

CHAPTER 8

APPROACHES TO REGULATING WEAPONS IN SPACE

Nancy Gallagher

The current rules regulating space activities were originally developed when the technology was new, the number of space users was small, and future uncertainty was high. The space security environment has changed dramatically since the 1967 Outer Space Treaty, raising questions about which uses of space should now have priority and how they should be protected. The Bush Administration's approach amounts to deregulation of military space activities in the expectation that US military power will be able to protect and promote US interests in a more competitive arena. I will argue, however, that the increased complexity in the space security environment strengthens, rather than undermines, the case for mutual restraint and protective regulation based on equitable rules, agreed operating practices and increased transparency.¹

In the early years of the space age, the United States worked hard to gain international agreement to a set of formal and informal rules that increased predictability and helped protect those uses of space that it deemed most valuable. The overarching objective of US space policy during the early decades of the Cold War was to develop and legitimate reconnaissance satellites and other military support systems that helped stabilize deterrence, while preventing the Soviet Union from using space in ways that the United States neither wanted to pursue nor would concede to its rival.

The Outer Space Treaty codified the key principles upon which the original space security system was built, including free access, non-appropriation, equitable benefits and peaceful use. It explicitly prohibits only a few military uses of space—i.e. weapons of mass destruction in orbit and military activities on celestial bodies. The treaty tacitly legitimates the use of space for surveillance (which the Soviets had denounced as

espionage until the early 1960s) and is silent about other space-based military support activities. It clearly states, however, that all uses of space must be “in accordance with international law, including the Charter of the United Nations”.²

The Outer Space Treaty’s rules were reinforced by a number of other agreements, including the 1963 Limited Test Ban Treaty’s injunction against nuclear explosions in space, the prohibition on space-based missile defence found in the 1972 Anti-Ballistic Missile (ABM) Treaty, and the protections for “national technical means” of verification in numerous arms control accords. Although the superpowers never explicitly outlawed anti-satellite (ASAT) weapons, the United States pursued a policy of reciprocal restraint with the Soviet Union and neither superpower made a serious effort to deploy a significant ASAT system or space-based weapons that could strike targets on Earth.

The US preference for a mix of formal regulations and informal restraint on space weapons reflected four hard-headed calculations about US security:

1. Space weapons were technologically challenging, expensive, vulnerable and offered the United States few—if any—advantages over land-, sea- or air-based systems for most military missions.
2. If the United States deployed space weapons, the Soviets would follow suit, so the advantage for the United States would be short lived, whereas if the United States exercised restraint the Soviets would reciprocate or take an incremental step that the United States could quickly counter.
3. The United States was more dependent on space than the Soviet Union was, so it had more to lose if attacks on space assets were legitimized.
4. Most military uses of space, such as arms control verification and early warning, helped to stabilize deterrence and should be protected, whereas the deployment of space-based weapons and other anti-satellite capabilities would create destabilizing incentives for pre-emptive attack.

Starting in the late 1970s, several developments began complicating efforts to provide predictability and protect peaceful space activities through a mix of general principles, a few explicit prohibitions and a large amount

of voluntary restraint. The strategic context shifted from stable mutual deterrence to concerns about possible nuclear warfighting, then to a post-Cold War era without clarity about whether the new strategic principle should be cooperative threat reduction or hegemonic coercion. Major advances in space-related technologies, including high resolution remote sensing, precision navigation, data management and miniaturization, increased the importance of space for military, civilian and commercial users. They also blurred the distinction between “benign” and “threatening” uses of space. The number of independent space powers increased significantly, but the spending and capabilities gap between the United States and all other countries widened even more. Finally, deregulation and privatization produced a sizeable commercial space industry. The use of space went from being monopolized by a small number of governments to being widely accessible through private companies to countries and organizations that lacked independent space capabilities of their own.

