

**Law Versus Power on the High Frontier:
The Case for a Rule-Based Regime for Outer Space**

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Law Versus Power on the High Frontier¹

The future of peace and security in outer space is at a critical juncture. The legal regime that guides commercial, military and scientific activities in space is fragmented and increasingly inadequate to meet the challenges posed by the growing number of actors seeking to exploit space. The most serious challenge to the space regime is posed by the stated intent of the present administration of the United States to pursue national dominance in space, which may eventually include stationing weapons there. Although space is already militarized to some degree, that is, used for military support purposes, no nation has yet placed weapons in space. Such a move would cross an important and longstanding threshold, likely provoking a battle for national superiority in space dominated by the United States. It would seriously undermine the current legal order in space widely supported by the rest of the world. The deployment of ground-based antisatellite weapons would also constitute a serious departure from the current regime. Without a concerted effort to develop a more comprehensive legal regime for space that will limit unconstrained weaponization, the international community will likely face a new military competition in space, with destabilizing consequences for national and global security. Such a competition will place at risk existing military, commercial, and scientific activities in space.

With events of September 11, 2001, and the war against Iraq dominating the headlines, the issue of national missile defense, and with it the larger issue of the control and weaponization of space, have receded from the front pages. However, the problem is imminent as the United States moves forward with Pentagon plans to develop “space control” and “global engagement” capabilities, which imply the deployment of weapons in space. If conflict over the use of space, or even actual conflict in space, is to be prevented or at least significantly constrained by general agreement, the international community will need to agree on permitted activity in space and more refined arrangements for distributing the benefits of that activity. Such a regime would be in the strong interest of commercial, scientific and military support constituencies worldwide. Without such agreement, space will largely be shaped by the short-term interests of power rather than the long-term interests of law.

This paper develops the case for a more refined, rule-based regime for outer space. In the first part of the paper, I describe the current challenge to the space regime posed by U.S. pursuit of national dominance in space. After summarizing the current legal regime in space, I outline three alternative scenarios for the future of space—national dominance, “muddling through,” and a strengthened legal regime—and argue why the first two are unlikely to lead to stable outcomes over the long haul. In the second part of the paper, I make the case for a strengthened, rule-based regime for space organized around new guiding principles. Despite the persistence of the

¹ I thank Ann Florini, Kenneth W. Ford, Rose Gottemoller, Ram Jakhu, Jeffrey Lewis, Janne Nolan, Christopher Petras, Jeremy Telman, Dean Wilkening, and especially Nancy Gallagher and John Steinbruner, for their helpful comments on earlier versions of this paper.

traditional “high seas” analogy for outer space, it is no longer an adequate basis for rulemaking for space. This analogy and its associated principle, “freedom of the seas,” are often used by advocates of space weapons to defend U.S. dominance in space and the stationing of weapons there. Yet their use of this concept is highly simplistic. “Freedom of the seas” has taken on the aura of a sacred mantra, but in actual practice it has been a controversial principle that has been increasingly circumscribed in ocean law since 1945. A close examination of the “freedom of the seas” analogy reveals its weaknesses as a basis for rulemaking in space. Instead, alternative principles and models are needed. The evolution of the Law of the Sea Treaty provides some useful insights about both the multilateral lawmaking process and new principles that might be used in developing a more specified legal regime for space.

The Current Challenge: Law versus Power in Outer Space

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 view emphasizes the central role of law in preserving space for “peaceful purposes” and in promoting international cooperation in the use and exploitation of space for the benefit of all. This view emphasizes the benefits of a multilateral 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 predominates to possibly jeopardize access to space by others. Power is constrained by law, and national interests are pursued in the context of a developed and articulated legal framework and an assumption of mutual and reciprocal interests. This is 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 beginning in the 1960s.

The second view is the logic of national dominance projected by the former U.S. Space Command (SPACECOM).⁷ With the United States increasingly reliant on space for both commercial and military support activities, SPACECOM argues that U.S. assets in space are vulnerable to attack and that in order to protect them the United States needs to dominate space militarily. SPACECOM’s *Vision for 2020* (1997) argues that the protection of space requires superior U.S. space warfare capability and proclaims its members “stewards for military space.” It sets out two principal themes: 1) dominating the space dimension of military operations to protect U.S. interests and investment, and 2) integrating space forces into warfighting capabilities across the full spectrum of conflict.⁸ As Air Force General Joseph W. Ashy, a former commander of SPACECOM, explained, the United States “will engage terrestrial targets someday—ships, airplanes, land targets—from space. We will engage targets in space, from

⁷ In October 2002, SPACECOM was incorporated into the US Strategic Command.

⁸ The Pentagon’s vision of outer space is contained in US SPACECOM’s *Vision for 2020* (February 1997); *Long Range Plan: Implementing US SPACECOM Vision for 2020* (March 1998); and James E. Oberg, *Space Power Theory* (Washington, DC: U.S. Government Printing Office, 1999). Available at the Federation of American Scientists website, www.fas.org/spp/military/docops/usspac/.

space...[The] missions are already assigned, and we've written the concepts of operations."⁹ SPACECOM also claims that the United States has to establish a military presence in space in order to preempt possible efforts by other nations to do so.

Although this was once purely SPACECOM doctrine, prominent civilian defense officials have endorsed the global engagement strategy, and have begun to implement changes in Pentagon doctrine, organization and budgets to move in that direction. 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.¹⁵ Although it stopped short of directly advocating space weapons, no one could miss the point. In late September 2001, the U.S. Quadrennial Defense Report, a wide-ranging assessment of U.S. defense policy, called for beefing up military space surveillance, communications, and other applications of earth-orbiting spacecraft. It also underscored the need to deny use of space by adversaries, and that U.S. vulnerabilities in space must be met with aggressive development of space capabilities.¹⁶

Most tellingly, the Department of Defense's *Nuclear Posture Review*, portions of which were leaked in March 2002, reportedly advocates the use of space-based assets to enhance conventional and nuclear strike capabilities. In October 2002, SPACECOM merged with the U.S. Strategic Command, which controls U.S. nuclear forces, to create a single entity responsible for early warning, missile defense, and long-range strikes.¹⁷ The Pentagon has requested \$1.6 billion dollars over FY 2003-2007 to develop space-based lasers and kinetic kill vehicles to intercept and destroy ballistic missiles (as well as to destroy satellites).¹⁸ Providing further evidence of high-level support for the global engagement strategy, the Bush administration's decision to withdraw from the 30-year old Anti-Ballistic Missile (ABM) Treaty appeared to be less a necessary move driven 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

⁹ Quoted in W.B. Scott, "USSC Prepares for Future Combat Missions in Space," *Aviation Week and Space Technology*, August 5, 1996, p. 51.

¹⁵ *Final Report of the Commission to Assess United States National Security Space Organization and Management*, January 2001, at www.space.gov.

¹⁶ *Quadrennial Defense Review Report*, September 30, 2001, at www.defenselink.mil/pubs/qdr2001.pdf.

¹⁷ "DoD Announces Merger of U.S. Space and Strategic Commands," Pentagon press release, June 26, 2002, at www.defenselink.mil/news/jun2002/b06262002_bt331-02.html.

¹⁸ John Steinbruner and Jeffrey Lewis, "The Unsettled Legacy of the Cold War," *Daedalus* (Fall 2002). Excerpts from the NPR are available at www.globalsecurity.org.

imminent) than a symbolic move to sweep away inconvenient legal obstacles to U.S. power projection in space.¹⁹

This vision of national dominance, the rest of the world, and especially China, contends, is incompatible with the established legal regime in space.²⁰ The international community has for over forty years repeatedly reaffirmed that space should be preserved for peaceful purposes, should be available to all, and should be weapon-free. Hence the relevant options appear to reduce to two: an active contest over national superiority in space, or an elaborated legal regime that would undoubtedly be designed to prevent decisive predominance in space by any one country, the United States in particular.²¹

A contest over national superiority in space could extinguish the explicit equal right to use space that all nations enjoy, creating instead a de facto regime of control over access and use by the first nation to successfully deploy weapons based in space 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 problem posed is how to balance the interests of the United States with those of the rest of the world. The 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. Equally if not more important, other significant interests of the United States in space will be jeopardized if an extended battle over superiority in space develops. Given the inherent vulnerability of space activities, traditional military support activities (including space-tracking, early warning, communications, reconnaissance, weather, and navigation) will be in jeopardy. The viability of commercial and scientific activities in space would be in serious question as well. 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

¹⁹ *The ABM Treaty and Missile Defense Testing: Does the United States Need to Withdraw?* Union of Concerned Scientists Working Paper, at www.ucsusa.org/security/ABM_analysis.pdf. The Bush administration announced December 13, 2001 that it would withdraw from the ABM Treaty in six months. U.S. withdrawal took effect on June 13, 2002. The Russians view the treaty as no longer in force (although this does not mean they have plans to violate it). On June 14, 2002, the Russian Foreign Ministry issued a statement saying that Russia was no longer bound by the START II treaty, and that “the United States withdrew from the ABM Treaty, with the result that this international legal act, which served for three decades as the cornerstone of strategic stability, has ceased to be in force.” “On the Legal Status of the Treaty Between Russia and the USA on Further Reduction and Limitation of Strategic Offensive Arms,” Russia Foreign Ministry Statement, Document 1221-14-16-2002, June 14, 2002, available at “Disarmament Documentation,” www.acronym.org.uk/docs/index.htm

²⁰ China Conference on Disarmament PAROS [Prevention of an Arms Race in Outer Space] Working Paper, February 8, 2000, *Disarmament Diplomacy*, No. 43. For an overview of the Chinese position, see Jeffrey Lewis, “Chinese Positions on a PAROS Treaty,” unpublished paper, University of Maryland, 2002.

²¹ A third option, “muddling through,” will likely be unstable over the long-haul and will degenerate into the first option, a contest over dominance in space, as I argue later in the paper.

space vehicles, disrupting commercial and scientific activity and communications on the ground.²⁵

Although SPACECOM and its supporters aggressively assert their views, advocates of weapons in space may be in the minority, even in the Pentagon. As many observers recognize, the interests of the United States in space are much broader than SPACECOM presents. U.S. testing and deployment of orbital weapons could make using space for other military and commercial purposes more difficult. Many in the military, especially those involved in crucial military support activities, are quietly aware of this, as are officials at NASA and the international space station, and their supporters in Congress.²⁶ Congressional support for antisatellite (ASAT) programs does not appear to be deep or widespread. Serious questions remain as to whether the threats to U.S. assets in space are really as great as SPACECOM argues, and whether, even if the threats were 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.²⁷

Overall, the risks brought on by a competition for national dominance in space would ultimately be detrimental to 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 600 satellites, both military and commercial, in orbit, a number that is expected to more than double during the next ten 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 over time. Current U.S. doctrines for space such as *Vision for 2020* likely underestimate the speed with which U.S. advantage as a space power will erode (although SPACECOM advocates hope to preserve this advantage through dominating space).

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 likely 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

²⁵ Recent studies suggest that a nuclear detonation in space would be extremely destructive. It would create an electromagnetic pulse [radiation] that would destroy satellites in a matter of weeks. William J. Durch, *Twenty-First Century Threat Reduction: Nuclear Study Results From DTRA/ASCO* (Ft. Belvoir, VA: Advanced Concepts and Technologies Division, Advanced Systems and Concepts Office, Defense Threat Reduction Agency, November 30, 2001), at www.dtra.mil/about/organization/nuclearstudies.doc.

²⁶For some skeptical views from the military, see Lt. Col. Bruce M. Deblois, "Space Sanctuary: A Viable National Strategy," *Air Power Journal*, Vol. 12, No. 4 (Winter 1998); David W. Ziegler, "Safe Heavens: Military Strategy and Space Sanctuary Thought," M.A. thesis, The School of Advanced Airpower Studies, Maxwell Airforce Base, AL, June 1997; and Major Howard D. Belote, "The Weaponization of Space: It Doesn't Happen in a Vacuum," *Aerospace Power Journal* (Spring 2000).

²⁷ For further discussion on this point, see Karl. P. Mueller, "Is the Weaponization of Space Inevitable?" Paper presented at annual meeting of the International Studies Association, New Orleans, March 27, 2002; and Deblois, "Space Sanctuary."

space to compete directly and immediately with U.S. space-based assets, the United States will almost certainly guarantee the loss of the advantages it seeks to protect. Although an arms race in ASAT weapons is one of the dangers, currently of greatest concern to states such as China and Russia is the U.S. use of space systems to augment its nuclear and conventional strategic strike capabilities. From their perspective, the U.S. decision to expand strategic capabilities into space represents 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.²⁹

Finally, a military competition in space would largely extinguish the role of law in space in favor of a regime of power. Despite the narrow organizational appeal of the latter to SPACECOM, the much broader interests of the United States in space lie in the promotion of the rule of law. The United States has long been a strong advocate of the rule of law both at home and in global affairs, in the latter case seeing it as the best way to promote its 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 rather than the more uncertain and potentially disruptive protection of untested and complex 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

The current legal regime in space 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.³⁰ 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 (for example, the Intergovernmental Agreement on the International Space Station, the International Telecommunications Union, the International Civil Aviation Organization, and the World Meteorological Organization). The general principles include that space should be reserved for “peaceful purposes” and that it is nonappropriable. However, due to the small handful of states historically able to operate in space, these principles have not really been tested and remain

²⁹ DeBlois, “Space Sanctuary.”

³⁰ The basic space treaties are the Outer Space Treaty (1967), the Rescue and Return Agreement (1968), the Liability Convention (1972), the Registration Convention (1975), and the Moon Treaty (1979). An arms control treaty, the Limited Test Ban Treaty (1963), bans nuclear tests in the atmosphere, outer space, and under water. Until June 13, 2002, when it expired, the ABM Treaty (1972) banned space-based missile defense systems between the superpowers. Both SALT I and SALT II, although primarily about arms control on land, also had an outer space component. SALT I (along with the ABM Treaty) prohibited interference with national technical means of verification (i.e. satellites). The SALT II agreement prohibited the development, testing or deployment of weapons of mass destruction in space.

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” used in the Outer Space Treaty. This principle is not sufficiently widely accepted that it could be called a principle of customary law.³¹

Additionally, a recurring tension exists between the communitarian principle of “equal access” to outer space and an entrepreneurial principle of “first come, first served.” The spacefaring states have historically been concerned with optimizing the use and exploration of outer space while non-spacefaring states have been concerned with influencing rulemaking to constrain the activities of those states and to protect their own future interests.

With regard to “peaceful uses,” the current legal regime consists of a set of modest limitations regarding military activity in the vacuum of near-earth space, and complete nonmilitarization of celestial bodies such as the moon. Space has always been militarized to some degree. Although the international community has declared that outer space should be reserved for “peaceful purposes,” the spacepowers have interpreted this to permit “passive,” or military support, activities (observation, surveillance, communications, detection of 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. From the beginning, U.S. space programs have been primarily military, not civilian or scientific, in nature.³⁴

Thus the current legal regime imposes certain important prohibitions on military activity but also leaves significant gaps. It prohibits the stationing of weapons of mass destruction, including nuclear weapons, in space. However, it does not cover the transit of nuclear weapons through space or nuclear weapons launched from earth into space for the purpose of destroying incoming missiles (such as some of the early U.S. and Soviet missile defense interceptors in North Dakota and around Moscow permitted under the 1972 ABM Treaty). It also says nothing about ASAT weapons or the placement of conventional weapons in space.³⁶ U.S. termination of the ABM treaty in June 2002 removed the 30-year prohibition on space-based ballistic missile defenses for the superpowers.

In short, major gaps exist in the legal regime to prevent the weaponization of space. Under existing international law, both conventional and “exotic” weapons are arguably

³¹ David Tan, “Towards a New Regime for the Protection of Outer Space as the ‘Province of All Mankind,’” *Yale Journal of International Law* 25, (2000), p. 10.

³⁴ Ivan A. Vlasic, “The Legal Aspects of Peaceful and Non-peaceful Uses of Outer Space,” in Bhupendra Jasani, ed., *Peaceful and Non-Peaceful Uses of Outer Space* (Geneva: UNIDIR, 1991).

³⁶ Rebecca Johnson, “Multilateral Approaches to Preventing the Weaponization of Space,” *Disarmament Diplomacy*, No. 56 (April 2001). For an extended discussion of the ambiguities in the existing law, see Peter Jankowitsch, “Legal Aspects of Military Space Activities,” in Nandasiri Jasentuliyana, ed., *Space Law: Development and Scope* (Westport: Praeger, 1992). The United States, the Soviet Union and its successor states have been unable to agree on an arms control agreement for antisatellite systems, despite several attempts since 1970 to do so.

permissible in space. Two types of space-based weapons are possible: 1) kinetic energy weapons (“hit to kill”), which “kill” by hitting another weapon at high speed (although to increase their effectiveness they may also carry chemical explosives), and 2) directed energy weapons (DEW), which destroy by beaming electromagnetic radiation at the speed of light.³⁷

Civilian satellites largely lack any legal protection under international law.³⁸ They can be attacked directly without causing any loss of life and without violating any existing formal legal rules. In contrast to the law for military reconnaissance aircraft, damage to civil remote sensing satellites would not necessarily be regarded as an attack on a state’s national security assets, yet military services rely increasingly on civilian satellites for communications and observation.³⁹ In the absence of agreed-upon controls, such satellites may become objects of attack. Additionally, the laws governing management of, and responsibility for, space debris, remain underdeveloped. More than 10,000 objects larger than 10 centimeters (large enough to be continuously tracked) whiz in orbit around the earth, along with an estimated 300,000 even smaller pieces of debris. Given the tremendous velocity of objects in orbit, even a piece of debris the size of a fleck of paint can cause serious damage to spacecraft.

Origins of the Space Regime

The current legal regime was shaped by an initial, nearly universal enthusiasm in the 1950s for adopting principles for preserving space for peaceful purposes, initially interpreted restrictively to mean “nonmilitary” activity. The United States initially took this position. This was followed soon by actual state practice (of the two superpowers), which quickly established that “peaceful” included passive military means. “Peaceful” would thus be interpreted to mean “nonaggressive.” Although much of the developing world objects to this interpretation, and prefers to read “peaceful” as meaning “nonmilitary,” no state has ever *formally* protested the passive military uses interpretation, as would be required to prevent a rule of customary international law from taking hold.⁴⁰

The use of space for passive military activities was encouraged by superpower perceptions of a close relation between military activity in near-earth space and military activity on earth. The military use of space was driven initially by U.S. interest in the 1950s in satellite

³⁷ One proposed system, an X-ray laser powered by a nuclear explosion, raises the question of what precisely constitutes a nuclear weapon. Some proponents of space-based missile defense systems argue that a nuclear-powered laser is not a nuclear weapon. Another question is whether any of the laser or directed-energy weapons, for instance, could be considered “weapons of mass destruction.”

