is an accepted fact of the Air force,” and reported that Pete Teets, who stepped down in April 2005 as acting secretary of the Air Force, told a space symposium in 2004 that, “We haven’t reached the point of strafing and bombing from space, nonetheless, we are thinking about those possibilities.”[2] As in 1950, far-reaching decisions are being made by

an elite group of individuals in positions of authority, challenged by precious little public discussion.

It seems that an effective way to discourage the weaponization of space by other nations would be for the USA to take the lead in not doing it. Conversely, history suggests that the way to guarantee the deployment of weapons in space by other nations is for the USA to do so first. Should we “go ahead” just because we—or others—can? Would the reasons given for “going ahead” be convincing to a public that sees a wider vision than the one held by the system’s proponents?

The public must claim the right, and own the responsibility, to question the motives and assumptions of those who are pushing for weapons in space. Because of our physics training and our distribution throughout the larger society, Sigma Pi Sigma members are well-placed to raise a discussion of this topic that links applications of physics to the broader sweep of human values.

Before Lilienthal, Acheson, and Johnson walked across the street for their meeting with President Truman on January 31, 1950, they had agreed to oppose the “Super.” Considering domestic politics, Johnson, however, told Lilienthal, “We must protect the President.” It remained for biographers to note, “It had come to that. The real issues related to national security had been rendered irrelevant by the simplifications imposed by domestic politics.”[3] Domestic politics will not count for much when we look up one day to find the weapons of many nations aimed downward at the heads of our children, and find that it is too late for society to have a conversation about it. How will we explain to them our being content to not ask the searching questions before a decision was made with such irreversible implications?

Intelligent discussion of any controversial issue requires a foundation of reliable information. We offer Dr. Tannenwald’s article (beginning on page 6 in this issue) as an excellent place to begin acquiring such information about the threats posed by weapons in space. We hope that her article will stimulate abundant and thoughtful discussion.

REFERENCES

- [1] K. Bird and M. J. Sherwin, *American Prometheus: The Triumph and Tragedy of J. Robert Oppenheimer* (Knopf, 2005), p. 428.
- [2] There has been some discussion in the popular press of proposals for weapons in space; for example, “Air Force Seeks Bush’s Approval for Space Weapons Programs,” *New York Times*, May 18, 2005 (www.nytimes.com); “Bush opens door to space weapons,” *The West Australian*, Oct. 19, 2006 (www.thewest.com.au). But how often do you see this topic discussed in the editorial page of your local community or campus newspaper?
- [3] Ref. 1, p. 428.