None of these developments automatically reduces the relevance of the Outer Space Treaty. It was deliberately written as a foundation document whose basic principles would remain valid and valuable when space was being widely used for a variety of purposes by both state and non-state actors. In practice, however, it has been difficult to have sustained discussions, let alone to reach agreement, about how the existing rules should be applied to the new situation, and what, if any, new rules are needed to balance interests and protect high-priority space activities. Although annual UN General Assembly resolutions on the Prevention of an Arms Race in Outer Space (PAROS) document near universal diplomatic support for steps to reinforce the Outer Space Treaty and further regulate military uses of space, the United States has been especially resistant to negotiations on the topic both in the Conference on Disarmament (CD) and in the UN Committee on the Peaceful Uses of Outer Space (COPUOS). This resistance reflects a deep scepticism about arms control’s ability to provide either predictability or protection, and a philosophical conviction that deregulation in the military sphere of space activities will free the United States to maximize its competitive advantage.

Unlike most other space-faring countries, the current US administration believes that the global spread of space capabilities translates directly into growing threats against US space assets. It also assumes that self-help is the most reliable form of protection. The Bush Administration

has sought to maximize its freedom of action by withdrawing from some agreements (the ABM Treaty), interpreting others very narrowly (the Outer Space Treaty), and opposing negotiation of any new restriction on military space activities. The United States still professes its commitment to the peaceful uses of space, but US military planning documents now assert that peace is best protected by unilateral space dominance—i.e. having the ability to see anything in and from space, to attack anything that is deemed dangerous, to defend all US space assets, and to control other countries' access to and use of space.

This approach to space security is fundamentally at odds with the principles and commitments in the Outer Space Treaty.³ It is of grave concern to the rest of the world, and would also be controversial in the United States if the American public realized that such a radical reorientation of US space security policy was underway.⁴ This is one reason why the Bush Administration has kept the issue out of the spotlight by quietly reinterpreting ambiguous language in the Clinton-era presidential space directive rather than spelling out its own presidential-level space policy. In effect, the Bush Administration is trying to change the facts on the ground in ways that favour expanded US military uses of space while avoiding any serious national or international assessment of the interests at stake.

The most immediate result of the new approach has been to shift US space priorities in ways that favour military uses of space over scientific and commercial ones and that impede international cooperation on a range of space-related issues. If the United States continues to expand its military space capabilities and doctrine while resisting international efforts to discuss the limits of legitimately "peaceful" use, it could eventually stimulate threats that do not currently exist, yet would have neither effective legal and diplomatic tools for managing those dangers nor reliable unilateral military protection.

The US quest for military space dominance is based on a distorted conception of the security challenges created by the global spread of space capabilities. Documents such as the 2001 Rumsfeld Commission report argue that the United States must move quickly to develop offensive and defensive space weapons if it wishes to avoid a "Space Pearl Harbor".⁵ Most near-term problems, such as space debris, orbital slot allocation and space traffic management, however, neither reflect hostile intent nor are

amenable to military solutions. Upon closer examination, some anecdotes used to document present dangers turn out to be coordination problems that respond to diplomatic solutions (for example, one incident of alleged jamming was actually due to an orbital slot allocation dispute that was resolved peacefully). Other “evidence” involves no real threat to US satellites (Iraq jammed US military global positioning system receivers, not satellite signals, and the jammers were destroyed without space weapons) or unsubstantiated assumptions about dual-use capabilities (i.e. allegations that a Chinese microsatellite is being developed for “parasitic” or “killer” purposes). The United States is the only country currently developing ASATs and other space weapons, although other countries are capable of doing likewise should they decide to emulate or offset some of the advantages that the United States military attributes to its space capabilities.⁶

If the space security environment envisioned by the Rumsfeld Commission actually developed, the United States would be best positioned to compete since it currently accounts for the vast majority of global military space expenditures.⁷ That does not mean, however, that the United States military could provide reliable and cost-effective protection for its own satellites, let alone those of allies or third parties. Most US space weapons efforts are still at an early stage in the development process, and significant technical challenges remain even after decades of work. Despite sharp budget increases, projected US spending on military space activities falls far short of what would be required to achieve complete offensive and defensive space dominance.⁸ Even if the United States were willing to spend significantly more to achieve space dominance—an unlikely prospect given the costs of war in Iraq and mounting concerns about the budget deficit—other countries could interfere with uses of space that they find intolerably threatening while still spending only a fraction of the US military space budget. Since offence tends to be easier and less expensive than defence in space, all space services could be denied or disrupted at a fraction of the cost and technical expertise required to perform them in the absence of protective rules.