³⁸ Bhupendra Jasani, “Orbiting Spies: Opportunities and Challenges,” *Space Policy* (2001), p. 5. The ABM, SALT and START agreements prohibit deliberate interference with “national technical means,” satellites used to verify treaties, but these treaties apply (or applied when they were in force) only to the United States and Russia.

³⁹ I discuss this in greater detail later in the paper.

⁴⁰Vlasic, “Peaceful and Non-Peaceful Uses of Outer Space,” pp. 38-42, 44-45.

reconnaissance capabilities. The Soviet Union, behind in satellite technology (although ahead in launch technology), initially opposed use of space for satellite reconnaissance on the grounds that satellites orbiting overhead would violate sovereignty by intruding upon a country's airspace and therefore that they were not "peaceful." Once it recognized the benefits of this capability and developed its own satellites, however, it eventually accepted the U.S. interpretation that "peaceful" should mean "nonaggressive." The initial round of negotiations on military activity in space, from 1957 through late 1966, thus resulted in a set of rules (including nonmilitarization of celestial bodies and modest arms control measures on near-earth space) that conformed closely to the superpowers' existing preferences.⁴¹ The use of satellite surveillance for monitoring U.S.-Soviet arms control agreements was a significant breakthrough in arms control and proved to be an important benefit of this capability.

Three Analogies for Outer Space

Much of the initial effort at regime creation in outer space was framed by three analogies—air, high seas, and Antarctica. As M.J. Peterson has shown, each of these analogies suggested a distinct approach to the regulation of space. The air and high seas analogies implied treating outer space as open to forms of military activity accepted under general international law, while the Antarctic analogy suggested treating outer space as "off limits" to all military activity.⁴² Because these analogies continue to influence arguments about the regulation of space, it is important to understand their contribution to the development of the current regime.

The *air analogy* supported notions of state control over all activity above its territory. It implied that the same rules regarding military activity that prevailed within a state's own domain, including its airspace, should be applied to outer space. These rules included the right to construct and maintain weapons and armed forces, and to use armed force against unauthorized intruders in self-defense. For example, military aircraft intruding upon national airspace can be shot down (civilian aircraft can be escorted or forced down).⁴⁶ The Soviet Union initially supported this analogy in the 1950s, but eventually shifted to the "high seas" analogy after developing reconnaissance satellite capabilities in the 1960s.⁴⁷

The *high seas analogy* supported treating outer space as a "commons," an area open to use by all states for the full range of military purposes accepted under international law. States

⁴¹ M.J. Peterson, *International Regimes for the Final Frontier*, unpublished manuscript, University of Massachusetts, Amherst, 2001. I thank her for sharing this manuscript.

⁴² M.J. Peterson, "The Use of Analogies in Developing Outer Space Law," *International Organization* 51:2 (Spring 1997). Peterson traces how analogies of air, high seas and Antarctica were used by negotiators in the 1950s to frame the issue of space. This discussion draws on her very useful analysis in this article and in her larger manuscript.

⁴⁶ Peterson, *Regimes for the Final Frontier*, pp. 146-47.

⁴⁷ Note that the concept is at best impractical because, except for Brazil and a few other countries on the Equator, the law of physics prevent any nation from maintaining satellites only over its own territory.

are free to send warships out on the high seas, limited by the general UN Charter rules governing the use of force between states. States can also send out military patrols, and carry out maneuvers and weapons testing so long as these do not interfere with other states' freedom on the high seas. They do not have the right, however, to shoot down foreign reconnaissance aircraft flying above the high seas, even when these aircraft are flying high enough to permit observing or photographing portions of the state's territory.⁴⁹

The *Antarctic analogy*, available after completion of the Antarctic Treaty in 1959, suggested nonmilitarization of an entire area. The treaty stated that Antarctica shall be used "for peaceful purposes only," and defined this to mean a prohibition on all military activities. This entailed far more comprehensive limitations than prevailed within the state domain or on the high seas. It banned even forms of military activity regarded as defensive under the UN Charter.⁵²

At the time space law was first being developed—in the 1950s—the United States, along with many other countries, and most international lawyers, supported the high seas analogy.⁵⁴ The decision to apply the notion of "commons" to outer space—i.e. space was nonappropriable—effectively ruled out the state domain option (the air space analogy), which the Soviet Union at first supported. The choice between UN Charter rules (permitting the right of self-defense, and thus some military activity) or nonmilitarization remained, however, and this decision came only with the selection of the "high seas" analogy.⁵⁵ The high seas analogy has remained firmly in place up to now.

What explains the agreement not to militarize the Antarctic? Several factors appear to be relevant. First, the perceived advantages of a military facility in the frozen Antarctic were low, and the perceived difficulty of defending it from attack because of isolation, distance, and difficulty of the physical environment were high. This encouraged agreement on mutual nonpossession.⁵⁸

Second, according to Deborah Shapely, the only real reason the United States felt it had to establish a military presence there was to make sure the Soviets did not.⁶⁰ Once it was evident

⁴⁹ Peterson, *Regimes for the Final Frontier*, pp. 147-8.

⁵² *Ibid.*, p. 148.

⁵⁴ Hamilton DeSaussure, "The Freedoms of Outer Space and Their Maritime Antecedents," in Nandasiri Jasentuliyana, ed., *Space Law: Development and Scope*. (Westport: Praeger, 1992).

⁵⁵ Peterson, *Regimes for the Final Frontier*, p. 148. In 1976, eight equatorial states claimed sovereignty over portions of the geostationary orbit, 22,000 miles above the earth. They argued that the norm of nonappropriability perpetuated the space powers' unfair advantage in space. This claim has been rejected by all the major spacefaring powers.

⁵⁸ Peterson, *Regimes for the Final Frontier*, p. 151.

that the Soviets would support nonmilitarization, an agreement was quickly reached. Thus mutual U.S.-Soviet interests—the U.S.-Soviet rivalry and a concern to keep the others out--were critical.⁶¹

Third, a key role was played by the scientific constituency, which lobbied for freedom of scientific exploration during International Geophysical Year (IGY) from July 1957-December 1958. It secured a temporary “gentleman’s agreement” on free access to the Antarctic, which was eventually made permanent in a treaty. Shapely identifies several political innovations that facilitated cooperation and eventual achievement of the treaty: the temporary demilitarization of the Antarctic for the IGY, the pooling of weather and rescue services, previously done on a national basis, and a series of personnel exchanges among rival national stations. Only after the IGY showed that such arrangements could work in practice were its temporary arrangements made permanent. It was also important that the scientist constituency favoring demilitarization had no rivals. Had another group of scientists with different interests appeared, the evolution of the regime might have been different.⁶²

Fourth, and finally, the symbolic aspects of achieving the treaty may have been a motivating factor, especially for the Soviets. The United States proposed the terms of the treaty, including a moratorium on claims to the Antarctic. The Soviets agreed very quickly to the proposed ban on military activities, suggesting that they had not been seeking military advantage but rather prestige. From the Soviet viewpoint, a treaty offered a chance to stay on in the region and appear equal to the West. The brevity of the document likely suggests an interest in getting an agreement fast.

Thus the treaty legitimized and perpetuated the de facto regime that had evolved rapidly in 1957-61, making rules hand-tailored to immediate, practical needs, and sidestepping awkward problems like sovereignty and U.S.–Soviet rivalry. The evolution of military technology since then has made Antarctica less rather than more useful militarily.⁶⁴

Many of the characteristics of the Antarctic---its remoteness, the difficulty of the physical environment, and the perceived lack of advantage of military facilities---also applied to celestial bodies, though not to the intervening vacuum of space. Governments and international lawyers

⁶⁰ There is an interesting parallel here with SPACECOM’s claim, however disingenuous, that the United States has to establish a military presence in space to prevent another nation from doing so first. I thank Nancy Gallagher for this observation.

⁶¹ Deborah Shapely, “Antartica: Why Success?” in Alexander George, et al., eds., *U.S.-Soviet Security Cooperation: Achievements, Lessons, Failures* (New York: Oxford University Press, 1988), p. 327. Christopher Joyner, *Governing the Frozen Commons: The Antarctic Regime and Environmental Protection* (University of South Carolina Press, 1998), pp. 54-56.

⁶² Shapely, “Antarctica.”

⁶⁴ *Ibid.*, p. 314; Peterson, “Analogies and Outer Space Law,” pp. 257-58.

soon came to perceive the weaknesses of the high seas analogy as applied to the Moon, and found the Antarctic analogy (complete demilitarization) relevant for the Moon.

The North-South Context

Although East-West dynamics influenced many of the early agreements on space, by the mid-1970s, as the economic benefits of space became more evident, North-South dynamics became much more prominent. In 1979, the international community concluded negotiations on the Moon Treaty. The initial impulse for negotiations stemmed from superpower desire to avoid political-military conflicts regarding the Moon. However, efforts by the Group of 77 nonaligned nations to extend the “common heritage of mankind” principle (borrowed from the deep seabed regime) to the Moon soon dominated discussions.⁶⁵ This principle involved notions of managing use of the resources of the Moon and other natural bodies in space by a global intergovernmental organization for the benefit of all. Though a multilateral treaty was written, only ten states have ratified it, suggesting little support for this principle as the core of a strengthened management regime. Although the common heritage principle introduces notions of equity into space law, in practice the proposed regime for harvesting the Moon’s resources is “even more hypothetical than that for the deep seabed, making the discourse all the more ideological due to its abstraction from present reality.”⁶⁶ Nonetheless, the common heritage principle retains significant political support and is important symbolically, making it politically necessary to pay attention to it in any elaborated regime for space.

Beginning in 1978, efforts were made to amend the Outer Space Treaty by adopting additional limitations on military applications of space technology or extending the prohibition on military activity from the Moon and other celestial bodies to near-earth space. In March 1977, the United States and the Soviet Union agreed to discuss prohibiting or severely limiting the use and deployment of ASAT weapons in space. They held three negotiating sessions, from June 1978 to June 1979. Agreement to impose a moratorium on ASAT systems seemed imminent at the last of these three meetings. Unresolved problems included the definition of ASAT-related activities, and the Soviet demand to include the U.S. space shuttle program under the proposed moratorium because of its supposed residual ASAT capability. Compromise proved impossible. Although a fourth round of talks was expected, after June 1979 the Carter administration put further talks on hold in order to give priority to ratification of the SALT II treaty. Following the Soviet invasion of Afghanistan in December 1979, the ASAT negotiations, like the SALT treaty, fell victim to the new chill in U.S.-Soviet relations. In 1980 the Soviets resumed their ASAT tests.⁷¹ In the early 1980s the Soviets proposed several initiatives on ASAT arms control, but the Reagan administration, now pursuing the Strategic Defense Initiative,

⁶⁵ Peterson, *Regimes for the Final Frontier*, p. 21.

⁶⁶ Thomas Franck, *Fairness in International Law and Institutions* (Oxford University Press, 1995), p. 400.

⁷¹ Coit D. Blacker and Gloria Duffy, *International Arms Control: Issues and Agreements* (Stanford University Press, 1984), 2nd ed., p. 122. Steven Weber and Sidney Drell, “Attempts to Regulate Military Activities in Space,” in Alexander L. George, Philip J. Farley and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation* (New York: Oxford University Press), pp. 407-12.

showed little interest. The ASAT talks between the United States and Russia are still formally in suspension. The ASAT issue was subsequently taken up for multilateral consideration at the Geneva-based Conference on Disarmament (CD) in the context of measures to prevent an arms race in outer space.

In recent years, delegates to the CD have proposed a variety of initiatives: additional protocols to existing agreements; universal adherence to existing agreements; new treaties to ban the development and deployment of specific weapons in space; a comprehensive international regime outlawing any military use of outer space; a strengthening of technical verification to ensure compliance with agreements; and a growing emphasis on confidence-building as an important means for ensuring the peaceful uses of outer space.⁷² Although some measures have been undertaken, most significant initiatives have been blocked, generally by the United States. In opposing strengthened arms control measures in space, the United States insists that there is no danger of an arms race in space, and that existing treaties banning the stationing of weapons of mass destruction in space are sufficient. Given the widespread use of space for surveillance and communication, the banning of all military activity in space is, in any case, a wholly impractical option.

For the last four years, the 66-member CD has been unable to conduct any negotiations at all because of a deadlock between the United States and the rest of the members over whether the CD should negotiate an agreement to prevent an arms race in outer space. In June 2001, China submitted a draft treaty to prevent the testing, deployment or use of any weapons in outer space, leaving no doubt that it was targeted at U.S. plans for missile defense and enhanced space capabilities. The United States staunchly opposed it.⁷³ In June 2002, Russia and China submitted their first-ever joint proposal to the CD for an international treaty to ban space weapons. Recent statements by U.S. officials suggest that the U.S. position on the issue has hardened, if anything.⁷⁴

Thus the international community appears to have reached an impasse over the future of space. Time and technology do not stand still, however. If conscious choice fails to determine the future of space, it will be determined by default. Still, as the 40-year history of U.S. restraint with regard to space weapons shows, the weaponization of space is not a matter of technological determinism. More accurately, it is a development being pushed by SPACECOM and its

⁷² Pericles Gasparini Alves, *Prevention of an Arms Race in Outer Space: A Guide to the Discussions in the Conference on Disarmament*, (Geneva: UNIDIR, 1991); Donald Sinclair, "Outer Space: The Conference on Disarmament Dimension," in J. Marshall Beier and Steven Mataija, eds., *Arms Control and the Rule of Law: A Framework for Peace and Security in Outer Space* (Toronto: Center for International and Security Studies, York University, 1998), pp. 29-33.

⁷³ Chinese working paper, "Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space," (CD/1645), June 2001. Wade Boese, "CD Ends Year Without Negotiations," *Arms Control Today*, Vol. 32, No. 8 (October 2002).

⁷⁴ Statement by U.S. Permanent Representative to the CD, "Outer Space Remarks by Ambassador Eric Javits to the Conference on Future Security in Space," New Place, England, May 28-29, 2002.

supporters with hardly any opposition from, or even scrutiny by, U.S. political leaders. It is now useful to consider what some future options for space might be.

Three Scenarios for the Future

There are three alternative scenarios for the future of space: U.S. national dominance, “muddling through,” or a more elaborated normative regime including treaties and specific operational rules.

U.S. space dominance – In this scenario, the United States, through power politics, imposes and enforces rules for outer space as it sees fit. This could include the possibility of stationing weapons in space. This scenario extends the model of the 1950s and 1960s, when the two superpowers, the only spacefaring nations at the time, effectively wrote the rules of space through their actions. In this scenario---to use a favored analogy of its supporters---the United States, through its immense technological capabilities, dominates space the way Britain dominated the high seas a hundred years ago. Taking advantage of the vastly asymmetrical distribution of power in space, the United States enforces and defends a hegemonic order in space that promotes U.S. interests and defends U.S. freedom of action. Its essence is a monopoly of space and denial of others’ access to it. It is aimed at using outer space for achieving strategic objectives on the ground, and it favors aggressive interpretation of the traditional legal principle that “anything that is not expressly prohibited is permitted.” International treaties and negotiations are not seen as particularly relevant, needed, or even desirable for securing an order in outer space, while the most extreme views boldly advocate sweeping away even the existing law as an unwelcome constraint on the projection of power and the assertion of sovereignty in space.⁷⁶ This is largely the view of SPACECOM and its supporters.

Muddling through – in this scenario, the international community continues its current practice of operating under diverse interpretations of nominally shared but vaguely specified principles, seeking incremental modifications to the existing regime where it can. The legal regime is shaped largely by unilateral interpretation of general principles combined with informal “rules of the road.” Rule-creation in this scenario is ad hoc, incremental and piecemeal. It continues to reflect traditional dominant norms of freedom of exploitation of space. Negotiations continue to be dominated by states, and to take place (or fail to take place, as it were) in the traditional forums. The United States does not aggressively pursue dominance of outer space, but neither does it support an effort at comprehensive rulemaking. This scenario is

⁷⁶According to SPACECOM, “Due to the importance of commerce and its effects on national security, the United States may evolve into the guardian of space commerce—similar to the historical example of navies protecting sea commerce.” *Vision for 2020*, p. 7 There are serious flaws in the Pax Britannica analogy, as I discuss further below. One advocate of U.S. dominance suggests that the United States develop “a Monroe Doctrine for space.” Steven Lambakis, *On the Edge of the Earth: The Future of American Space Power* (University of Kentucky Press, 2001), pp. 264-5, 275. Everett Dolman argues that the United States should “declare that it is withdrawing from the current space regime” and establish a principle of “free-market sovereignty in space.” The United States should also “at once seize military control of low-Earth orbit.” This would be “for all practical purposes a police blockade of all current spaceports...” Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (London: Frank Cass, 2001), p. 157.

nominally the current official position of the United States, which maintains that the existing legal regime for space is entirely adequate and that U.S. military plans for space pose no threat to other nations.

A more elaborated normative regime – in this approach, the international community attempts to negotiate rules that would ensure that commercial, security, and scientific interests in space are secured. It emphasizes international cooperation among all parties with an interest in space, and widespread participation in decisionmaking and rulemaking regarding space, including by nonstate actors. Its rules, which would eventually need to be embodied in treaties, would be designed to prevent the predominance of any single power in space. This approach would require a shift away from an operational regime based largely on a “freedom of the seas” analogy to one based more on principles of comprehensive security, equal protection in space, and equity in the use of space resources. Such an approach may well be favored by a majority of states (excepting, at the present time, the United States), including both spacefaring and non-spacefaring nations.

