

NO HARMFUL INTERFERENCE WITH SPACE OBJECTS: THE KEY TO CONFIDENCE-BUILDING

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INTRODUCTION

There is a consensus that the use of outer space is essential to preserving the economic, commercial and military interests of advanced industrial nations, and that any harmful interference with satellites poses a threat to these interests. Opinions diverge on the means with which to secure the use of outer space over the long term. I will show that the advancement of an international norm against harmful interference with space objects, supported by a hedging strategy in the event of non-compliance by other nations, offers the best likelihood that satellites can continue to support the needs of citizens and their governments. Furthermore, I argue that a provision banning harmful interference with satellites might best be imbedded in a code of conduct for responsible spacefaring nations. Indeed, a code of conduct that includes other essential provisions, such as those establishing debris mitigation and space traffic management protocols, could be vitiated if nations test and use mechanisms that result in harmful interference with space objects. The alternative to a code of conduct is including a provision banning harmful interference with space objects in a more formal legal instrument. I will use the terms “ban”, “prohibit” and others to refer to the no-harmful-interference provision. In all cases this should be taken to mean, unless specified otherwise, a pledge not to interfere in a harmful manner with space objects. Whether this pledge takes the form of a politically or legally binding agreement would be a decision left to interested nations, though I will discuss the merits of these options.

The next section examines the precedent for embedding such a provision in an international agreement. This is followed by a discussion of the need for a ban on harmful interference with space objects in a code of conduct for responsible spacefaring nations, including how the lack of a ban could threaten the success of the code as a whole. The fourth section explains why advanced spacefaring nations will still retain the means to respond

effectively if another state breaks its pledge not to engage in harmful interference. The fifth section compares the relative merits of legally and politically binding instruments as tools for building a norm against harmful interference with space objects.

HARMFUL INTERFERENCE PRECEDENTS

A provision limiting harmful interference would not be without precedent. The agreement most directly comparable to a ban on harmful interference with space objects is the 1975 Incidents at Sea Agreement between the United States and the Soviet Union. The agreement provided for the implementation of a wide variety of specific procedures so as to avoid dangerous close-quarters incidents at sea. That both navies retained the ability to respond forcefully when attacked actually enhanced the strength of the agreement. It also ensured that both had incentives to ensure strict adherence to the procedures by stressing the consequences of a failure to abide by the terms laid out by the agreement. This diplomatic agreement enhanced international security by limiting freedom of military action in a way that reduced the chances of unintentional escalation to a general nuclear war. In the years before the agreement was negotiated there were a number of incidents which posed a risk of unintentional escalation. They forced the realization that without some diplomatic limitations on military operations, the risk of escalation was dangerously high. A ban on harmful interference with space objects would be perfectly analogous to avoiding incidents at sea if, in addition to creating political crises, incidents at sea made the oceans themselves more dangerous to traverse.

Though there is no perfect analogy to be made between a ban on harmful interference with space objects and other threat reduction agreements, the precursors of an international norm against harmful interference with space objects can be identified, as this provision is embedded in international treaties and agreements as well as, by extension, customary international law. These precedents include specific provisions that ban harmful interference with space objects, provide for notification or consultations in the event of harmful interference, and list some of the specific actions that might constitute harmful interference. The Anti-Ballistic Missile Treaty, the Strategic Arms Limitation Talks, the Intermediate-Range Nuclear Forces Treaty, the Threshold Test Ban Treaty, the Peaceful Nuclear Explosions Treaty, the Strategic Arms Reduction Treaty, Conventional Forces in Europe Treaty,

and the second Strategic Arms Reduction Treaty all contained measures that ban interference with “national technical means of verification”, a euphemism that was commonly understood to refer to the satellites essential to monitoring treaty compliance. Similarly, the 1971 Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War contained a provision requiring that the United States and the Soviet Union notify each other “in the event of signs of interference with these systems or with related communications facilities”.

The Constitution of the International Telecommunication Union (ITU) created another powerful precedent for non-interference with space objects. Article 45 of the ITU constitution states that, “All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Member States ...”. Importantly, the next item in the constitution states that members are required to ensure that non-governmental providers and users of radio services or communications adhere to the non-interference clause as well. This document is particularly important because it established what might be the only legal precedent that specifically addresses harmful interference with satellites mounted by non-military and extra-governmental organizations.

The cornerstone of the existing international legal regime that governs activities in outer space, the Outer Space Treaty, also lays the basis for a ban on harmful interference with satellites. Article IX of the treaty links harmful interference with consultation measures:

If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.

Finally, it is important to note that the provisions banning interference with satellites have existed for almost as long as satellites themselves. The earliest references to “national technical means” in international law are found in the Anti-Ballistic Missile Treaty and the Strategic Arms Limitation Treaty I interim agreement of 1972, while the reference to harmful interference in the Outer Space Treaty was enshrined in international law five years earlier. A mere 10 years after the space age began, states were already beginning to insist that satellites and other objects traversing outer space were not to be interfered with. This sentiment has only grown stronger over time.