The United States should be using its leadership position in space to strengthen protective rules and cooperative mechanisms for managing space security. Indeed, changes in the space security environment actually reinforce the reasons why the United States originally wanted a system of rules and mutual restraints in space, not a no-holds-barred realm of competition.

- Technological change is occurring across the board, not just in space, so it remains true that space weapons offer few, if any, advantages for most military missions.
- Technological diffusion means that if any country deploys space weapons, others will quickly emulate or offset them, so the advantage to the initiator of a world in which space was just another arena for military competition would be short compared with the benefits of rules limiting military uses of space and protecting peaceful space activities.
- As the world's "sole superpower", the United States still has the most to lose if attacks on space assets are legitimized since its economy and military are most heavily dependent on space assets.
- Because the United States is so far ahead, it can afford to exercise restraint knowing that other countries have even less incentive or ability to suddenly surge ahead of the United States than the Soviets did during the Cold War.

Until the United States recognizes the continued applicability of this logic and returns to its traditional support of international efforts to protect peaceful uses of space through legal order and mutual restraint, other countries will have to fill the leadership void. I do not believe that like-minded countries should attempt an "end run" around the United States by repeating the "Ottawa Process" that negotiated the Anti-Personnel Landmine Convention because no country's central security concerns can be addressed without the constructive involvement of the United States. It should be possible, however, to find a creative solution to the current impasse in which COPUOS is not allowed to take up issues related to space weapons because that is the CD's business, but the CD is blocked from holding discussions about the topic because it lacks consensus on a general programme of work. At a minimum, a coalition of like-minded countries could demonstrate their seriousness of intent by suspending diplomatic turf battles long enough to hold a meeting that would bring together delegates to the CD and to COPUOS to discuss practical problems such as space debris that cut across their jurisdictions. Since most space-related technologies have both peaceful and military applications, it could be fruitful to promote dialogue between these two communities even if not all space-faring countries were initially represented.

One can easily envision the basic outline of a more ambitious set of rules for regulating military space activities to protect legitimate activities

while providing reassurances about how those activities will operate and how their benefits will be shared. Any such effort should reinforce the Outer Space Treaty, not raise questions about its legal status, rewrite the treaty in ways that required re-ratification, or reopen basic principles in an attempt to negotiate a single comprehensive outer space convention under difficult diplomatic circumstances.

The first step would be to make fuller, more explicit use of the Outer Space Treaty's provisions. For example, US Air Force lawyers are trying to legitimate any military activities not explicitly prohibited by Article IV of the treaty by asserting that "various unopposed military uses of space may as a practical matter enlarge the unofficial definition of 'peaceful purposes' to the point that specific arms control agreements may be the only effective limitation on development and deployment of various weapons in space."⁹ It is important to write a diplomatic and legal record of international opposition to those military uses of space that do not involve weapons of mass destruction or military installations on celestial bodies but still go far beyond the passive military support activities that have historically been accepted as stabilizing. For example, Article III's requirement that all uses of space must be "in accordance with international law, including the Charter of the United Nations" could be used to request an advisory opinion from the International Court of Justice on the legality of any offensive military space activities not authorized by the Security Council as necessary to maintain or restore international peace and security. If the US military ever actually started trying to exercise unilateral control over other countries' access to and use of space, it would violate Article I's freedom of use principle. Moreover, any military space activity that generated debris or other potentially harmful interference with other countries' use of space would be grounds for international consultation under Article IX. Of course, lodging a protest or requesting a consultation would be largely symbolic because the Outer Space Treaty does not include much in the way of verification, compliance management or enforcement. Still, symbolic protests are better than nothing when silence is being misconstrued as consent.

One or more companion agreements to the Outer Space Treaty would have several reinforcing elements. A categorical prohibition on the testing and deployment of dedicated space weapons, including anything designated as an ASAT weapon and any weapons stationed in space that could hit targets on Earth, would make a valuable normative statement.