For several reasons, the first two scenarios are unlikely to lead to stable outcomes. As discussed earlier, U.S. efforts at space dominance will likely inspire other countries to pursue countermeasures to offset U.S. capabilities, thus risking a never-ending search for security in space that will leave all worse off. Some advocates of space weaponization argue that others will be “deterred” from responding to U.S. deployment of space weapons for fear of a U.S. counterattack or out of a conviction that there is no point competing because the United States will always be ahead.⁸¹ But proponents of this view have so far offered little explanation of how or why this would be the case. Given the vast U.S. dependence on satellites, other countries merely have to pursue an “asymmetrical warfare” strategy of building antisatellite weapons, and there are multiple and relatively easy ways to do this. Because of this, dominance will be very hard to achieve, and will also have adverse consequences—including alienating allies, pushing Russia and China closer together, and placing at risk other U.S. interests in space.⁸²

Legal possibilities for interference with U.S. space ambitions are also quite extensive. Countries party to the 1990 Conventional Forces in Europe (CFE) Treaty could take legal action on the basis of treaty provisions prohibiting interference with national technical means of verification. The 1972 Liability Convention, and Article 7 of the Outer Space Treaty, on liability, make parties that launch objects into space liable for damage to the property of another treaty party. Article 9 of the Outer Space Treaty provides for consultations if any member state believes an activity planned by another treaty party would cause “potentially harmful

⁸¹According to Dolman, “If the United States were willing to deploy and use a military space force that maintained effective control of space, and did so in a way that was perceived as tough, non-arbitrary, and efficient, other states would quickly realize that they had no need to develop space forces.” It would “serve to discourage competing states from fielding opposing systems.” In his view, the U.S. ability to deny others’ military access to space “makes the possibility of large-scale space war and or military space races less likely, not more,” Dolman, *Astropolitik*, pp. 158-59.

⁸²Michael Krepon, “Lost in Space,” *Foreign Affairs*, 80, 3 (May/June 2001).

interference with activities in the peaceful exploration and use of outer space.” Legal actions directed at the United States on the basis of these provisions could have a substantial nuisance value for the United States, especially if developing countries mobilized behind such actions.⁸⁵

The muddling-through scenario is also unlikely to lead to a stable outcome. It is, in any case, more a default possibility than a policy option that can be coherently defended. It is unlikely to adequately balance the variety of interests in space, leading to a less coherent and durable regime than would result from a more comprehensive effort at rulemaking. Most importantly, it involves a substantial risk that the current legal regime will collapse if not assertively defended. An analogy of sorts is provided by the incremental militarization of air after World War I. As Jack Hitt notes, the Air Force began as a wing of the Army, flying over enemy territory and providing surveillance. Then the pilots began shooting one another down; later they started to drop bombs. Space can be seen as undergoing a similar process, “progressing out of its current stage as an arena of surveillance to microsatellites attacking other satellites to, finally, space-based lasers aiming down at fighter jets to blast them from the sky.”⁸⁶

This is a troubling scenario to many, but it is a likely one if the current legal regime is allowed to stagger along without significant reinforcement. Supporters of weapons in space use this analogy to argue that Americans (and others) will eventually grow comfortable with the use of space for increasingly aggressive purposes.⁸⁷ This could possibly be true, but, for reasons discussed further below, it is probably less likely than its supporters hope.⁸⁸ Even if it were true, that does not make it inherently desirable. Achieving a “comfort level” with space weapons---if such is possible---will likely come at a very high price.

Thus the muddling-through scenario is more likely a recipe for the slow death of the space regime than a viable policy choice for the long haul. A more elaborated normative regime

⁸⁵ Jonathan Dean, “Future Security in Space: Treaty Issues,” Bulletin 20, Prevention of an Arms Race in Outer Space, International Network of Engineers and Scientists Against Proliferation, May 2002, at www.inesap.org.

⁸⁶ Jack Hitt, “The Next Battlefield May Be in Outer Space,” *New York Times Magazine*, August 5, 2001, p. 9.

⁸⁷ Lambakis, *On the Edge of the Earth*, pp. 256, 278, 286. According to SPACECOM, “the emergence of space power follows both of these models [the evolution of land power and of air power]. Over the past several decades, space power has primarily supported land, sea and air operations...During the early portion of the 21st century, space power will also evolve into a separate and equal medium of warfare.” *Vision for 2020*, p. 1. This will be facilitated by development of “a new generation of agreements and treaties” that will “normalize space operations.” The United States should “shape the international community to accept space-based weapons to defend against threats in accordance with national policy.” *Long Range Plan*, pp. 63, 139. Gray and Sheldon argue that what is needed most urgently today is “a relatively mundane understanding” of the space environment as “*just another environment of human conflict*.” Colin S. Gray and John B. Sheldon, “Spacepower and the Revolution in Military Affairs,” in Hays et al., eds, *Spacepower for a New Millennium*, pp. 242, 247 (italics in original).

⁸⁸ Many people remain uncomfortable with nuclear weapons, after all, and the distaste for nuclear deterrence has grown, not diminished, over the years.

offers the best prospects for securing a stable order in space that preserves security and stability for all. However, the interests in space are diverse and complex, and some of the parties, such as those tied to defense industries, may have little interest in keeping space free of weapons. The next several sections lay out some of the considerations that will need to be taken into account in thinking about the content of, and strategies for developing, a more robust regime.

Space as an Issue Area

Any future regime in space must take into account certain features of space as an issue area. First, creation of regimes for space activity has been conditioned from the start by the highly unequal distribution of overall and issue-specific power in the international system. Long dominated by the Soviet-American duopoly, today more than 30 countries possess significant space industries and eight provide launch services. The Russians and Americans remain the “major spacepowers” capable of a full range of space activity. An additional six states or regional entities are capable of launching satellites and other objects, but not manned space vehicles, into space (Europe, France, China, India, Japan, Israel).⁸⁹ Finally, a larger group of nations, along with four intergovernmental organizations, possess significant space capabilities in narrow areas, but are dependent, in one or more critical areas, on other nations to achieve the benefits of space. Many in this group build and operate objects launched for them by one of the launching states.⁹⁰ Though a small minority in a world of over 190 states, the spacefaring states’ ability to shape the situation through their own actions has given them extra weight in the bargaining process.

Beyond the spacefaring states, a larger group of states selectively participates in space systems (e.g. INTELSAT) but possess little in the way of space technology themselves. This group is most concerned with the economic and military significance of space. Among states involved in space activities, they are the group least likely to be a threat to world stability based on space capabilities.

A third group of states includes the ever-diminishing number of states that are not involved with space in any way.⁹¹ Finally, also involved in space are a large number of private firms based in industrial states.

The major change in the exploitation of space over the decades is the large increase in commercial interest in space. International space activity has moved increasingly toward practical applications for commercial markets, though scientific research stills plays a major role.

⁸⁹Peterson, *Regimes for the Final Frontier*, p. 21.

⁹⁰ This group includes South Africa, Canada, Brazil, Argentina, Australia, Germany, Indonesia, and the UK. The intergovernmental organizations are INTELSAT, INMARSAT, COMSAT and ARABSAT.

⁹¹ Freleigh J.F. Osborne, “Outer Space and Multilateral Security: Current Trends and Possibilities,” in Beier and Mataija, eds., *Arms Control and the Rule of Law in Outer Space*, pp. 4-6.

Commercial space launches started to outnumber military ones in 1998.⁹² Telecommunications, remote sensing and Geographic Information Systems (GIS), and Global Satellite Navigation Systems (GSNS) are rapidly becoming significant commercial applications. They have uses in environmental studies (global observing, climate change, land use, disaster management planning) and communications services (broadcasting, communication and navigation). According to some studies, there will be between 262 to 313 communications satellites in geostationary orbit by 2006.⁹³ There are also numerous commercial spin-offs such as secondary applications of space technology. The manufacture of launch vehicles has been developed into a lucrative industry to meet the needs of the satellite operators. It is estimated that the commercialization of space has already generated \$90 billion worth of revenues, a figure that, before the collapse of a large part of the telecommunications industry in 2000, was growing at an annual rate of 20%. Pre-2000 estimates of the satellite launch market suggested it would generate more than \$45 billion over the period 1998-2007.⁹⁴ These figures are now undoubtedly revised downward.

Thus an increasing number of states operate remote sensing on a commercial basis. For example, France, Canada, India, Israel and Russia, in addition to the United States, all have built their own satellites and the data from them are sold commercially.⁹⁸ Economic power in space remains concentrated in North America, however. North America's share of the top 50 companies in terms of space revenues has been relatively stable at around 75%, Europe at around 20% and Asia at around 6%.⁹⁹

Access to communications and other benefits of space is of special interest to developing nations, which want to bridge the "information gap" between the industrial nations and emerging economies. The Third UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in July 1999, focused on developing a comprehensive worldwide environmental protection program for using space applications for human security and economic

⁹² Hitt, "The Next Battlefield."

⁹³ "Commercial Benefits and Spin-Offs from Space," Background Information for UNISPACE III, downloaded from UN Office of Outer Space Affairs website.

⁹⁴ "The United Nations, Private Enterprise and Space," p. 1. Background information for UNISPACE III, downloaded from UN Office of Outer Space Affairs website. The launch and satellite industry is currently facing the threat of a severe oversupply of satellite building and launch capacity, and falling prices. The market for low-earth orbit satellites for mobile telephones has not grown as expected. The forecasts are thus for little significant growth in the launch industry in the coming decades. Industry analysts expect market restructuring and consolidation among the five global makers of telecommunications satellites (Alcatel and Astrium in Europe, and Boeing, Lockheed and Loral in the United States). Kevin Done, "Survey—Business of Space," *Financial Times*, March 16, 2001.

⁹⁸ Linda L. Haller and Melvin S. Sakazaki, "Commercial Space and United States National Security," prepared for the Commission to Assess United States National Security Space Management and Organization, 2000, pp. 13-14, at www.fas.org. Jasani, "Orbiting Spies."

⁹⁹ "Race Tightens for No. 1 Spot," *Space News*, p. 12

development. It brought together member states, leading figures from the world of space technology, and, uniquely for a UN conference, private enterprise representatives (global satellite navigation systems, for example, did not exist at the time of the previous conference in 1982). The UN Office of Outer Space Affairs has organized two symposia for industry on satellite services applications since then.¹⁰⁰

Of the 1000 active satellites currently in orbit, about an eighth belong to the U.S. military, and that percentage will diminish by the end of the decade, when experts estimate that operating satellites in space will reach 2000.¹⁰¹ Well over 250 of 2816 total (active and inactive) satellites in orbit in February 2003 were operated by international organizations, NGOs, or private corporations.¹⁰² During the 1991 Persian Gulf War, about 25% of U.S. military communications was provided over commercial satellite systems, a number that grew to 85% in the 2003 war against Iraq.¹⁰³ As one military writer noted, “One day we may find ourselves defending against armed attacks supported by commercial satellite companies, possibly even the same companies supporting our forces.”¹⁰⁴

Actors in Space and Their Interests

The various actors in space have different, and sometimes competing, interests, and these will influence the type of operational norms and rules that states are likely to agree on in any negotiations for a more comprehensive regime.

States. The Indian and Chinese space programs, like those of Russia and America four decades ago, are by-products of missile development that are meant to show off their technological prowess. Both India and China have ambitions as serious space powers. India launched its first test rocket in 1963, and took its first step as a commercial satellite launcher in 1999, putting South Korean and German satellites into orbit. With the launch in April 2001 of its Geosynchronous Satellite Launch Vehicle, designed to put broadcasting and communications satellites into geostationary orbit, it has joined the few countries that can launch lucrative, heavyweight satellites deep into space. Developing its own rocket technology has boosted its

¹⁰⁰ “Recent and Future Activities of the UN Office of Outer Space Affairs,” *Space Policy* 17 (2001), p. 189.

¹⁰¹ Hitt, “The Next Battlefield,” p. 1.

¹⁰² Cheyenne Mountain Operations Center, “Satellite Score Box,” February 7, 2003, at www.cheyennemountain.af.mil, and Major David L. Willson, “An Army View of Neutrality in Space: Legal Options for Space Negotiation,” *Air Force Law Review*, 50, 175 (2001), p. 4.

¹⁰³ Bob Preston *Plowshares and Power: The Military Use of Civil Space* (National Defense University Press, 1994), p. 132.

¹⁰⁴ Willson, “Neutrality in Space,” p. 4, and “Pentagon Turns to Commercial Satellites to Ease Wartime Data Squeeze,” *Globe and Mail*, March 28, 2003. INTELSAT, an international treaty organization providing services to over 125 member countries, and now being privatized, moved its satellites into position in order to support coalition forces during the 1991 Gulf war.

technological reputation, and some in India have ambitions of sending an unmanned mission to the moon.¹⁰⁵

China also has lofty ambitions, and the potential for military space capabilities. The Chinese space program began in 1970 with the launch of a satellite on a Chinese-built rocket. With its Long March rockets, China is capable of launching anything from small experimental satellites to large telecommunications satellites. It is pursuing its first manned mission in space, which it has said it will carry out before the decade is out, with the long-term goal of establishing a manned space station.¹⁰⁹ Although some observers suggest this project has a military aspect, it is likely that China is pursuing the manned space program mostly for the prestige benefits (just as Russia and the United States did earlier), because manned programs do not offer significant military advantages over unmanned ones. China has had a photo imaging capability from space for about 20 years. It does not have a publicly identified dedicated antisatellite effort, although it is widely suspected of pursuing research on such capabilities. Existing launch capabilities could provide the basis for developing such a system.¹¹⁰ China has been highly concerned to constrain U.S. missile defenses and the weaponization of space as a threat to its own small deterrent force.

Europe's space program is driven by commercial rather than military ambitions. The European Space Agency mostly concentrates on communications technology, earth observation and space science. No evidence exists for any real enthusiasm among European nations to develop active space-based weapons systems.

Finally, Japan's program is somewhere in between. Japan's rocket program has been commercially uncompetitive in recent years. After a string of failed launches, Japan began a complete reorganization of its space program in 2000. It has been more successful on the scientific front, in 1998 sending a probe to Mars that will search for water. If Japan's unsuccessful H-2 rocket can be made to work, it could potentially have military uses.¹¹⁶ However, Japan's constitutional prohibition against offensive military capabilities, which restrains its defense spending, suggests it has little inclination to weaponize space.

Added to this are the large majority of the world's nations who are primarily interested in the economic benefits of space. Most nations would like guarantees that space will not be used against them, and have supported strengthening the legal regime in space to constrain weaponization. This includes key spacefaring nations. China's views have been noted, but Russia has also called strongly for an international treaty prohibiting weapons in space. In September 2001, Russian foreign minister Igor Ivanov outlined several key provisions for any

¹⁰⁵ "Runners Up in the Space Race," *The Economist*, April 14, 2001, p. 73.

¹⁰⁹ Leonard David, "China's Space Program Driven by Military Ambitions," March 13, 2002, at www.space.com/news/china_space_020313.html.

¹¹⁰ "Chinese ASAT Capabilities," Federation of American Scientists, at www.fas.org.

¹¹⁶ "Runners Up in the Space Race," p. 74.

new treaty on space security: no placing of weapons in orbit, no use or threat of use of weapons against targets in space, and establishment of adequate verification mechanisms.¹¹⁸ The Russian delegate to the CD reiterated this position in January 2002, calling for a moratorium on placing weapons in space until a treaty could be achieved.¹¹⁹

In late June 2002, Russia and China submitted a first-ever joint proposal to the CD for an international treaty to ban space weapons, clearly a response to U.S. withdrawal from the ABM treaty several weeks earlier.¹²¹ Although there was little new in the substance of the proposal, the fact that it dropped many self-serving provisions and focused on a few simple points that would have broad international appeal suggests that it was a serious effort. Additionally, the fact that it was joint suggests that, as critics of missile defenses have predicted, U.S. pursuit of missile defenses is driving Russia and China together, an adverse outcome for the United States. Canada, France, Sri Lanka, Egypt, and other members of the CD have also offered proposals to begin negotiations on the nonweaponization of space.¹²² As David Ziegler notes, “any assertion that the United States should aggressively pursue weaponization in order to beat adversaries already rushing in that direction is highly questionable.”¹²³

Industry. In addition to states, a large number of private firms operate in space or provide space services to governments. Just as the interests of industry have been one of the major factors conditioning the development of ocean law, so the interests of industry will strongly influence policy in space. For example, the Truman proclamation of 1945, in which the United States unilaterally claimed jurisdiction of the continental shelf off its coasts, was driven by the needs of the oil industry for legal security over underwater areas beyond the limits of the territorial sea as a prerequisite for investment and hence development (this claim eventually became generalized as a part of ocean law). Since only the state could provide such guarantees, government was asked to act, and obligingly did so. Commercial pressure also effectively shaped the U.S. attitude toward deep seabed mining.¹³¹

Similar dynamics operate in space. While many telecommunications and satellite firms will have an interest in preserving a stable environment in space in which to do business, other

¹¹⁸ James Clay Moltz, “Breaking the Deadlock on Space Arms Control,” *Arms Control Today* (April 2002), p. 6.

¹¹⁹ Statement by Ambassador Leonid A. Skotnikov, Permanent Representative of the Russian Federation to the Conference on Disarmament, Geneva, January 22, 2002.

¹²¹ Clare Nullis, “Russia and China Push for Treaty to Ban Arms in Space,” *Boston Globe*, June 28, 2002.

¹²² Sinclair, “Outer Space: The Conference on Disarmament Dimension,” p. 31.

¹²³ Ziegler, “Safe Heavens,” p. 52.

¹³¹ Ian Townsend-Gault and Michael D. Smith, “Environmental Ethics, International Law, and Deep Seabed Mining: The Search for a New Point of Departure,” in Van Dyke et al., *Freedom for the Seas in the 21st Century*, p. 394.

companies have a vested interest in the militarization of space. Large U.S. defense contractors such as Lockheed Martin and Boeing, the No. 1 and No. 2 U.S. military contractors respectively (Boeing is now the world's largest space company), have a strong interest in the development of the multibillion-dollar U.S. national missile defense. They are the co-heads of the so-called national team being shaped by the Pentagon to integrate more effectively the dozen or so existing missile defense programs. The defense funding bill signed into law January 10, 2002, by President Bush includes a lucrative \$8 billion for missile defense development. Other companies involved include Raytheon, TRW, Inc., General Dynamics Corp, and Northrop Grumman.¹³³ These companies can be expected to lobby heavily for the development of U.S. military capabilities in space, including weapons.