THE INDISPENSABILITY OF THE NO-HARMFUL-INTERFERENCE PROVISION

It is the tension between the existence of myriad ways to interfere with satellites and the crucial role that satellites play that has placed this topic on the agenda. Recognizing that the United States’ use of outer space is crucial to its national and economic security, domestic commentators have proposed policies that seek to resolve this tension satisfactorily. I cite these commentators and discuss the case of the United States only because it is that with which I am most familiar—but the arguments I make apply to other spacefaring nations as well. Most American commentators gravitate towards one of two options: military dominance or legal restraint. There is also a third option which does not constrain the ability to interfere or seek a treaty banning space weapons. It relies on a code of conduct built around the principle of non-interference with space objects. In fact, this principle would be an indispensable component of any of the three options: protection through freedom of military action, a space weapons treaty or a code of conduct.

Attempts to dominate outer space by any state, and certainly by the United States, will inevitably run afoul of the security dilemma. At its core, the security dilemma is the paradox often used to explain the motivation behind arms races. A state may decide to build up its military with the goal of improving its capabilities relative to those of its neighbours. Its leaders may see such a build-up as being a viable way of improving the state’s security. However, when its neighbours see the state upgrading its military, they realize that their own capabilities are growing relatively less capable. Thus, when one state builds up its forces, it implicitly threatens its neighbours, leading them to build up their own militaries. This is a fear for space-based

as well as terrestrial capabilities. Any attempt by a state to dominate outer space militarily would by definition make other countries that operate in outer space feel less secure. As a result of a state's pursuit of dominance, other actors face the spectre of a first-strike attack on their satellites. These actors would then be spurred to pursue parity or, more likely, asymmetric capabilities aimed at negating the competitor's advantage. The pursuit of anti-satellite weapons or other systems with the latent ability to interfere with space objects would be characteristic of an asymmetric strategy. That this very possibility may have motivated the pursuit of dominance in the first place is the essence of the security dilemma.

The international community has already seen evidence of the security dilemma as it pertains to outer space. In the political storm in Washington that followed China's destruction of its satellite Fengyun-1C in 2007, one did not have to look hard to find a "hawk" calling for an immediate response. The response advocated with the most frequency was an increase in the level of funding devoted to offensive counter-space programmes. China's reaction to the United States' destruction of its failed satellite USA-193, though it was ostensibly for the purpose of enhancing safety and was conducted with advance warning to the international community, will be a good indication of how sensitive states are to the implications of the security dilemma as it pertains to outer space.

A provision banning harmful interference with satellites would not resolve, but would help address, the security dilemma. By ensuring that any state that initiated harmful interference against satellites would be violating an established norm of international behaviour, the no-interference provision would be the foundation of the victim's effort to rally international support for its response, whatever that might be. In effect, pledges by spacefaring nations against harmful interference would serve a purpose similar to that of the articles of the UN Charter that prohibit and allow for responses to acts of aggression. The nations with the technical knowledge and resources necessary to operate in outer space also generally have the means to respond to harmful interference with their space assets. There is a consensus that nations have a right to defend themselves and their interests if attacked. An established norm against initiating the harmful interference that would constitute an attack would not impair the right of self-defence that is integral to national security and acknowledged in the UN Charter. The violation of an international norm against harmful interference would also make such a response more politically defensible, if a nation were to deem it necessary.

Pledges not to interfere with space objects may be broken, just as treaties may be broken. Major spacefaring nations have the means to respond in outer space or on the ground if international norms or treaty commitments are disregarded. Thus, it is unreasonable to expect states making a no-harmful-interference pledge to refrain from hedging against the possibility of a violation of the norm. Indeed, hedging strategies can serve as a deterrent, reducing the likelihood of interference directed against space objects. But such a pledge would preclude spacefaring nations from carrying out tests of harmful interference. Thus, pledges against harmful interference with satellites would make a violation of this norm more objectionable and enhance the credibility of a retaliatory response, if one were deemed necessary. Both effects would ultimately serve to reduce the likelihood of any interference with satellites. Of course, this state of affairs—tit-for-tat strikes against satellites—would not be ideal. Surely, no nation desires (or should desire) a race to acquire anti-satellite weapons of any variety. My point is simply that given the nature of the security dilemma and the existence of technology with the latent capability to harm satellites, the world will be better off if there is a strengthened norm against interfering with satellites.