Since many space technologies have both benign and threatening applications, though, a ban on weapons in space would need to be coupled with measures to address “latent” or “residual” ASAT capabilities. For example, any missile defence system could be used offensively. It would make sense to prohibit space-based missile defence interceptors because they are at a very early stage of development, offer relatively little protective benefit at great expense, and could be used offensively against satellites in geostationary orbit that would otherwise be out of reach. Unless the United States can be persuaded to forego all missile defences, however, one would also need a general injunction against any form of attack or deliberate interference with legitimate satellite operations. Likewise, concerns about microsatellites should be addressed by combining a general prohibition on aggressive uses with reassuring behavioural rules and restrictions on specific capabilities where the peaceful benefits are not worth the suspicion and risks of misuse.

Prohibitions on threat or use of force against peaceful space activities will require more explicit international agreement about which military support activities are truly peaceful and thus deserving of legal protection, and which are not. Many supporters of the PAROS approach want to focus, at least initially, only on weapons that project force in, from and to space, on the grounds that space-based military support systems are so sacrosanct for the United States as to preclude productive discussion. It is worth giving some thought to the broader question, though, because of a problem called the “paradox of ASAT arms control”—i.e. if legal measures are used to suppress ASAT attacks on vulnerable satellites, then countries will be tempted to deploy more threatening spacecraft and incentives to develop ASAT capabilities will increase, thus undermining the effectiveness of legal restraint.¹⁰ Therefore, reliable restraints on attacks against or interference with satellites require corresponding restraint and reassurance about the uses of those satellites.

This raises a number of challenging questions that merit serious discussion among those who believe that additional regulation of space weapons would be useful. Should the objective be a categorical ban on threats and use of force against outer space objects, or should one try to specify from the outset that protection requires peaceful use, and if so, how should peaceful use be defined? Would there be a presumption that all military support satellites are peaceful during peacetime and lose their protected status during wartime, or are there types of military support

activities that should be either banned as dangerously destabilizing during peacetime or protected as mutually beneficial for crisis management and conflict termination even during a war? What about satellites that provide services to both combatants and civilian users or neutral countries? None of these are easy questions, so it is better to start working now on answers that balance the full range of interests at stake than it is to cling to a false dichotomy between “good” military support satellites and “bad” space weapons.

Creative thought is also needed to avoid another false dichotomy about whether the details of verification should be addressed before or after agreement on the principles for regulating military uses of space. Discussions about verification of new limits on space weapons are already falling into counterproductive Cold War patterns: arms control opponents claim that verification problems preclude further restrictions; some proponents want to postpone discussion of verification until after legal commitments have been made; and self-styled pragmatists suggest that willingness to agree in advance on verification is evidence of sincerity or lack thereof.

A more constructive approach would be to identify specific ways in which a greater willingness to exchange information about space-related activities would have immediate practical benefits in making those activities safer, cheaper or more effective, and would also increase confidence about compliance with rules regulating military space activities. For example, states that want greater international cooperation on space security could start by ensuring that their own submissions to the UN Convention on Registration of Objects Launched into Outer Space are complete, accurate and timely since all space users have a common interest in avoiding space traffic collisions and clarifying questions about the purpose of satellites. Likeminded states could also discuss pooling resources to develop a global system for detecting and tracking satellites, space debris and other objects, ideally in collaboration with the US space surveillance network, but independently if it proved impossible to agree on equitable rules for sharing information and allocating costs.¹¹ New life could be given to information-sharing projects such as the Joint Data Exchange Center (JDEC) and the Russian-American Observation Satellite (RAMOS) first proposed as a way for the United States and Russia to overcome Cold War suspicions if they were recast as steps toward building the level of confidence and operational