Even commercial satellite operators may have a close relationship with the military. Starting in October 2001, the U.S. National Imagery and Mapping Agency (NIMA) bought for \$1.9 million per month the exclusive rights to all images acquired over Afghanistan by the IKONOS-2 satellite since the Afghanistan conflict began, to prevent the satellite company from selling its pictures elsewhere. IKONOS-2, the world's highest resolution commercial satellite, was built by a U.S. firm, Space Imaging, and launched in September 1999.¹³⁴ The company called its deal with the U.S. government "a wonderful business transaction."¹³⁵ During the 1991 Gulf War, the U.S. government relied on commercial satellite communications services and remote sensing imagery from the French company SPOT Image, while both the Coalition and Iraqi forces used channels on ARABSAT.¹³⁶ Imagery of the Gulf region from both SPOT Image and the U.S. Landsat satellite was embargoed during the conflict.¹³⁷ In 1996, the United States relied on INTELSAT for communications among field commanders in Bosnia, and in 1999 for Kosovo.¹³⁸ According to a report prepared for the Rumsfeld Commission, the Pentagon uses commercial satellite systems for about 60% of its satellite communications needs. The Air Force currently relies on commercial systems for about 50% of its military satellite communications

¹³³ Jim Wolf, "Lockheed, Boeing Head Missile Shield Drive," January 11, 2002, biz.yahoo.com.

¹³⁴ *The Economist*, November 10, 2001, p. 74. Ikonos provides near real-time imagery with a resolution of 0.82 meters. U.S. military satellites have been able to see features smaller than this for years, but Ikonos does provide enough detail to count individual vehicles in convoys and to distinguish different types of aircraft, and so its images have appreciable military value.

¹³⁵ "The Satellite Wars," November 8, 2001, www.spacetoday.org

¹³⁶ F.R. Cleminson, "Banning the Stationing of Weapons in Space Through Arms Control: A Major Step in the Promotion of Strategic Stability in the 21st Century," in Beier and Mataija, eds. *Arms Control and the Rule of Law in Space*, p. 39.

¹³⁷ Jasani, "Orbiting Spies." Monopolizing imagery may conflict with the Remote Sensing Principles, adopted by the UN GA in 1986 [UN Resolution 41/65, December 3, 1986], which require that a country being sensed has the right to obtain images acquired over its territory in a reasonable time and at a reasonable cost. However, such problems would arise only if the sensed country knows that it is being photographed from space. This may not be possible for many countries.

¹³⁸ Haller and Sakazaki, "Commercial Space and U.S. National Security," p. 38.

needs, a number it estimates will rise to about 75%. The Air Force is also now the largest customer for commercial satellite imagery in the world.¹³⁹ The United States recently decided to make commercial satellites the primary source of data for the CIA's mapping program, in order to free up the government's own satellites for more specialized work.¹⁴⁰

High launch costs, and the fact that the biggest customers for high-resolution imagery are governments, will likely sustain the close relationship between commercial satellite operators and governments. However, it is likely that *users* of satellites (telecommunications and imaging companies)---as opposed to the *builders* (defense contractors)---will see their long-term interests better protected by the development of a stable legal regime in space than by its weaponization. Commercial users have to date remained largely disengaged from the space weapons issue. It is clear, however, that---contrary to SPACECOM's fondest visions---commercial satellite operators and their backers are not clamoring for military protection, or for hardening standards or other measures that might interfere with their profitability.¹⁴¹

Scientific community. This includes national space science agencies such as NASA and its equivalents, as well as industry and university-based scientists, and the nations cooperating in the International Space Station (ISS). This group has a significant interest in preserving space for peaceful and scientific purposes, and for promoting international cooperation in its use (although the interests of the United States, a major ISS player, may be divided). Scientists' groups have in the past played important roles in the achievement of arms control and environmental treaties, and can be expected to have a strong interest in a more specified rule-based regime for space.

The interests of these groups---states, industry, and the scientific community---will help shape the rules for any elaborated space regime. Views on how best to distribute the economic benefits of space are likely to range widely; compared with this, the relative consensus on the need to prevent the weaponization of space is quite remarkable. Only the United States (along with defense contractors) currently stands outside it. The United States justifies its position by reference to "freedom of the seas" in space, but this analogy has outlived its usefulness as an organizing principle for space.

The Declining Relevance of the High Seas Analogy

As noted earlier, the high seas analogy has historically played a significant role in shaping the current legal regime in outer space. Today, advocates of stationing weapons in space regularly invoke "freedom of the seas" as a rationale for space weapons, implying that the military use of space will recapitulate earlier experiences with navies on the high seas. However,

¹³⁹ Ibid., pp. 39, 40.

¹⁴⁰ James Risen, "CIA Instructs Spy Agencies to Use More Commercial Satellite Photos," *New York Times*, June 26, 2002, p. A8.

¹⁴¹ Lt. Col. Peter Hays, USAF and Karl Mueller, "Going Boldly—Where? Aerospace Integration, the Space Commission, and the Air Force's Vision for Space," *Aerospace Power Journal* (Spring 2001), p. 41.

a central question is whether this analogy continues to be useful—and whether it is even true. Vast changes in both space as an issue area, and in international law itself, point to the declining utility of this analogy as a guide to regulating outer space. Moreover, the historical analogy between the high seas and space is flawed; the nature of space, its uses, and its relation to earth, are significantly different from the nature and uses of the high seas and their relation to the land.

Within the realm of ocean law, the “freedom of the seas” concept is today seen as an increasingly weak principle for guiding management of the oceans. While long held up as a sacrosanct principle, it has always been highly uncertain and contested in practice, and open to competing interpretations not only between great and small powers but among European seafaring nations themselves. It is the fact that freedom of the seas has essentially meant “lack of law” that has stimulated the drive to articulate ocean law more clearly in the Law of the Sea Treaty. However, although the “freedom of the seas” principle is of declining usefulness to the effective regulation of the oceans—for reasons that are also relevant to space---the pattern of development of the law of the sea more generally, especially since 1945, is instructive for thinking about a more articulated legal regime for outer space.

The High Seas Analogy and Outer Space

Traditionally, the use of outer space, like use of the traditional high seas, has been based largely on a “first come, first served” principle. Anything that is not expressly prohibited is permitted. Just as the ocean-going powers, with large deep-water navies, traditionally exercised a dominant influence on the development of ocean law, so the dominant space powers have disproportionately shaped space law. Prior to the 1982 Law of the Sea Convention, ocean law developed very much as customary law based on state practice, where power largely shaped the rules---just as has largely been the case with space so far. When President Eisenhower first established the nation’s space policy in the mid-1950s, it was built around the explicit notion of “freedom of space” and a “space-for-peaceful-purposes” policy. While this effort was partly for propaganda purposes, it was also designed to fend off any claims of sovereignty over space that might limit U.S. freedom of action there.

Advocates of weaponizing space draw on the high seas analogy in justifying their position. They argue that the Outer Space Treaty’s reference to the UN Charter’s right of self-defense permits uses of space deemed necessary for national security (just as it permits use of the high seas for similar purposes). In May 2002, Ambassador Eric Javits, the Bush administration’s negotiator at the CD in Geneva, stated that “Article 51 of the UN Charter makes it clear that all Member States have the inherent right of individual and collective self-defense. The global responsibilities of the United States, and the new threats facing it in today's world, require that that right be exercised both on the Earth and above it.”¹⁴⁸ This right, in the view of space weapon supporters, would include not only military support missions but also potentially the military force application missions arising from the stationing of weapons in space.

¹⁴⁸ “Outer Space Remarks by Ambassador Eric Javits to the Conference on Future Security in Space,” New Place, England, May 28-29, 2002.

More specifically, the logic of national dominance promoted by advocates of space weapons relies heavily on the analogy with dreadnaughts sailing on the high seas. Just as Britain ruled the waves a hundred years ago under a freedom of the seas principle, so the United States can rule space today. According to one writer, invoking the sea power theory of Alfred Thayer Mahan, “Much as the British ruled their vast Empire through control of a few critical outposts, occupation of critical space chokepoints—terrestrial launch facilities, low-earth orbit in the near-Earth space, the Moon and libration points in Lunar space, and the planets, primary asteroids, and major moons of Solar space—will guarantee dominance and control of the space lines of communication and commerce.”¹⁴⁹ This list would appear to involve well more than a “few” chokepoints, however.

Its frequent invocation notwithstanding, the freedom of the seas analogy is both simplistic and misleading. First, it relies implicitly on a false dichotomy between law and “freedom of action,” implying that these two concepts are mutually exclusive. However, the law/freedom of action dichotomy has been gradually disappearing as a meaningful distinction in international practice.¹⁵⁰ The rise of interdependence and globalization means that actors interfere with each other, both deliberately and inadvertently. “It is increasingly clear that no single country—or a small group of countries—can consistently achieve its objectives through unilateral action or ad hoc coalition,” a situation referred to as “the new sovereignty.”¹⁵¹ The number of states has expanded greatly, while the number, velocity, types and complexity of international and transnational interactions are increasing even more rapidly. These developments require very high levels of coordination and cooperation among complex activities. They make it increasingly difficult, if not often impossible, for a state to achieve its interests purely through informal, ad hoc, or unilateral approaches. As Chayes and Chayes argue, “the traditional attributes of effective foreign policy in the security area—flexibility, energy, secrecy—tend to give way before the growing importance for the new sovereignty of predictability, reliability, and stability of expectations.”¹⁵² The development of, and compliance with, rules governing an issue area becomes not so much a constraint on the freedom of action of the state as a necessary condition for realizing its full range of objectives. This trend is clearly reflected in ocean law where there is no better example than the decision of the anti-treaty Bush administration in November 2001 to join the Law of the Sea (LOS) treaty, seven years after it came into force.¹⁵³

¹⁴⁹ Dolman, “Astropolitics and *Astropolitik*,” p. 28.

¹⁵⁰ Dinah Shelton, “Introduction,” in Shelton, ed., *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System* (Oxford University Press).

¹⁵¹ Abram Chayes and Antonia Handler Chayes, *The New Sovereignty: Compliance With International Regulatory Agreements* (Cambridge: Harvard University Press, 1995), p. 123.

¹⁵² *Ibid.*, p. 124.

¹⁵³ This decision is discussed further below.

A second weakness of the high seas analogy is that the concept of “freedom of the seas” is increasingly less useful even for the oceans, for reasons that are also relevant to outer space. The notion of freedom of the seas evolved at a particular historical time to meet the needs of a particular era. It has not been a static concept. Rather, it has changed as the nature of the international community and its needs and interests have changed. The extent of freedom of the seas therefore depends on state practice rather than on any innate quality of the high seas.

The Evolving High Seas Concept

Freedom of the seas is the principle that outside its territorial waters, a state may not claim sovereignty over the seas except with respect to its own vessels. The notion of freedom of the seas as coined by the Dutch jurist Hugo Grotius in 1609 in his famous *Mare Liberum* was based in part on a widespread perception at the time that the seas had “limitless” resources. Grotius argued that the seas should be free for navigation and fishing because natural law forbids ownership of things that “seem to have been created by nature for common use.” Things for common use are those that “can be used without loss to anyone else.”¹⁵⁴ From Grotius’ perspective, the fish of the oceans seemed limitless, and thus fishing efforts by one nation did not interfere with the right of other nations’ vessels to fish in the same region. Grotius also argued that the seas cannot constitute property because they cannot be occupied in the sense in which land can be occupied and that they are therefore free to all nations and subject to none. In developing his argument Grotius drew on Roman legal principle and may have drawn on the free navigation traditions of Asia and the East Indies.

Grotius’ effort was actually a political tract to defend the Dutch East India Company’s right to navigate in the Indian Ocean and other Eastern seas over which Spain and Portugal had asserted a commercial monopoly as well as political domination. Claims that asserted territorial sovereignty over the seas had increased markedly during the 16th and 17th centuries, largely because of the growth in world trade following the discovery, exploration and colonization of new lands.

Two hundred years were to pass before Grotius’ principle prevailed. In the meantime, John Selden’s *Mare Clausum* (1635), advocating “closed seas”---controlling as much ocean as a state’s power would permit---became the operative guide. Selden’s tract was published at the express command of King Charles of England to express England’s view on the subject and to defend the “Dominion of the British Seas.”¹⁵⁵ Selden, a prominent scholar, historian and lawyer, tried to prove that the sea had in fact been appropriated in many cases. He also asserted that the seas did not have inexhaustible resources.¹⁵⁶

¹⁵⁴ Quoted Jon M. Van Dyke, “International Governance and Stewardship of the High Seas and Its Resources,” in Jon M. Van Dyke, Durwood Zaelke and Grant Hewison, eds., *Freedom for the High Seas in the 21st Century: Ocean Governance and Environmental Harmony* (Washington, D.C.: Island Press, 1993), p. 14.

¹⁵⁵ R. P. Anand, *Origin and Development of the Law of the Sea* (The Hague: Martinus Nijhoff, 1982), p. 105.

¹⁵⁶ *Ibid.*, p. 106.

Despite Grotius' tract on freedom of the seas, the Dutch East India Company paid little attention and went on to try to pursue a monopoly of trade, eventually defeating the Portuguese in the East Indies and expanding into empire. Grotius himself later abandoned the arguments of his book in defense of the imperial interests of his country. From the late 15th century to the early 19th century, the major powers attempted to exclude commercial rivals from parts of the open sea. They attacked other ships and actively tried to prevent commerce by other nations in areas where the major powers claimed dominion. The Dutch championed freedom of the seas in the Atlantic (where the British dominated) while claiming *mare clausum* in the East Indies (where they dominated), while the British claimed *mare clausum* in the Atlantic and pleaded for open seas in the East Indies. In defending England's claims for sea dominion in the Channel, Selden was forced to disprove French claims to a similar dominion.¹⁶¹ *Mare clausum* largely prevailed during this period because of the weight of British naval power behind it. King Charles had started building up the British naval fleet, and in the 18th century the Atlantic became virtually an English lake.¹⁶²

It was not until after the Napoleonic wars and the rise of European imperialism in the 19th century that freedom of the seas became the operative principle. Great Britain, as the strongest naval and industrial power, became its champion and policeman. Why did Britain shift to support of *mare liberum* after 1815? Three primary factors explain the shift. First, economically, freedom of the seas was more suited to the needs of the industrial revolution in Europe than was *mare clausum*. The industrial revolution in the late 18th and early 19th centuries, along with the rise of 19th century imperialism, vastly expanded commercial possibilities. As Europeans became more interested in commercial prosperity and trade, and ever more Europeans needed to travel to Asia and Africa, freedom of the seas became accepted as a more useful principle, and *mare clausum* came to be seen as an anachronism.¹⁶⁴ Britain, as the cradle of the industrial revolution, stood to benefit greatly from a system based on free trade and open seas.

Second, the freedom of the seas principle also prevailed because the British (and the Dutch) had the military might to protect the right of their commercial vessels to sail unrestrained throughout the oceans. Third, and finally, on the ideational side, a shift in the dominant

¹⁶¹ Pittman B. Potter, *The Freedom of the Seas in History, Law, and Politics* (New York: Longman's, Green and Co., 1924), p. 60.

¹⁶² Anand, *The Law of the Sea*, pp. 96-98.

¹⁶⁴ Anand, *The Law of the Sea*, p. 7, and Anand, "Changing Concepts," p. 76.

economic philosophy in Britain from mercantilism to liberalism provided a key intellectual underpinning for free trade and the freedom of the seas principle.¹⁶⁸

Efforts to codify the freedoms of the high seas began early in the 20th century. Most influential were the law of the sea drafts prepared by international legal scholars. These drafts provided four distinct freedoms: freedom of navigation; freedom of fishing; freedom to lay submarine cables and pipelines; and freedom to fly over the high seas. The work of these scholars developing the notion that freedom of the seas was really a composite of specific freedoms had a great impact on the official conventions that followed.¹⁷²

Already by the 1950s, however, Grotius' principle no longer prevailed. In 1950, the famous French jurist Gilbert Gidel had already said that in "fisheries and mineral resources the Grotian tradition of freedom of the high seas is losing its paramountcy which, generally speaking, has survived fairly well down to the present day."¹⁷⁴ He wrote, "The expression 'freedom of the high seas' is in reality a purely negative worn-out concept, nothing more; it has no meaning for us, except as the antithesis of another, positive concept [i.e. the high seas are subject to territorial dominion], which has long since disappeared."¹⁷⁵ While the purely negative concept might be suitable for the use of the sea as a means of communication, it was not suitable for the sea as a source of wealth, because the resources were not inexhaustible. This is even truer today. In recent decades, developments such as drift net use leading to overfishing and widespread marine pollution challenge the view that the seas have "limitless" resources and capacity to absorb activities. Military activities on the sea also pollute and interfere with other kinds of activities. One of the historic freedoms of the high seas has been the "freedom" to use the oceans as a garbage dump. Now we know that the oceans do not have an infinite capacity to assimilate pollution.¹⁷⁶

Such concerns led the international community to begin its efforts to codify ocean law, first in a set of conventions in 1958, and then in a more comprehensive effort that resulted in the 1982 Law of the Sea Convention. At the time, overfishing was already a problem, and protracted and bitter fisheries disputes prevailed among European states. Offshore oil drilling

¹⁶⁸Bernard Semmel, *Liberalism and Naval Strategy: Ideology, Interest and Sea Power During the Pax Britannica* (Boston: Allen & Unwin, 1986), pp. 8-12, 18. In the mercantilist view, commerce is a type of war, and increasing the national wealth significantly meant depriving other countries of trade by effective competition. Thus in the 18th century, the English Crown would give commissions to private citizens to prey on the shipping of a competing great power. In the emerging liberal view, by contrast, trade now replaced war as the route to wealth, and peace alone would facilitate commerce. British liberals viewed the traditional naval strategy of commercial war as immoral as well as injurious to economic interests

¹⁷²DeSaussure, "The Freedoms of Outer Space and Their Maritime Antecedents," p. 4.

¹⁷⁴ Quoted in Anand, "Changing Concepts," p. 81.

¹⁷⁵ Quoted in Anand, *The Law of the Sea*, p. 232.

¹⁷⁶Van Dyke, "International Governance and Stewardship of the High Seas and Its Resources," pp. 16-17.

was in its infancy, but its potential was already apparent. The 1958 conference produced four conventions, but these largely asserted the traditional law of the sea, codified traditional practices of the great powers and left large gaps, which continued to widen during the subsequent decades. No agreement was reached on the outer limits of the territorial sea, on fisheries jurisdiction, or on the limits of the continental shelf. States could pick and choose among the four conventions, becoming parties to any one and ignoring the others. The treaties thus produced a fragmented system that allowed chaotic claims to national jurisdiction, extermination of fisheries, and pollution of the marine environment.¹⁷⁹ Conservation of the marine environment and the fundamental importance of marine science and technology were not understood as yet, and there was no notion of the unity of ocean space and the interaction of ocean uses.¹⁸⁰ The treaties, in short, codified what had already been accepted, and left unsettled what had not, including where the high seas began.¹⁸¹ They revealed the weakness of an ad hoc, as opposed to a more comprehensive, arrangement.

It was evident something had to be done. Three major factors converged to motivate the effort toward developing a more comprehensive regime: 1) the great powers wanted the limits of national jurisdiction stabilized to protect the freedom of navigation; 2) new states that had not participated in earlier law of the sea conferences wanted their say, and 3) the relentless march of technological development made marine resources available further out and deeper down, hastening the extinction of commercial fisheries and the pollution of the marine environment.¹⁸⁴

Developing countries, especially, have generally been critical of traditional ocean law as codified in the 1958 Convention on the High Sea, and of the concept of freedom of the seas, which, they believe, has been inimical to their interests, just as they have been critical of the “first come, first served” principle of outer space. After 1960, the trend toward curbing the freedom of the seas by extending coastal state jurisdictions for the protection of security and economic interests of the coastal states increased. When the Third UN Law of the Sea Conference (UNCLOS III) convened in 1974 in Venezuela, the new majority of the developing countries made it clear that it was only the great seafaring countries “that profited from these unlimited and undefined freedoms” of the traditional law. The continuing laissez-faire of the high seas had ceased to serve the interests of international justice.¹⁸⁵ As the representative of Kenya pointed out during the negotiations, “in 1970 the developed countries with less than one-

¹⁷⁹Elizabeth Mann Borghese, “The Process of Creating the International Ocean Regime to Protect the World’s Resources,” in Van Dyke, Zaelke and Hewison, eds., *Freedom for the Seas for the 21st Century*, p. 23.

¹⁸⁰ Ibid.

¹⁸¹Anand, *The Law of the Sea*, p. 183.

¹⁸⁴ Borghese, “Creating the International Ocean Regime,” pp. 23-24.

¹⁸⁵ Anand, “Changing Concepts of Freedom of the Seas,” p. 82.

third of the world's population, had taken 60 percent of the world catch of fish, while only 40 percent had gone to the developing countries."¹⁸⁶

Arvid Pardo's early draft treaty of the law of the sea convention was based on the conviction that laissez-faire on the high seas had become dysfunctional. The treaty that eventually emerged from negotiations in 1982, while preserving the concept of freedom of the seas, did so in a much-circumscribed fashion. It also departed from traditional ocean law in many ways. The treaty reduced the size of the high seas by the extent of the 200 mile "exclusive economic zone" but nevertheless reaffirmed that the governing regime for the remaining high seas is one of freedom of access and use.¹⁸⁷ However, these "freedoms" on the high seas must be exercised with "due regard" to the interests of other states and embody a concept of "reasonable use." One of the main principles of the UNCLOS conference was that in the future the sea must be used for the benefit of all and not merely for the interest of a few great powers. There will be freedom but, like the freedom an individual enjoys in society, it is not unlimited but rather is enjoyed under agreed-on legal principles.¹⁸⁸

The contrast with the traditional law of the sea is important to note, both with regard to new principles of law established, and with regard to the process by which the 1982 regime was created. It established the notion of "common heritage of mankind" as a guiding principle for regulating the use of global "commons." In the LOS treaty this applied particularly to the deep seabed, but it introduced notions of equity and a global public interest. The treaty evolved in little more than a decade, through a truly international process that attempted to address the broadest possible agenda of national wishes and aspirations. In contrast, the old law of the sea evolved gradually, within narrower confines, and was the product of inputs from relatively few states (the 1958 conferences involved about 86 states, in 1982 about 150).

The legal regime for outer space today bears significant similarities to the unsatisfying state of ocean law in the late 1950s and early 1960s, after the 1958 conventions but prior to the 1982 treaty. In the ocean regime of that time, agreement existed on a vague freedom of the seas, implying freedom of peaceful navigation with a few agreed "rules of the road" that benefited European seafaring states, but little agreement existed on other rules. Similarly, space today is characterized by broad principles ("peaceful purposes," nonappropriability, freedom of use)

¹⁸⁶ Quoted in Anand, *The Law of the Sea*, p. 199.

¹⁸⁷ The LOS treaty is an extensive, complex document touching on a wide range of issues. The most significant areas of the Convention deal with naval power and maritime commerce, coastal State interests, marine environment protection, marine scientific research, and international dispute settlement. Key provisions include setting a 12-nautical mile territorial sea limit and a 200-nautical mile exclusive economic zone; clarifying rights of innocent passage; the innovative concept of "transit passage" (through straits); jurisdiction over the continental shelf; seabed mining and the concept of the common heritage of mankind; compulsory arbitration or adjudication for disputes, and three new institutions (the International Seabed Authority, the dispute resolution tribunal, and the Commission on the Limits of the Continental Shelf). Bernard Oxman, "United States Interests in the Law of the Sea Convention," *American Journal of International Law*, v. 88, January 1994, pp. 167-78.

¹⁸⁸ Borghese, "Creating the International Ocean Regime."

largely left open to unilateral interpretation. Just as states could pick and choose among the 1958 ocean conventions, so states today can pick and choose among the current outer space treaties. Finally, the space regime up to this point, like the pre-LOS ocean regime, has largely been defined by the small number of nations with capabilities to exploit it.

Freedom of the seas, in other words, meant in practice largely a lack of law. It was insistence on the right of freedom from any kind of interference (most strongly defended by Britain), leaving uses of the ocean open to unilateral interpretation without regard for possible consequences, and with little accountability. As nations eventually discovered, in the absence of agreed-upon rules, use of the ocean became a chaotic, uncertain, and often conflictual matter.

“Reasonable Use” and the Military Loophole

Even though the 1982 treaty does preserve the freedom of seas concept, albeit in circumscribed form, for many ocean law experts today, as well as for many states, the principle appears increasingly anachronistic and inadequate for meeting today’s complex challenges to the sea. Technological developments and the practices of states in recent years have demonstrated dramatically the inadequacy of this approach. The notion of “reasonable use,” for instance, remains too open to subjective and unilateral interpretation, leaving the door open to “anything goes” attitudes. Especially problematic, the principle is nearly useless for controlling military activities, leaving them essentially unregulated. Nuclear states claim the right to declare broad areas of the high seas as exclusionary or warning zones off limits to free navigation, to serve their military purposes, including nuclear and ballistic missile testing and naval maneuvers. These zones, which have laid claims to areas as large as the 400,000 square miles around Bikini atoll for U.S. tests, can significantly interfere with other uses of the seas, such as fishing and navigation (the radioactive contamination of the Japanese fishing boat “Lucky Dragon” in 1954 is a sad example). Weapons testing and combat training can also cause environmental damage, especially harmful in areas designated for scientific research. In some cases military activities have resulted in significant damage to commercial vessels.¹⁸⁹

Although the nuclear powers proclaim their adherence to the freedom of the high seas in the abstract, conflicts with the principle arise when they assert claims of “national security” to justify use of the seas for weapons testing.¹⁹⁴ The nuclear testing programs in the Pacific Ocean generated widespread protests against atmospheric testing of nuclear bombs and against the legality of exclusionary danger zones. In 1963, in response to public concern about radioactive contamination from testing, and a general sense in both the United States and the Soviet Union that restraint was called for after the 1962 Cuban missile crisis, the United States, the Soviet Union, and Britain negotiated the Partial Test Ban Treaty, which moved their nuclear test programs underground. France and China continued to test in the atmosphere. When, after a

¹⁸⁹Jon M. Van Dyke, “Military Exclusion and Warning Zones on the High Seas,” in Van Dyke, Zaelke, and Hewison, *Freedom for the Seas in the 21st Century*, p. 459.

¹⁹⁴The United States maintains that it is not asserting sovereignty over these zones, and that they are simply “warning zones,” “predicated on voluntary compliance.” The United States has had difficulty sustaining this “voluntary compliance” position in practice, generally responding with force when others, often Greenpeace ships, have entered the zone in protest. Van Dyke, “Military Exclusion and Warning Zones on the High Seas,” p. 451.

long break, France resumed nuclear testing in the Mururoa atoll in 1995, antinuclear movements organized a boycott of French wine and other goods, stunning French leaders and the military establishments of the nuclear states by the strong public outcry and forcing France to curtail the testing program.¹⁹⁵ Testing on the high seas is probably now prohibited by customary international law (it is hard to argue that a nuclear test on the high seas shows “reasonable regard” for the interests of other states). While missile testing has somewhat less of an impact on the environment than nuclear weapons testing, it is likely that missile testing on the high seas will continue to be accepted as a legitimate use of the sea only as long as it does not significantly interfere with navigation and fishing or pose serious safety concerns.¹⁹⁶

Thus the freedom of the seas concept, even with the addition of the “reasonable use” principle, often remains too abstract and open to unilateral interpretation. Ocean law experts challenge the conventional wisdom that freedom of the seas is a sacrosanct principle that promotes universally positive values. Many argue that “freedom of the seas” should finally be abandoned for good; it must be recast as “freedom *for* the seas,” an approach that takes a more ecological perspective and emphasizes widespread participation in decisionmaking regarding the oceans, and the need for a more refined regime for ocean regulation.¹⁹⁸

In sum, the factors discussed here—the general decline of the law/freedom of action dichotomy in international practice due to the rise of interdependence, and the declining usefulness of the freedom of the seas concept even for the seas—point to the declining relevance of the high seas analogy for outer space. Space is more like the seas of today than the seas of a hundred years ago. As noted earlier, there are more, and a greater variety of, actors involved in space. Space is not “limitless,” and 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, while military activities in space could preempt other uses. On the policy side, the lack of an agreed-on definition of peaceful uses, the lack of a clear definition of outer space or of space weapons, and the lack of legal protection for commercial satellites, make for an uncertain and unpredictable global order in space.

Although the United States has long championed freedom of the seas, it has also played a significant role in departing from the purely negative concept of freedom of the seas. As early as 1887, the United States tried to convince European governments and Japan of the desirability of

¹⁹⁵“Firestorm of Protest Radiates From Pacific,” *Christian Science Monitor*, August 11, 1995; “Pacific Critics Use a Megaphone Against Chirac: Amplified Denunciations May Finally get France to Stop Its Nuclear Testing,” *Christian Science Monitor*, November 7, 1995.

¹⁹⁶Van Dyke, “Military Exclusion and Warning Zones on the High Seaspp. 445-52,454-58.

¹⁹⁸“Introduction: Traditions for the Future,” in Van Dyke, Zaelke and Hewison, eds. *Freedom for the Seas in the 21st Century*, pp. 3-5; and Lawrence Juda, *International law and Ocean Use Management* (New York: Routledge, 1996).

international cooperation for the “better protection of the fur-seal fisheries in the Bering Sea.”¹⁹⁹ Its dispute with Great Britain over fur-seal fishing—whether fur-seals could be protected outside the 3-mile limit of the territorial sea—initiated the trend for change in the law and the protection of coastal fisheries by the coastal states. The most important challenge to the traditional law of the seas doctrine came with the 1945 Truman proclamation extending U.S. jurisdictional claims over the continental shelf. This led to numerous claims by other states for continental shelf jurisdiction and protection of fisheries, codified several decades later in the LOS Treaty. Thus the United States itself has often sought to balance “freedom” with cooperation to manage resources and activities.

Beware Simplistic Analogies:

The False Analogy Between Freedom of the Seas and the Military Use of Space

The weakness of the freedom of the seas concept in regulating military uses of the oceans points to its even greater inadequacy for regulating military uses of space, because the military threat posed by space weapons could conceivably become even greater than that posed by weapons on or under the high seas. Supporters of weapons in space suggest that there is little conceptual difference between warships on the high seas and weapons in space. Both operate in a global commons under a freedom of access and use principle. Thus the United States should be free to transit space with weapons, just as on the high seas. Further, just as navies are needed to escort commercial shipping, so commercial satellites in space will need military protection and escorts. According to one Air Force general, “satellite systems of the United States and its allies are, for the most part, unprotected on the open seas of space” and thus they need “some form of security or escort.”²⁰⁰ According to General Thomas Moorman, Jr., a member of the Rumsfeld Space Commission, as the number of U.S. satellites in space increases, the United States “will want to provide the necessary protection and deterrence to attack. Here the naval analogy with freedom of the seas is apt.”²⁰¹

These are dubious analogies. Several significant differences exist between freedom of the seas and the military use of space. First, the implicit threat from military activities at sea at the time the traditional law of the sea was laid down is nothing like the potential threat from space if space were to become weaponized. The freedom of the seas concept evolved in the era of 19th century battleships when the difference between the territorial sea and the high seas was

¹⁹⁹ Anand, “Changing Concepts,” p. 233.

²⁰⁰ Lt. Gen. Bruce Carlson, “Protecting Global Utilities: Safeguarding the Next Millennium’s Space-Based Public Service,” *Aerospace Power Journal* (Summer 2000), pp. 38, 37.

²⁰¹ Gen. Thomas S. Moorman Jr., “The Explosion of Commercial Space and the Implications for National Security,” *Airpower Journal* (Spring 1999), p. 19. See also Simon P. Worden, “Space Control for the 21st Century: A Space “Navy” Protecting the Commercial Basis of America’s Wealth,” in Peter L. Hays et al., eds., *Spacepower for a New Millennium* (New York: McGraw Hill, 2000), pp. 225-37. Worden, providing the most detailed exploration of the issue, eventually acknowledges that “the naval analogy breaks down a bit in space. Satellites are not ships.” p. 233.

real. Warships on the high seas were out of range of land and were thus unable to threaten coastal states unless they came in close. Today's modern nuclear and cruise-missile armed ships and submarines are an anomaly in this regard. They eliminate any protection the territorial seas once provided, leaving all states vulnerable to attack from the high seas. This is clearly an unsatisfying situation for many coastal states, and helps account for the numerous unilateral claims of sovereignty by coastal states over waterways that border their territory, presumably in violation of traditional free navigation norms.²⁰⁴

This vulnerability would be exacerbated in space, where factors of speed, the vulnerability of space activities to disruptions with consequent effects on earth, and the perceived close link between military activity on earth and military activity in space would enhance the risk posed to others. Here it is useful to distinguish between the physical effects of space weapons and their geostrategic impact. From the perspective of their physical effects, in most cases, space-based weapons increase present threats rather than replace them by much greater threats. Space-launched missiles move hardly any faster and reach no farther than submarine-launched missiles. Space-borne weapons are much more vulnerable than land-based weapons. And inland nations are not really safer from attack from the oceans than attack from space.

However, space-based directed energy weapons, such as lasers, would move faster, and could strike targets on earth and in the atmosphere with enormous speed.²¹² Lasers would also pose a significant threat to the survivability of space systems. They might make possible a prompt "sky-sweeping" attack against military satellites without significant tactical warning. In such a case, redundancy of satellites would be of little value. This would pose a threat of great magnitude to a state dependent on satellites for essential military functions. More generally, strategic defense systems based in space will pose significant threats to other space-based systems, and to targets in the atmosphere and on earth as well.

In terms of their geostrategic impact, space-based weapons do not simply enhance existing threats but introduce a new and greater danger because of the threat they pose to strategic stability. The vulnerability of space-based weapons will likely create incentives for preemptive attack to protect them during a crisis, greatly increasing the likelihood of war. Further, although supporters of space weapons claim that, consistent with the United States' defensive orientation to the world, such weapons would be for defensive purposes, the reality is

²⁰⁴ More than 50 countries make such claims, which include unrecognized historical waters claims, improperly drawn baselines, territorial sea claims greater than twelve miles, security zones not provided for in the LOS convention, exclusive economic zones that negate or restrict overflight rights, restrictions on innocent passage through territorial seas, requirements for advance notice of innocent passage, and restrictions on transit passage. The United States objects to these claims by others as unlawful, although it maintains various kinds of security zones itself. Capt. George Galdorisi, "The United States and the Law of the Sea: Changing Interests and New Imperatives," *Naval War College Review* (Autumn 1996), p. 9. In reality, there is no reason why coastal states should feel more threatened than inland states. Missiles launched from submarines can reach anywhere, and cruise missiles launched from ships can reach most, if not all, inland states.

²¹² A space-based directed energy weapon would require less than a millisecond to strike an air-based object flying at an altitude of 10 kilometers. Philip J. Baines, "A Convention for the Non-Weaponization of Outer Space," in Beier and Mataija, eds., *Arms Control and the Rule of Law in Outer Space*, p. 69.

that, given their characteristics, many of them are inherently offensive weapons. It is widely recognized that space-based ballistic missile defense systems could carry out surprise attacks against terrestrial targets or satellites.

Exacerbating the threat posed by space weapons is the Cold War-era deterrence logic that continues to dominate U.S. military planning. This logic emphasizes deterrence of threats through overwhelming force, carried out during the Cold War through the confrontational posturing of large, opposing forces on hair-trigger alert. The extension of this deterrence logic to space, as envisioned in current U.S. space plans, will turn space into a domain of overwhelming threat, against which most states have little protection.²¹⁶ The new “pre-emptive” logic of the Bush administration’s first National Security Strategy, released in September 2002, will make this situation even worse.²¹⁷ The launching into space of an armada of space “battle stations,” 1500 “Brilliant Pebbles” antimissile satellites, or “several thousand interceptors,” would certainly seem to violate the important norm prohibiting the “threat of force” in relations between states.²¹⁸

Finally, the “right of passage” in space, including by private actors, risks being transformed into a “right of stay” because of the close link between private actors and governments in space activities, and the continued prevalence of a “first come, first served” ethic.²¹⁹ In sum, for several reasons, the transit of space is not nearly as “innocent” as transit over the ocean.