cooperation among all space-faring countries needed for global space security.¹²

Of course, it is hard to have forward progress even on modest forms of cooperation, let alone on the core problem of regulating military space activities, when the most powerful country is actively pursuing military space dominance in support of a national security strategy based on coercive prevention. Luckily, there are good reasons to believe that technological challenges, budgetary constraints and domestic politics will eventually have a moderating effect on US space security policy. In the meantime, other countries should not let US intransigence on PAROS be an excuse for inaction on things that they can influence. Anyone who wants new regulations on space weapons should make sure that they are fulfilling all national obligations under existing international agreements and should play a constructive role in the development of rules and information-exchange mechanisms on related issues, such as space debris and space traffic management. Instead of trying to repeat the Ottawa Process, likeminded countries should consider whether nascent projects on global Earth monitoring and space surveillance might be opportunities to replicate the “Galileo Process” in which a growing number of states made progressively stronger commitments as the functional benefits of cooperation became clearer. These secondary forms of cooperation should neither be dismissed for failing to place new constraints on space weapons nor be allowed to substitute for serious discussion of the larger problem. Instead, they should be integrated into a coherent strategy to change the facts on the ground in ways that favour space security cooperation by demonstrating the continued relevance of the basic principles in the Outer Space Treaty and their practical application in protecting legitimate space activities in an increasingly complex environment.

Notes

- ¹ This presentation reflects work funded by the John D. and Catherine T. MacArthur Foundation and was undertaken in collaboration with John Steinbruner, Jeffrey Lewis and Martin Malin. The observations in this presentation are developed more fully in Nancy Gallagher, “Towards a Reconsideration of the Rules for Space”, *CISSM Working Paper*, April 2005, at <www.cissm.umd.edu/documents/gallagherspace.pdf>.

-
- ² *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, Article III.
- ³ See Ram Jakhu, "Legal Issues Relating to Global Public Interest in Outer Space", *CISSM Working Paper*, October 2005, at <www.cissm.umd.edu/documents/jakhuspace.pdf>.
- ⁴ When presented with arguments for building or banning space weapons, though, Americans overwhelmingly preferred the latter approach. See Steven Kull, "Americans on WMD Proliferation", *CISSM/PIPA/Knowledge Networks poll*, 15 April 2004, at <www.pipa.org/onlineReports/WMD/WmdReport_04_15_04.pdf>.
- ⁵ *Report of the Commission to Assess United States National Security Space Management and Organization* (The Rumsfeld Commission), Executive Summary, 11 January 2001, at <defenselink.mil/pubs/spaceintro.pdf>.
- ⁶ Jeffrey Lewis, "Programs to Watch" and "False Alarm on Foreign Capabilities", *Arms Control Today*, vol. 34, no. 9 (November 2004), pp. 12, 14–17.
- ⁷ Some estimates place the US share of global military space expenditures as high as 95%, but it is notoriously difficult to compare military budgets of such dissimilar countries as the United States, Russia and China. See "Government Space Budgets Continue to Grow", *Spacedaily.com*, 11 December 2003, at <www.spacedaily.com/news/satellite-biz-03zzzl.html>.
- ⁸ For example, US Air Force Space Command has estimated that the cost of acquiring all the capabilities for which it is responsible would be almost double the available resources in the next decade. See Air Force Space Command, "Strategic Master Plan FY06 and Beyond", 1 October 2003, p. 13.
- ⁹ For example, see Elizabeth Waldrop, "Weaponization of Outer Space: U.S. National Policy", *High Frontier*, Winter 2005, pp. 36–37.
- ¹⁰ Ashton Carter, "Satellites and Anti-Satellites: the Limits of the Possible", *International Security*, vol. 10, no. 4 (Spring 1986), p. 68.
- ¹¹ Currently, only the US military has a significant capability to track space objects, but there are problems with its coverage and concerns about data availability. A number of other countries have partial capabilities that could be combined and expanded into a more comprehensive and reliable space surveillance system if they had a compelling reason to do so. See Theresa Hitchens, *Future Security in*

Space, Washington, DC, Center for Defense Information, September 2004, pp. 53–62.

- ¹² On the potential significance of JDEC as a step toward security arrangements based on reassurance rather than deterrence or coercive prevention, see John Steinbruner, “The Significance of Joint Missile Surveillance”, *Occasional Paper of the Committee on International Security Studies*, American Academy of Arts and Sciences, July 2001, at <www.cissm.umd.edu/documents/jointmissile.pdf>.