A second flaw of the freedom of the seas analogy is that the need for “naval” escort in space is not the same as on the seas. As Karl Mueller and Peter Hays point out in a critique of the Air Force’s conservative thinking about space, “commercial space activities are fundamentally different from merchant shipping and air transport in every respect, save that all three are economically important.”²²⁰ One difference is that satellites collect, relay or transmit information, while commercial shipping transports goods and people. As they note, this has a number of significant implications. Unlike for the oceans, space piracy is not a problem, so space navies are not required to suppress it. In addition, the vulnerability of satellite communications to attack can be reduced by relaying transmissions through backup and

²¹⁶ John Steinbruner, *Principles of Global Security* (Washington, DC: Brookings Institution, 2000).

²¹⁷ “National Security Strategy of the United States of America,” September 2002, available at www.cdi.org/national-security-strategy/

²¹⁸ Vlasic, “Legal Aspects of Peaceful and Nonpeaceful Uses,” p. 49.

²¹⁹ Patrick Salin, “Privatization and Militarization in the Space Business Environment,” *Space Policy* 17 (2001).

²²⁰ Hays and Mueller, “Going Boldly—Where?,” p. 40.

redundant systems (goods and people, in contrast, can only travel on one vessel at once).²²¹ In short, satellite commerce resembles telegraphy or radio more than it does maritime trade. Mueller and Hays caution space strategists to “resist the temptation to engage in easy but fallacious generalizations about the equivalence of maritime trade and commercial space operations, or the need to escort commercial satellites as if they were ships at sea.”²²² In their view, relying on false analogies inhibits the Air Force from thinking seriously about how space, and threats to activities in space, are different from those in other domains.

A third flaw of the freedom of the seas analogy is that what advocates of space weapons are proposing for U.S. policy is not an accurate parallel with how Britain actually policed the seas in the 19th century. Britain’s naval policing activities during the reign of Pax Britannica involved a significant element of restraint, and did not extend to actively denying others’ access to the seas or naval capabilities that it found threatening. Instead, the Royal Navy’s policy focused primarily on three things: 1) protecting British traders’ lives and property by suppressing piracy, despots, and uprisings in the colonies (for example, port closures and takeovers) that threatened to disrupt free trade, 2) suppressing the slave trade, and 3) charting the oceans.²²⁵ Britain also sought to enforce the three mile territorial sea. In these policies Britain enjoyed both domestic and international support, including from the other great powers, which coincided sufficiently to condone unilateral British military action. By undertaking foreign military initiatives only in pursuit of long-established, narrowly focused policies for which there was widespread support, Britain was able to use its power to promote its policies, and to do so with a significant degree of legitimacy.

As important is what the Royal Navy did *not* do: although it did employ “gunboat diplomacy” on some occasions, and did irritate other nations by trying to restrict free trade by neutrals in wartime, in general it did not impose a British peace on the world; it made no effort to keep the French from entering Algiers in 1830, or Mexico in 1863, or Indonesia in the 1860s, nor to keep the Americans out of Japan in the 1850s, or the North from blockading the South in the American civil war.²²⁹ In the view of British leaders, while Britain should use the Royal Navy

²²¹To reduce vulnerability, satellite systems should emphasize a large number of small satellites. Hays and Mueller, “Going Boldly—Where?” p. 41; and Mueller, “Is the Weaponization of Space Inevitable?” pp. 5-7. As they note, the Air Force does not routinely make a practice of escorting commercial airliners even though they are economically important and entirely vulnerable to attack.

²²² Ibid., p. 41. Even with respect to the oceans, the need for great power naval forces to enforce the freedoms of the seas is much reduced in the context of a strong international consensus on maritime issues, as has been taking shape under the LOS treaty. In the future, it would be desirable to have more internationalized naval forces and more cooperation of national navies. Some analysts argue that, as part of an effort to develop legitimate multilateral naval forces, the law of the sea will need to repudiate unilateral uses of warships for upholding the freedom of the seas. Joshua Handler, “Denuclearizing and Demilitarizing the Seas,” in Van Dyke, Zaelke, and Hewison, *Freedom for the Seas in the 21st Century*, pp. 432-33.

²²⁵ Semmel, *Liberalism and Naval Strategy*.

²²⁹ Gerald S. Graham, *The Politics of Naval Supremacy: Studies in British Maritime Ascendancy* (Cambridge University Press, 1965), p. 119.

effectively, this meant a policy of limits and restraint. The selective use of gunboat diplomacy gave considerable added weight to British policies with relatively little involvement of British military forces in actual combat—hence the 100 years of so-called “Pax Britannica.” According to historian Gerard Graham, “it was this general desire to avoid war”—and the restraint which that entailed—“that made the so-called age of *Pax Britannica* possible.”²³⁰

The U.S. role in space proposed by SPACECOM and its supporters would be far more overwhelming than that of the British navy in centuries past. The more accurate parallel to Pax Britannica for the United States in space would not be preemptive denial of access to space by others that might threaten in the future, but rather the development of a security and economic regime in space, around a relevant organizing principle, that enjoyed international consensus. The essential contribution of British hegemony was to promote and enforce the development of a “regime” around a new principle—freedom of the seas—that was relevant to the security and economic interests of the times and hence enjoyed widespread support. The relevant lesson of Pax Britannica for space in the 21st century is not the freedom of the seas principle itself; rather it is the model Great Britain provides of a hegemon leading the way in promoting transition to new economic and security principles. Crucial to British success in its role as a “benign hegemon” was the support and legitimacy its policies enjoyed. U.S. plans for space dominance do not currently enjoy this kind of international support or consensus. They show little prospect of doing so any time soon.

A final argument of space weapons supporters draws on historical analogies of weaponization generally to demonstrate that the weaponization of space is “inevitable.” According to an Air Force analyst, “the weaponization of space is as inevitable as was the weaponization of the land, sea, and air media of warfare.”²³¹ The Rumsfeld Space Commission report trades heavily on the inevitability argument.²³² Whether desirable or not, these proponents argue, the weaponization of space is going to happen. They believe the first state to place weapons in space will have a great advantage over rivals, so if some nation is going to be first, it should be the United States.

Arguments from technological determinism or “human nature” are popular (and are certainly in the interests of the U.S. Air Force). However, although land, sea and air have indeed become battlefields, there is no inherent reason that space must become one too. As Karl Mueller argues, because militarization proceeded differently on land, sea and air, facile analogies between these domains and military space does not predict whether there will be weapons in

²³⁰ Ibid., p. 119.

²³¹ Lt. Col. Thomas D. Bell, “Weaponization of Space: Understanding Strategic and Technological Inevitabilities,” Occasional Paper No. 6, Center for Strategy and Technology, Maxwell Air Force Base, AL (1999), p. 5; Oberg, *Space Power Theory*, pp. 143-52.

²³² According to the Rumsfeld Space Commission Report, “We know from history that every medium—air, land and sea—has seen conflict. Reality indicates that space will be no different.” p. 100.

space.²³³ Large areas of the planet, he notes, have been set off limits to nuclear weapons (e.g., the seabed, the Antarctic, nuclear weapons free zones), as has the Moon, and some weapons have been prohibited (biological and chemical weapons, landmines). Finally, space itself has so far remained unweaponized. As the current debate over the desirability of space weapons shows, the 45-year tradition of superpower restraint with regard to weapons in space has become a politically significant norm. As Mueller notes, in the very near term, say a decade or more, space weaponization is not inevitable “for the simple reason that only the United States possesses the resources and capabilities that would be required to deploy space weapons in a serious way.” In the longer term, whether space is weaponized will certainly be affected by the decisions of U.S. leaders in the coming decade.²³⁴

For several reasons, then, the analogy between freedom of the seas and the military use of space is a false one. Transit of space by orbiting weapons is not nearly as “innocent” as transit over the oceans, satellites are not like ships at sea, and the proposed U.S. role in space would be far more overwhelming than the role of Britain during the 19th century. It is difficult to avoid the conclusion that, in reality, what SPACECOM and its supporters actually want is a version of *mare clausum*, 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 19th century British experience they are actually most enamored of is the notion of empire, not the freedom of the seas principle. Mahan’s theory of control of “chokepoints” is a theory of empire, not a theory of free trade and commerce. Doctrines centering on control and domination are theories of empire and war, not theories of freedom. As one Air Force analyst admits, the development of space forces to protect assets in space “challenges the notion of ‘freedom of space,’ and ‘space for peaceful purposes,’” because, he notes, in wartime nations are quick to abandon freedom of the seas.²³⁵

The solution to the future of space is not to continue using an easy but outdated analogy from the 19th century—which fails to address effectively the problem of modern weapons on the ocean, let alone in space—but rather to develop a new, more appropriate normative regime for space. None of the existing analogies provides an adequate basis for devising rules for space. Principles of accountability, fairness and equity in international law and practice, especially regarding use of the world’s resources, though still weak, are more developed today than they were a hundred years ago, and can no longer be ignored. In sum, the circumstances giving rise to “rule Britannia” no longer prevail, either on the high seas or in outer space. New guiding principles, more suited to the conditions of the 21st century, are needed.

²³³ Mueller, “Is the Weaponization of Space Inevitable?”

²³⁴ Ibid., pp. 4, 16.

²³⁵ Michael V. Smith, “Ten Propositions Regarding Spacepower,” Ph.D dissertation, School of Advanced Airpower Studies, Ch. 3, p. 91.

A New Approach to Rulemaking for Outer Space

Does a Superpower Need Rules? The Advantages of Legal Regimes

Why should a superpower need rules—especially if it is the only superpower? Actors create rules for several reasons: rules facilitate cooperation, coordinate action, stabilize expectations about the future, and help actors realize their interests and achieve their goals in the context of an interdependent world. It is often argued that weak states have a stronger preference for rules—“rules are the last refuge of the weak”—because rules constrain the power of the strong. The strong can get what they want through the exertion of power and coercion of weaker actors, while the weak must rely on the protection of the law. In fact, even hegemonic states find significant advantages—for both “soft” and “hard” power reasons—in having rules, and therefore support rules that promote their interests.²⁴²

Rules or regimes can come into being in a number of ways. They can be imposed through coercion or power, they can be negotiated, or they can arise spontaneously (e.g. in the manner of customary law).²⁴³ The trend today is much more toward negotiated international law. In recent years, NGOs and private actors (e.g., firms) have played a much greater role in the creation of rules, a development relevant to outer space issue.²⁴⁴ There has also been a trend toward “soft law,” politically but not legally binding agreements, an area of lawmaking in which nonstate actors can participate.

Empirically, international law has traditionally reflected the interests of the dominant powers. For example, the United States got its way most of the time in the negotiations over the post-WWII economic order. In the case of the law of the sea, after holding out for more than a decade, the United States was able to secure substantial revisions of the deep seabed mining provisions of the 1982 convention even after it had entered into force. On the basis of this, in 1994, the Clinton administration announced its intention to adhere, and sent it to the Senate where Jesse Helms, chair of the Senate Foreign Relations Committee, blocked further action on it.²⁴⁶ Other industrialized countries, including Britain, France, Japan, Canada and the USSR, also objected to aspects of the deep seabed mining provisions, however, and largely supported

²⁴²John Ikenberry and Charles Kupchan, “Socialization and Hegemonic Power,” *International Organization*, Vol. 44 (Summer 1990), pp. 283-315.

²⁴³Oran Young, “Regime Dynamics: The Rise and Fall of International Regimes,” *International Organization*, Vol. 36, No. 2 (1982), pp. 277-297.

²⁴⁴A. Claire Cutler, Virginia Haufler and Tony Porter, *Private Authority in International Affairs* (Albany: State University of New York, 1999); Jessica T. Matthews, “Power Shift,” *Foreign Affairs* (January-February 1997).

²⁴⁶“Administration Revives Effort to Get Law of the Sea Treaty Under Way in Senate,” *CQ Weekly*, Vol. 56, No. 33 (August 15, 1998), pp. 2248-9; Capt. George Galdorisi, “The United States and the Law of the Sea: Changing Interests and New Imperatives,” *Naval War College Review*, Vol. XLIX, No. 4 (Autumn 1996).

the changes pushed by the United States. They delayed their ratifications until recently.²⁴⁷ Finally, almost single-handedly, the United States was able to keep a firm commitment to reductions of carbon dioxide emissions out of the Framework Convention on Climate change in Rio in 1992.²⁴⁸

However, hegemonic rulemaking is being nibbled away. As noted earlier, principles of equity, accountability and fairness are increasingly accepted principles of international law. Additionally, although power remains important, it is increasingly being diffused by more participatory, multilateral decisionmaking structures. For example, the creation of the World Trade Organization significantly democratizes rulemaking in international trade. The international treaty-making process in general leaves a good deal of room for accommodating divergent interests. Multilateral negotiating forums provide opportunities for weaker states to organize blocking coalitions. In UNCLOS III, the caucus of “land-locked and geographically disadvantaged states,” which included such unlikely colleagues as Hungary, Switzerland, Austria, Uganda, Nepal and Bolivia, developed a crucial strategic position. The Association of Small Island States, chaired by Vanuatu, played a similar role in the global climate negotiations. The LOS treaty received the requisite number of ratifications to enter into force in 1994, *before* most of the major powers had ratified it, a factor encouraging the United States to reconsider its position on the treaty. The 1997 landmines ban was achieved over the objections of the United States. It currently appears that the majority of states who support the establishment of legal commitments under the Kyoto accord on global warming may seek to proceed without the United States.

The trend toward multilateral rulemaking might suggest that rules established on the basis of principle and equity are more efficient and enduring than rules imposed by power. The issue is complex, however. On the one hand, rules imposed by power presumably enjoy the support of the dominant actors and therefore are probably fairly enduring and stable. Rules established on the basis of principle and equity presumably entail negotiations among a large group of actors with diverse interests. The outcome reflects some lowest common denominator and therefore leads to vaguer and more incoherent rules, which are inherently unstable over the long haul.²⁴⁹ This is often the fate of many large multilateral negotiations, especially in the initial phases of negotiation on an issue.

However, most analyses in the literature suggest that pure hegemony is also inefficient. The hegemon may induce obedience through the exercise of coercive power, but it is exceedingly costly to rule solely by coercion. Norms and rules offer one way to reduce costs, so

²⁴⁷ Among the unacceptable elements were a decisionmaking process in the International Seabed Authority that did not give industrialized countries a blocking coalition, provisions requiring the mandatory transfer of technology, and the incorporation of a non-market economic philosophy. Marjorie Ann Browne, “The Law of the Sea Convention and U.S. Policy,” CRS Issue Brief for Congress, updated August 30, 2002.

²⁴⁸ Chayes and Chayes, *The New Sovereignty*, p. 6.

²⁴⁹ Vicki E. Baer, James G. March and Harald Saetren, “Implementation and Ambiguity,” in J. March, ed., *Decisions and Organizations* (Oxford, UK: Basil Blackwell, 1988 [1986]), pp. 150-164.

they are prominent even in hegemonic systems. But the rule structure will have this effect only if it is to some extent truly normative, and not just a disguise for willful command. Thus even the hegemon will find itself seeking attributes of legitimacy to make the rule system work.²⁵⁰ In reality, enduring and viable legal regimes are neither purely power-based nor can they entirely ignore power in favor of pure equity. To be both legitimate and enduring, they must recognize considerations of both power and equity.

The United States and the Law of the Sea Treaty

The Bush administration's decision in November 2001 to adhere to the LOS Treaty provides a good example of the consequences of interdependence and how even hegemonic states find it useful to support rules. This was a surprising decision given the Bush administration's well-known skepticism of international law and multilateral treaties in general. On November 27, 2001, the U.S. Ambassador to the UN Economic and Social Council announced that the treaty met "U.S. national security, economic and environmental interests," and informed the council that President Bush supported U.S. accession to the treaty, nineteen years after it had been negotiated and seven years after it had gone into effect.²⁵¹

Several factors appear to be behind this decision. First, the treaty had strong support from the Navy and oil, mining, shipping and fishing industries, as well as environmentalists and marine scientists. U.S. Navy officials argued in favor of it on the grounds that it would secure the rights of navigation that would allow U.S. naval forces to transit quickly to military theaters.²⁵⁷ Second, U.S. acceptance of the treaty allows it to participate in several institutions created by the treaty, and thereby exert more influence on ocean-related commissions and tribunals. The most important of these is the Commission on the Limitations of the Continental Shelf, the body responsible for establishing a secure regime for exploitation of oil and other non-living resources on the continental shelf. The treaty provides the only recognized means of gaining authority over this area. The United States has a strong interest in this commission since it seeks to extend its continental shelf claim beyond 200 miles in the Bering Sea. Other important treaty institutions include the dispute resolution tribunals and the International Seabed Authority. U.S. nationals can only participate in these institutions if the United States is a member of the treaty.²⁵⁸

²⁵⁰Chayes and Chayes, *The New Sovereignty*; Ikenberry and Kupchan, "Socialization and Hegemonic Power."

²⁵¹ *Washington Post*, December 7, 2001; U.S. Ambassador Sichan Siv, "Statement on Oceans and Law of the Sea," November 27, 2001. At www.state.gov/g/oes/rls/rm/6796.htm

²⁵⁷ Capt. George Galdorisi, "It's Time to Sign On," *Proceedings*, U.S. Naval Institute, Vol. 124, 1 (1998), and Galdorisi, "The United States and the Law of the Sea."

²⁵⁸ William Burke, "International Leadership by the U.S. on Marine Affairs," October 8, 2001. Governance Working Group, School of Marine Affairs, University of Washington. www.sma.uwashington.edu

Additionally, the diplomatic confrontation between the United States and China in early 2001 following overflight of the Chinese exclusive economic zone by a U.S. surveillance plane may have impressed upon the Bush administration the value of the substantive principles and concepts of the treaty.²⁶⁰ The U.S. position that this overflight was lawful would have been considerably strengthened if the United States had been able to invoke Article 58 of the treaty, which covers such incidents. China, of course, had already accepted the LOS Convention, as have 141 other nations. Last, but not least, U.S. membership in the LOS treaty provides the opportunity to influence the evolution of this agreement through its interpretation by state practice. Being on the outside, looking in, inhibits that possibility.

Given SPACECOM's narrow interpretation of U.S. interests in space and dismissive attitude toward international law, the U.S. military's strong support for the LOS treaty is worth noting. The Pentagon's 1998 annual report to Congress stated that "the Department of Defense strongly supports U.S. accession" to the LOS convention. It explained that "a stable legal regime for the world's oceans that recognizes traditional navigational rights and freedoms is essential to U.S. national security." A global power, regularly moving military forces around the world, depends on mobility and freedom of navigation. Worldwide acceptance of the treaty "is the best way to ensure these rights are recognized, respected, and given the force of written law."²⁶³ In the Pentagon's view, reliance on customary law would serve U.S. interests much less effectively. The Convention was preferable because "it confirms traditional high seas freedoms of navigation and overflight; it details passage rights through international straits; and it reduces prospects for disagreements with coastal states during operations."²⁶⁴

These provisions are crucial for the Navy, which is currently restricted from routinely operating in many perceived strategic areas due to excessive maritime claims. Several countries—including China, India, Pakistan and North Korea—require prior notice or permission for the innocent passage of warships within twelve nautical miles of their coastlines, and others require notice before passing through the EEZ. The Navy is currently forced to rely on bilateral and multilateral agreements with local governments to pass through such areas. The LOS treaty will minimize the need for these confusing, overlapping, and sometimes undependable agreements. Under the treaty, all foreign commercial and military vessels are allowed innocent passage through sea lanes, coastal waters and EEZs.²⁶⁵

²⁶⁰Burke, "International Leadership," Christopher Drew, "Old Hijinks May Pull the Rug From the U.S. Claim to Plane," *New York Times*, April 4, 2001; Robert Marquand, "U.S. and China Talk Planes, Fly Zones and Fair Play," *Christian Science Monitor*, April 18, 2001; Frederic L. Kirgis, "United States Reconnaissance Aircraft Collision with Chinese Jet," *ASIL Insights*, American Society of International Law, April 2001, at www.asil.org/insights.

²⁶³ Appendix H. "National Security and the Law of the Sea Convention," in William S. Cohen, Secretary of Defense, *Annual Report to the President and the Congress 1998*, at www.defenselink.mil/execsec.

²⁶⁴1994 DOD white paper, "National Security and the Convention on the Law of the Sea," at http://www.state.gov/www/global/oes/oceans/980610_los.html#national

²⁶⁵ Brett Wagner and Philip Lofrumento, "It's Time to Ratify the Law of the Sea Treaty," *Washington Quarterly*, Vol. 22, No. 3 (Summer 1999), pp. 17-20.

Supporters of space weapons point to the role of strong U.S. naval forces in keeping the sea lanes open and enforcing freedom of the seas as a model for a similar U.S. policy in space. Yet the Navy itself has concluded that a stable international legal regime provides a less costly and dangerous way to ensure freedom of the seas than sole reliance on unilateral “enforcement” through its Freedom of Navigation Program (FON). In this policy, the Navy deliberately challenges, through diplomatic protests and assertive fleet operations, what it sees to be excessive coastal claims over the oceans. The Navy has found these unilateral demonstrations of resolve increasingly risky as they were eliciting strong and potentially dangerous reactions from other states.²⁶⁶ They were also stretching the Navy thin, and other nations were reluctant to join in FON operations. The FON program was thus becoming physically, politically, and financially costly for the Navy. In the Navy’s view, the LOS Treaty, by reducing the number of coastal state claims and pressure on the Navy to act unilaterally, provides a more cost-effective and reliable means of promoting U.S. interests. As the Pentagon argued, “relying solely on diplomatic and operational challenges is less desirable than establishment, through the Convention, of accepted norms of behavior.”²⁶⁷

In short, the Bush administration calculated that the LOS treaty would advance U.S. interests by stabilizing rights and responsibilities regarding ocean activities, and that the United States would be better off inside rather than outside it. Such developments in multilateral decisionmaking are the result of increasing recognition that rules are more stable and efficient when stakeholders, both powerful and weak, are involved in the rulemaking process.

An “LOS Treaty” for Outer Space

Space, like the oceans, provides for a combination of military and civilian uses. If the United States were to reason from this example and support an LOS treaty equivalent for space, what components already exist, and what would have to be created? Those that currently exist include a basic set of general principles including treating space as a commons, preserving it for peaceful purposes, maintaining freedom of access and use, and promoting responsibility and cooperation in its use for the benefit of all. Space is the “province of all mankind,” and states are obliged to defer to the international community’s interests in space, and to share the benefits of space.²⁶⁸ At the level of rhetoric, at least, many of the basic principles are in place.

Important elements are lacking, however, and would have to be created. First, clear definitions of these principles and specific guidelines for operationalizing them in practice are needed. As I noted earlier, the LOS treaty takes significant steps in these directions with respect to the oceans, but still falls short especially in the security area. A space regime will need to go

²⁶⁶ U.S. warships and aircraft have asserted rights and freedoms in all oceans against objectionable claims by more than 50 countries at the rate of 30-40 per year. Galdorisi, “The United States and the Law of the Sea,” p. 9.

²⁶⁷ Appendix I, “Freedom of Navigation,” in *Pentagon Annual Report 1998*.

²⁶⁸ Outer Space Treaty (Article 1, paragraph 1). Ralph G. Steinhardt, “Outer Space,” in Christopher Joyner, ed., *The United Nations and International Law* (Cambridge: Cambridge University Press, 1997), p. 340.

further. Second, old analogies, such as the freedom of the seas, no longer suffice, and need to be replaced with several new organizing principles: comprehensive security, equal protection in space, and equity in access to space. Here, the LOS model needs to be updated. Third, a better articulated space regime will need more effective, collective decisionmaking processes, and mechanisms to monitor and enforce compliance with the rules. Here, the LOS treaty provides a good model (the LOS process, for example, resulted in new decisionmaking tribunals such as for the Continental shelf and deep seabed mining regime, and a dispute resolution mechanism with “teeth”). Finally, a specific political process for negotiating a more comprehensive regime will be needed. Here, the LOS treaty provides one of several possible models, though perhaps the least likely one given today’s political environment.

New Principles

A more elaborated regime for space will require a shift away from an operational regime based largely on a “freedom of the seas” analogy and deterrence-based notions of security to one based on principles of comprehensive security, equal protection in space, and equity in access to space resources. A broader definition of security would go beyond a purely military approach to security to include resource and environmental issues, and economic and development concerns. Such an approach is crucial for space, with its transnational and planetary effects. Military, environmental and economic issues are inherently linked in space. Testing ASAT weapons in space, for example, could produce thousands of pieces of space debris, which could make it much riskier to put either commercial or military satellites into low-earth orbits.²⁶⁹ Protecting space from environmental damage will be central to continuing enjoyment of its economic and security benefits. As the 1995 Commission on Global Governance stated, “global security must be broadened from its traditional focus on the security of states to include the security of peoples and the planet.”²⁷⁰

An effective operational regime for space will also need to reflect principles of reassurance rather than threat and deterrence. It will need to address the issue of the uneven distribution of security and protection among states, especially with respect to space assets. The United States possesses hugely asymmetrical capabilities to wage war and defend itself and its allies. But these tremendous capabilities, against which other states possess little defense, increase the vulnerability of others and create incentives for asymmetric warfare. Most significantly, vast changes in the nature of threats today make deterrence a much less relevant approach to security than in the past. In an era of globalization where weapons proliferation, terrorism, and unconventional warfare, not attack by another state, pose the major security threats, traditional concepts of deterrence and confrontational force postures are increasingly

²⁶⁹Links between the environment and military activities include environmental contamination from weapons production and development, the environmental consequences of warfare, and environmental degradation as a cause of conflict. Eric K. Stern, “The Case for Comprehensive Security,” in Daniel Deudney and Richard A. Matthew, eds., *Contested Grounds: Security and Conflict in the New Environmental Politics* (Albany: State University of New York, 1999), pp. 135-38. Jessica T. Mathews, “Redefining Security,” *Foreign Affairs*, Vol. 68 (1989).

²⁷⁰ Quoted in Stern, “Comprehensive Security,” p. 133.

dysfunctional and even counterproductive.²⁷¹ Deterrence policies (including missile defense, which, contrary to claims of its supporters, does not eliminate deterrence) exacerbate suspicion and hostility, create incentives for arms races, and undermine crisis stability. Instead, policies for space should emphasize principles of common security and reassurance rather than national security and deterrence. Most nations would like guarantees that space will not be used against them. The long-term stability of the space regime depends on its being organized as a regime of collective protection—of both states and assets—rather than as a regime of nationally organized threat and deterrence.

Finally, principles of equity will also need to be central elements of an elaborated space regime. At the time the Outer Space Treaty was negotiated, the space powers accepted the “province of all mankind” concept “on the general assumption that it will not really burden their programs and, in any case, that they themselves will determine unilaterally how it is to be implemented.”²⁷² Technically, the “province of all mankind” does not mean the same thing as the “common heritage of mankind,” which formally applies to the Moon only. The “province of all mankind” is a relatively general principle that says that all nations have the nonexclusive right to use space. The notion of common heritage (CH) is a more specific principle (although with uncertain scope) that refers to the legal status of property rights. It implies five things: 1) that a resource can be used but not owned, 2) that the use of the commons will be managed by an international authority, 3) active sharing of benefits, 4) reservation of the commons for peaceful purposes, and 5) reservation for future generations.²⁷³

Because of the exhausting controversy over the CH principle during the seabed negotiations, and few ratifications of the Moon Treaty, the international community is unlikely to formally extend the CH principle to all of space any time soon, although many developing countries and environmental law experts would support this.²⁷⁴ Yet it remains a politically important and relevant concept, especially in its “new and improved” 1994 interpretation. In the renegotiated deep seabed mining regime, the International Seabed Authority (ISA) was restructured along market lines, allowing private economic activity in accordance with market principles including the transfer of technology through the open market on commercial terms, and “chambered” voting. The latter ensures that the United States and two other industrialized

²⁷¹ Steinbruner, *Principles of Global Security*; Nina Tannenwald, “Arms Control Policy in a Time Warp,” *Ethics and International Affairs*, 15, 1 (2001).

²⁷² Tan, “Towards a New Regime for the Protection of Outer Space.”

²⁷³ Kemal Baslar, *The Concept of the Common Heritage of Mankind in International Law* (The Hague: Martinus Nijhoff, 1998), pp. xx-xxi.

²⁷⁴ Colleen D. Sullivan, “Defining and Strengthening the Global Commons Nature of Outer Space,” Ph.D. dissertation, Temple University, 1993.

states can make up a blocking vote in the ISA Council.²⁷⁵ Under this new interpretation, the concept was quite acceptable to the western states. Indeed, despite the conflict over the principle in the LOS treaty negotiations, the principle itself was never rejected, even by the United States and other western countries dissatisfied with the treaty's provisions for the deep seabed mining authority. The dispute was over how to apply it. No government denied the need to implement the CH principle in seabed activities through a global redistributive scheme. Rather, some states asserted that this could be achieved more effectively by private enterprise than by encumbering international management.²⁷⁶

In the wake of the revised seabed agreement, both the status and the scope of the CH principle today remain uncertain. It remains a highly contested and controversial legal concept. Legal scholars, environmental advocates and states have variously proclaimed its application more broadly to meteors, the geostationary orbit, the radio-frequency spectrum, solar energy, low-earth orbits, various environmental resources such as endangered species, genetic resources, tropical rain forests, the high seas, the atmosphere, all food resources, marine living resources and cultural heritages.²⁷⁷ This suggests that there is no particular understanding that the concept is reserved only for mineral extraction. Indeed, advocates of the concept saw its application to seabed mining as merely the first step in what should eventually become a broad application to the global commons, leading to a revolution in environmental management. Were the CH concept applied to space, it could in principle be applied to the economic benefits of all space activities, not simply resource extraction from celestial bodies.

So far, although no government has rejected the CH principle in the abstract, governments have not exhibited any willingness to accept it as a mandatory legal obligation for activities in common areas. The majority of legal writers hold that it is primarily a reflection of a political aspiration and a moral commitment, and that it does not represent substantive international law. At the same time, it does possess an "emerging normative quality."²⁷⁸ It has helped to promote notions of stewardship and the sharing of benefits that are now widely accepted as essential to the legitimacy of any global commons management system. Although the United States objected to many of the Moon Treaty's CH provisions as being too "socialistic," it indicated throughout the negotiations that it was not opposed to the basic idea of

²⁷⁵ Browne, "The Law of the Sea Convention and U.S. Policy," p. 7. The 1994 Annex also guarantees the United States a seat on the Council, which the original Convention did not. The four-chambered voting procedure entails that a majority of any of the following can block a decision: 1) four major minerals consumer/importing states, 2) four of the largest eight states with investments in deep seabed mining, 3) four major minerals exporting countries, 4) a group of developing countries. Louis B. Sohn, "Law of the Sea Forum: The 1994 Agreement on Implementation of the Seabed Provisions of the Convention on the Law of the Sea," *American Journal of International Law*, v. 88 (Oct. 1994), pp. 687-705.

²⁷⁶ Franck, *Fairness in International Law and Institutions*, p. 398. The interim U.S. law authorizing seabed mining outside the LOS regime provided for redistributive payments into a trust fund for the benefit of the international community and the least developed states. So did similar provisions in the German interim law.

²⁷⁷ Baslar, *Common Heritage of Mankind*, pp. xx, 221-42

²⁷⁸ *Ibid.*, p. 349.

sharing benefits with the Third World, and to redistributing a small percentage of its wealth. However, one consequence of the 1994 revised seabed agreement is that the operational interpretation of any application of the CH concept today will be informed by a liberal market philosophy rather than by the command economy-style redistributive aspirations of the 1970s-era demands for a New International Economic Order that shaped the original interpretation of the CH principle. Principles of efficiency and practicality will limit aspirations for redistribution and justice.

In sum, although the phrase “common heritage of mankind” itself is unlikely to make it into an elaborated space regime, its component elements reflect basic principles of equity, accountability and fairness in the use of resources that will be essential elements of a more specified regime for space. The rest of the world is directly concerned and should have a say in the options that are chosen for space projects and in the distribution of the benefits of space. In pursuit of the common benefit, the members of the international community must be able to determine the conditions under which the exploitation or use of the resources is to take place. At minimum, the “peaceful uses” and “province of all mankind” principles imply that freedom of use is not unlimited, especially for warfare. More broadly, the “province of all mankind” could be expanded to incorporate a notion of sustainable development.²⁷⁹ At any rate, the rules of space will need to reflect a global, rather than national, public interest, and not merely the interests of a few spacefaring governments and corporations.

Thus an elaborated regime for space will need to be supplemented by principles of equity and new principles of security. However, these principles will need to be given content through specific operational rules. This will entail, in particular, setting clearer limits on the notion of freedom of exploration and use, and on “peaceful purposes.”

New Rules: Operationalizing Peaceful Purposes

The controversy over the term “peaceful purposes” as regards outer space reflects different conclusions about how to manage military competition. At one end of the spectrum, advocates of “peace through strength” perspectives, such as SPACECOM, believe security is best achieved through self-help and unilateral reliance on a posture of overwhelming military force to deter challenges in advance. At the other end of the spectrum, advocates of demilitarization believe security is best advanced by eliminating all forms of military activity from space. In the middle, advocates of security through mutual deterrence and arms control divide military activities into “destabilizing” and “stabilizing” activities. In this view, stabilizing military activity (such as monitoring of arms control agreements) should be continued while developing new weapons technologies that upset the strategic balance should be avoided.²⁸⁰

²⁷⁹ Tan, “Towards New Regime for the Protection of Outer Space,” p. 7.

²⁸⁰ Most of the destabilizing functions are located in low-earth orbit (LEO). Almost all of the functions provided by satellites in geosynchronous orbit (GEO) are of a stabilizing nature (launch warning, detection of nuclear explosions, rapid worldwide communications). George Lindsey, “Arms Control in Space,” paper presented at the Sixth ISODARCO Beijing Seminar on Arms Control, November 1998, p. 7.

The majority of the international community clearly views weaponization of space as inconsistent with “peaceful purposes.” This leaves two other possible interpretations of “peaceful purposes”: total demilitarization, or some form of “space sanctuary,” understood as a ban on weapons in space and possibly constraints on other military activities.

Total demilitarization. This would follow the model of the 1959 Antarctic Treaty to prohibit military involvement in space altogether. It would have the virtue of a strong prohibition on arms in space and greater logical clarity. Advocates of this position charge that any ban limited to weapons rather than including all military activities will have the effect of legitimizing the military use of near-earth space. However, as Rebecca Johnson has noted, the challenge of this position is that since passive military activities are already carried out in space, a total demilitarization of space would be a radical step and would probably depend on a far-reaching and deeper demilitarization of international relations. Further, the difficulty of distinguishing between civilian and military uses of satellites would make monitoring this difficult. While a majority of the satellites in space do have a military purpose, many also serve as “national technical means” and therefore play an important role in monitoring and verification of arms control and nonproliferation agreements, an important stabilizing effect.²⁸¹ Just about any use of space can be useful for military purposes, including weather, navigation, communications and remote sensing.

For the foreseeable future, a regime promoting a purely nonmilitary approach to outer space would likely be purely aspirational, lacking clear definitions or compliance measures, since the dominant spacepowers are unlikely to agree to a specified regime that eliminated passive military activities. Thus such a regime may have little effect on the activities of the spacepowers, leading to what many non-spacefaring nations would perceive as a discriminatory regime.²⁸² Though it may remain the aspiration of some groups of states, total demilitarization of space appears an unlikely possibility.

Space sanctuary. It is likely—indeed almost inevitable—that “non-aggressive” (rather than “nonmilitary”) will continue to be the operating interpretation of “peaceful purposes.” Even so, agreement will still be needed on what counts as “non-aggressive” military activity. The likely option is a regime that recognizes some role for the military use of space but not its weaponization. This view, often referred to as “space sanctuary,” would prohibit the testing and deployment of weapons in space, as well as ASAT weapons deployed on Earth.²⁸³ It draws on the 45-year tradition among the spacepowers of refraining from stationing weapons in space.

²⁸¹ Johnson, “Multilateral Approaches to Preventing the Weaponization of Space.”

²⁸² S. Chandrashekar, “Problems of Definition: A View of an Emerging Space Power,” in Jasani, ed., *Peaceful and Nonpeaceful Uses of Space*, p. 92.

²⁸³The most developed statements of this view have come from military writers. See Deblois, “Space Sanctuary,” and Ziegler, “Safe Heavens.” Philip Coyle and John Rhinelander, in “Drawing the Line: the Path to Controlling Weapons in Space,” *Disarmament Diplomacy*, No. 66 (September 2002), define space sanctuary as total demilitarization, but this is less consistent with the common usage.

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 this tradition of restraint in weaponizing space. According to Theresa Hitchens, this “unspoken pact” or “gentlemen’s agreement” has “penetrated the international psyche so deeply” that most countries, including the two superpower rivals during the Cold War, also refrained from deploying earth-based weapons that could shoot down satellites (although they have pursued development of such weapons).²⁸⁴

Hitchens may overstate the robustness of this tradition, given the strong elements of contingency in its origins. Nevertheless, it has become a widely supported norm of the international community. It thus provides an important precedent for developing a more formalized notion of space sanctuary.

What accounts for the lack of an arms race in space so far? Explanations emphasize a set of military, technical, political, organizational, and ideational factors. According to Paul Stares, the explanation lies in the “convergence of national interests, military disincentives and technical constraints, which were buttressed at important times by *formal* agreements.”²⁸⁵ U.S. policymakers recognized that space weapons offered few military advantages. They faced serious technical constraints, and also wanted to project a “peaceful” image of the U.S. space program. Organizational factors reinforced these considerations, as the Air Force interest in space declined for a lengthy period in the 1960s and 1970s. Other explanations emphasize the common interest of the superpowers in avoiding an ASAT race. Both the United States and the Soviet Union recognized the mutual benefits of reconnaissance satellites and reached a “tacit” agreement to refrain from developing weapons to counter them. Satellites provided mutual reassurance and thus strengthened the system of stable nuclear deterrence.²⁸⁶ As Stares emphasizes, the practice of keeping space free of weapons has been reinforced over the years by formal agreements (e.g. the 1963 UN resolution banning weapons of mass destruction from space, later codified in the Outer Space Treaty; and the ABM treaty). The international community has repeatedly reaffirmed support for the nonweaponization norm in numerous UN resolutions and diplomatic statements.

Today, some of these conditions no longer hold. Perhaps somewhat surprisingly, changes have occurred mainly on the organizational and policy, not the technical, side. The Air

²⁸⁴ Theresa Hitchens, “Rushing to Weaponize the Final Frontier,” *Arms Control Today* (September 2001).

²⁸⁵ Paul B. Stares, *The Militarization of Space: U.S. Policy, 1945-1984* (Ithaca: Cornell University Press, 1985), p. 238.

²⁸⁶ *Ibid.*, p. 237.

Force has rediscovered a major organizational interest in space.²⁸⁷ The continued U.S. commitment to projecting a peaceful image in space is in serious doubt, especially after U.S. withdrawal from the ABM treaty. Technical and strategic constraints have changed much less than imagined, however. While U.S. space technological capabilities have advanced significantly, serious technical constraints on space weapons remain. Additionally, the military advantages of space weapons remain unclear. Finally, given the international community's increasing use of space, the common interest in avoiding an arms race in space is even stronger today. For the United States, the strategic disadvantages of an ASAT race are even more acute than in the past because of the greater U.S. dependence on space today. Thus many of the technical, military and strategic factors encouraging a nonweaponization tradition continue to hold today.

Rules for a Space Sanctuary Regime

A more elaborated operational regime for a space sanctuary could begin with two basic rules: no weapons in space, and no interference with space assets. These would be insufficient to sustain an operational sanctuary regime, however, and would need to be accompanied by two additional sets of rules: rules defining permissible limits on military activities in space, especially with regard to observation and sensing, and rules allocating use of space among various uses (economic, scientific, military) and various users.

Since there are no weapons in space today, one obvious limit will be to prohibit weapons based in space. No nation is likely to object to ICBM trajectories through space, thus these would be permitted. However, U.S. missile defenses, under the space sanctuary rules that I am suggesting, would not include weapons based in space. Also prohibited would be the testing and deployment of earth-based and air-based ASAT weapons, although verification of such an agreement will be difficult because of the residual ASAT capabilities of missile defenses. An alternative strategy would be to ban weapons from higher orbits (above 500 miles). This would permit attacking ballistic missiles traveling through (near-earth) space but would forbid shooting from space or attacking permanent objects in space.²⁸⁸

In addition to the ban on deploying weapons in space, a second core rule of the regime would be a prohibition on interference with space assets. Assets in space are highly vulnerable, and any space security regime will need to incorporate a strong normative prohibition against interfering with them, or threatening to do so. Superpower arms control agreements, including the ABM, SALT and START treaties, contained provisions prohibiting interference with

²⁸⁷ Views in the Air Force are actually mixed, although the evidence is difficult to come by. According to Lt. Col. Bruce DeBlois, if there is a large increase in funding for space weapons, this mix of views will come to a head, as various branches of the Air Force will inevitably vie for scarce resources (personal communication). One clear line of cleavage is between supporters of air power and supporters of space power. The former worry that space power is going to draw attention and resources away from the traditional focus of the Air Force on air power. Thus some argue for a separate space force. See Alec M. Robinson, "Distinguishing Space Power from Air Power: Implications for the Space Force Debate," Maxwell Air Force Base, AL, April 1998.

²⁸⁸ Moltz, "Breaking the Deadlock on Space Arms Control."

“national technical means,” each side’s satellite monitoring capabilities. This rule should be generalized to all space assets. It would guarantee immunity to satellites, installations and their components in space that perform “peaceful” and security functions including agreed-upon military support activities. Interference with space assets would be viewed as aggression, and violations would incur strong sanctions or penalties. Such a rule would have the virtue of clarity, simplicity and coherence. Most states would have a strong interest in having their space assets immune from attack. Reciprocity and the threat of retaliation would help to sustain the rule. Since such a rule would be in the greatest interest of states heavily dependent on space assets, powerful states will have an interest in supporting it. Obviously, there may be pressure to violate it in time of crisis. While such a rule could certainly not prevent a state determined to violate it from doing so, it would make attack upon a space asset a very serious matter, with possibly severe consequences to follow.

While these two rules—nonweaponization and noninterference—might form the core of a space sanctuary regime, a noninterference rule (e.g. freedom of the seas) is easily abused as freedom to disregard the interests of others. It thus requires clear agreed-upon limits on the activities entitled to enjoy “noninterference.” In space, this means clear rules on the limits of permissible 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, are arguably highly aggressive. These roles will increase once states master the techniques for tracking moving objects on earth from space. Thus space could be used to employ many weapons systems not based in space, including nuclear and conventional strategic strike missions.²⁸⁹

Defenders of such activities argue that the use of satellites for precise target acquisition has reduced human suffering in warfare.²⁹⁰ This may be true at some level, but this benefit risks being overwhelmed by the possible extension of the strategic threat to space and the consequent collapse of global strategic stability. States are also currently free to use measures such as camouflage and deception to conceal sensitive military activities in space. There are also no limits on the number of objects a state may launch into space. The permissibility of launching a large number of decoys could be questioned at some point in the future. Where all these activities cross the line into “non-peaceful” remains undefined.

The need for clarification is becoming urgent because of conflicting interpretations of the current legal regime. The United States maintains that the current right to transit space is customary (thus permitting any activities that are not expressly prohibited).²⁹¹ China rejects this

²⁸⁹ Lindsey, “Arms Control in Space,” p. 4.

²⁹⁰ Michel Bourbonniere, presentation at conference on “Present and Future Challenges to Air and Space Law,” McGill University, April 20, 2002.

²⁹¹ The United States considers the space systems of any state to be national property with the right of peaceful passage through space without interference. White House, *Fact Sheet: National Space Policy*, pp. 1,2.

view, arguing that the right to transit space is given by the Outer Space Treaty, and is therefore contingent on being “peaceful.” China has made clear that its interpretation of what counts as peaceful will be revised if the United States moves weaponry into space. In that event, China will likely take a much narrower view of what is permitted in the way of military support activities. The United States has until now enjoyed great latitude in this area, but all these activities will be called into question if the United States moves weaponry into space and conflicts with China come to a head. China has hinted that it is willing to allow fairly sophisticated military support in exchange for some kind of restraint on space weapons.²⁹²

Thus it is likely that we will need some rules on the limits of sensing and observation in support of military activities. They will be designed to reassure others that space surveillance practices used to verify compliance with treaties are not part of a clandestine ABM or espionage effort. Other states, 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, precision-strike, and surveillance capabilities are not aimed at them. Such rules will also be designed 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.

In addition to constraints on military support, the international community will probably also need to devise rules for the distribution and allocation of commercial sensing data, especially in times of crisis. While states can regulate and control their own commercial remote sensing industry (if they have one), they have no such control over those of other states. This creates a strong incentive to negotiate rules to provide for the distribution of data in times of crisis.²⁹³ Additionally, there will also likely need to be rules limiting deception and camouflage in space, and regulating the number of objects a state may launch into space.

To ensure compliance with the rules, an effective operational regime for space will need a system of monitoring, verification and enforcement. To the extent possible, it should emphasize a compliance rather than a deterrence approach to rule enforcement.

A *compliance regime* restricts opportunities to violate the rules instead of making choice of violation less attractive.²⁹⁴ It involves rules, monitoring and enforcement procedures aimed to *prevent* violations by, for example, requiring equipment with certain specifications that makes violating the rules unlikely. Compliance is built into technical capabilities or procedures in a way that makes monitoring relatively transparent. For example, requiring ships to have certain kinds of hulls for pollution control, or spacecraft to have certain physical characteristics (non-

²⁹² Lewis, “Chinese Positions on a PAROS treaty.”

²⁹³ Capt. Michael R. Hoversten, “U.S. National Security and Government Regulation of Commercial Remote Sensing from Outer Space,” *Air Force Law Review*, Vol. 50 (2001).

²⁹⁴ Ronald Mitchell, “Regime Design Matters: International Oil Pollution and Treaty Compliance,” *International Organization*, Vol. 48 (Summer 1994), pp. 425-58.

hardening) makes it difficult to violate certain rules, and easier to detect possible violations. In effect, compliance with the regime is coerced.

In contrast, *deterrence regimes* aim to *deter* violations through penalties or sanctions. This mechanism of enforcement is also important, but violations under this scheme are often harder to detect. A compliance approach will be difficult in space because of the dual-use nature of much of the technology.

Finally, an operating regime for space will need to be built around norms and processes of *transparency*. Transparency measures are an important mechanism of both reassurance and verification when linked to cooperative obligations.²⁹⁵ Transparency measures serve to demonstrate peaceful intent, good faith, and ongoing compliance with the rules. Such measures would involve the systematic exchange of relevant information on space activities, including measures to provide generally available information as well as other measures for the exchange of more sensitive information under agreed conditions for access and use.

One example would be the development of an on-site prelaunch verification regime. This could build on the UN Registration Convention, which is intended to be a transparency mechanism but is currently not very demanding. It could be strengthened to provide details about the nature and function of the spacecraft as well as about “transparency of use,” such as tracking space objects, monitoring telemetry, and observation. Parameters such as radiation hardening, weight, power, nature of telemetry, satellite services, and international participation could be used as additional elements to categorize uses. Lack of data or inadequate compliance with these aspects would be an indicator of suspicious use.²⁹⁶ For this to qualify as true verification, it would have to go beyond “transparency without obligation.” The information reported or collected about the various parameters would have to reflect agreement about how each characteristic related to acceptable or prohibited activities.²⁹⁷ Other transparency mechanisms could include advance notification of launches with expected orbital parameters, minimum separation distances between spacecraft, inspection procedures, and consultative mechanisms to reduce misperceptions arising from ambiguous activities or accidents in space. One useful multilateral step would be to provide warning to any interested state of the launching of rockets anywhere in the world.²⁹⁸

²⁹⁵ Transparency can also involve stand alone measures, i.e. those that impose no constraints on state behavior other than simply a requirement to report on what the state is doing, but this is not a mechanism of verification because it is not link to agreed-on cooperative obligations. Nancy Gallagher, *The Politics of Verification* (Baltimore: Johns Hopkins University Press, 1999).

²⁹⁶ Chandrashekar, “Problems of Definition: A View of an Emerging Space Power,” p. 77.

²⁹⁷ Gallagher, *The Politics of Verification*.

²⁹⁸ George Lindsey, “Symposium Summary,” in Beier and Mataija, eds., *Arms Control and the Rule of Law*, p. 194.

These various sets of rules would obviously need greater specification, and their technical details would have to be worked out. However, they might provide the core of a more formalized space sanctuary regime.

New Processes and Institutions

Three alternative models for creation of a more elaborated space regime are provided by 1) the UNCLOS III approach to the law of the sea, 2) the “framework-protocol” approach of several recent environmental treaties, and 3) the “Ottawa process” approach of the landmines campaign. Each has its strengths and weaknesses. The UNCLOS III model suggests an enormous, comprehensive effort that results in a massive, very detailed and complex regulatory agreement that is in effect a kind of “constitution” for space.²⁹⁹ It specifies very detailed operational rules and sets up new decisionmaking, monitoring and dispute resolution structures. This approach would produce the kind of detailed operating regime needed for space. But it would require difficult, highly complex and detailed negotiations over an extended period. For such a massive effort to be successful, it would require a major political commitment to the process and leadership on the part of the dominant actors. Although some states might be interested, the United States, which played a major leadership role in the UNCLOS negotiations, shows no comparable interest in a similar negotiation process for space at this time.

In contrast, the framework-protocol approach is a more incremental process. As illustrated by the Ozone Treaty and the Kyoto accord on global warming, a framework convention typically establishes a structure for further cooperation among the parties through monitoring and implementation procedures, exchanging data, and facilitating scientific research, while protocols provide for greater specificity in complex regulation. This permits a treaty embodying general principles to come into force and a cooperative regime to get under way where the consensus necessary for a more detailed agreement is lacking. This approach emphasizes common interests and common benefits. It emphasizes compliance, implementation and dispute avoidance, rather than “breach”, “dispute settlement,” and “compulsory jurisdiction.”³⁰⁰ It focuses on transparency and capacity-building as ways to induce compliance. The advantage of this approach is that it allows the process of cooperation to move forward even while the endpoint remains out of sight. The disadvantages of this approach for space, as illustrated by the grimly slow progress of the Kyoto accord, is that the process may become stalled at the framework level if states cannot agree on operational “solutions,” and thus agreement on detailed operating rules is repeatedly put off for the future—a risky situation for space.

²⁹⁹ Some legal scholars have argued that the UNCLOS III model, with appropriate modifications, should logically be extended to space. “The essential concepts for a meaningful management regime for space—namely disarmament and development, overlaid by the common heritage of mankind philosophy and the concept of ‘comprehensive security’—are already in place.” Peter Bautista Payoyo, ed., *Ocean Governance: Sustainable Development of the Seas* (Tokyo: United Nations University Press, 1994), Part IV. Elizabeth Mann Borgese, *Some Preliminary Thoughts on the Establishment of a World Space Organization*, (Ottawa: Candian Centre for International Peace and Security, 1988).

³⁰⁰ Chayes and Chayes, *The New Sovereignty*.

A third approach is an “Ottawa-process.” This is based on the model of the landmines campaign, whereby civil society and a few conscientious states led the way in achieving a worldwide ban on landmines. The virtue of this process is that it takes the process of creating new norms out of the exclusive hands of states. It would involve mobilizing coalitions of NGOs and countries and industries with significant commercial interests in non-military uses of space.³⁰¹ Most defense companies, which mount powerful lobbies in the United States, have a vested interest in weaponizing space, and thus may be hard to interest in this process. Since the landmines campaign, the United States has sought to avoid circumstances that might lead to other Ottawa-type processes outside the regular UN negotiating fora (such as for small arms), and would be expected to resist such a process for space. China and others would not be enthusiastic about NGO participation. At one level, of course, there is nothing to stop coalitions of NGOs and interested states from getting such a process going, since they do not need anyone’s permission to do so. However, the result could be meaningless unless the United States, the 800-pound gorilla in space, agrees to go along with the results.

Given the current distribution of power and interests in space, an UNCLOS III-type process seems unlikely at this point. The creation of a more specified regime for space will more likely entail some combination of a framework approach and an Ottawa process. As long as the United States continues to resist negotiations on space weapons, interested states, NGOs, commercial enterprises and other parties may simply have to move forward in alternative fora with an “agenda politics” approach to the creation of new principles and norms for space. It is important to establish the relevant “framework” as soon as possible – the principles of comprehensive security, equal protection in space, and equity, and the basic rules of restraint—nonweaponization, noninterference, and defined limits on activities. These new norms can begin to orient both political activity and activities in space. Because the United States has multiple interests in space, it is not unreasonable to think that it will eventually discover that it is better to join the effort rather than to watch from the sidelines.

Conclusion

The challenge the international community faces in space today is the imminent collapse of a 45-year tradition of restraint in 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 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.

Because of the threat posed by this development, it is clear that, one way or another, a new regime for space will emerge. The existing regime cannot survive in its current form in the face of the new challenges. Either it will be transformed by agreement into a more elaborated

³⁰¹ This approach is advocated in Johnson, “Multilateral Approaches to Preventing the Weaponization of Space.”

operating regime that balances the various interests in space on the basis of new guiding principles and norms, or it will be transformed by default into a regime of power and an arena of military competition dominated by the United States.

What are the prospects for a nonweaponization regime for space? It is obvious that no viable legal regime for space can be established without the agreement of the major space powers. On the other hand, it is equally obvious that a regime that neglected the needs of others would be rejected by subsequent space-active countries. Today, there are more spacefaring countries that are in a position to influence the issue than there were in the 1960s and 1970s. This provides some reason for optimism. What led to the dramatic changes in ocean law was that the multitude of developing states realized that, although they could not match the great powers in long distance fleets and technology, they could thwart their freedom of movement by extending jurisdictional claims into the oceans. Likewise in space, other states will not be able to match the United States in capabilities, but they can thwart U.S. freedom of action through various kinds of interference, such as jamming satellite signals. This creates a strong incentive for the United States to negotiate clear rules of behavior that will preserve its broad interests in space.

Today the freedom of the seas principle is increasingly dysfunctional, but hegemony need not be. The United States should use its power and position to support the creation of an operational regime for space based on the rule of law, rather than pursue a short-sighted policy of competition in national dominance there. Security in space will be more effectively achieved through a rule-based regime than through the deployment of destabilizing weapons systems. The rest of the world is not rushing to weaponize space, and instead appears ready to follow the U.S. lead in devising new rules for its effective management. In the long run, the best way to protect U.S. commercial, scientific and security interests in space will be through the stability of the rule of law, rather than through unilateral assertions of military power. The United States should take the lead in promoting the transition to a regime of mutual restraint and benefit in space.