An early push towards a norm against harmful interference would also do a great deal to hasten a more complete code of conduct geared toward other aspects of space security. When building a norm against interfering with satellites, why not deal with other elements of space security as well? A holistic path towards securing outer space is much more likely to succeed than one that leaves issues outside of harmful interference unaddressed. For example, efforts to establish space traffic management protocols would reduce the probability of an accidental collision. However, an accidental collision could be just as harmful as intentional interference. Though its effects could be indistinguishable from those caused by a harmful interference event, an accidental collision could not be considered a violation of an agreement not to interfere with satellites. It is unclear why states would endeavour to prevent the consequences of one type of interference but not the other. Given the precedents against interfering with satellites, a norm against interference is a very attractive foundation for a more comprehensive agreement. It is also absolutely necessary for the other elements of a code of conduct to operate effectively or be meaningful at all.

The Henry L. Stimson Center, in collaboration with other non-governmental organizations, has developed a code of conduct governing the actions of responsible spacefaring nations.¹ Its key elements are as follows: non-interference with satellites, the prevention of activities resulting in persistent orbital debris, information exchanges and consultations concerning space activities in general, information exchanges and consultations regarding activities that might be construed as either interfering or debris-creating, the coordination of spectrum use (for example, radio frequencies) and orbital slot allocation, and space traffic management. None of these are sustainable in the long term without a ban on harmful interference with satellites. The prevention of activities that create orbital debris is an obvious case, particularly when considering that debris-creating direct-ascent kinetic energy anti-satellite weapons are currently experiencing an unfortunate renaissance and pose a serious threat to the existence and use of satellites. Some methods of physically interfering with satellites create debris, yet without a code against harmful interference, this debris would be treated the same as debris created by normal space operations—as unfortunate but largely unavoidable. The coordination of spectrum use and orbital slot allocation might likewise fall by the wayside without a ban on harmful interference. An incident that occurred late in 2006 serves to illustrate this point. The roots of the incident reach back to 1988, when Tonga registered a large number of slots in geostationary orbit. It lacked the capacity to use the slots itself, but leased them out to corporations to bring in revenue.² However, several of these slots became subject to international dispute. Indonesia, in an effort either to put pressure on Tonga to acquiesce to its claim over a particular slot or to deny Tonga the use of this slot, proceeded to jam the satellite in that slot.³ Thus, jamming occurred because of a disagreement about the use of an orbital slot. Thankfully, ad hoc diplomatic intervention prevented further escalation. With an agreement banning harmful interference, a mechanism to resolve the dispute would already be in place. Without removing the option of escalating such a dispute by physically interfering with the satellite in question, belligerent states have no incentives to resolve these disputes peacefully. With no clear international stance on harmful interference with satellites not necessarily involved in treaty verification (and therefore considered to be national technical means), it will doubtless continue to occur.

Space traffic management, another major element of a code of conduct for operating in outer space, is also vulnerable to the instability inherent in the present state of affairs. Since it entails debris mitigation as well as collision

avoidance, it seems clear that space traffic management would be vitiated without a non-interference provision, lest debris created innocently be subject to the mandates of the system while debris created wilfully remains perversely outside of it. Space traffic management also requires consultations, which would be difficult to maintain without a harmful interference ban. In fact, the possibility of instituting virtually any consultative measure seems very low without a ban on harmful interference. If there are no definite and pre-determined objectionable activities, what is there to consult about?

Establishing a space traffic management system, debris mitigation protocol or consultative mechanism without a strengthened international norm against harmful interference with satellites is analogous to having a nuclear hotline that is automatically turned off during crises. Times of international tension, particularly those caused by an incident in outer space, are times when a code of conduct would be subjected to its most difficult test. Without first banning harmful interference, a code of conduct for operating in outer space would be less reliable during crises, when nations rely on their satellites to a particularly great extent. As made clear in this section, a ban on harmful interference with satellites is vital to international security, even if there is no code of conduct governing space operations. Conversely, if the international community opts to pursue a code of conduct for outer space, it cannot hope to succeed without also considering a provision that deals with harmful interference.

LIMITING INTERFERENCE LIMITS TESTS BUT NOT LATENT CAPABILITIES

One of the most common arguments against a treaty or code of conduct governing activities in outer space is that an exclusive approach to protect satellites would capture military capabilities with other purposes. On the other hand, a narrow approach that focuses solely on “dedicated” anti-satellite capabilities would not be sufficiently protective of satellites, since many technologies have the capability to perform both benign and hostile missions. Furthermore, these critics argue, unscrupulous states will likely ignore the prohibition against developing and deploying the weapons that are banned, leaving the states that stand by the provisions of the agreement at a disadvantage. These arguments do not apply very persuasively to a ban on harmful interference.

The critics are right to recall that a key barrier to concluding space arms control agreements has been the difficulty in defining space weapons. As noted by former US Under Secretary of State for Arms Control Robert Joseph, "... negotiations [during the Carter administration] were stymied by questions of which so-called 'space weapons' capabilities should be limited—co-orbital interceptors, direct-ascent interceptors, ground-based, or just space-based directed-energy systems".⁴ However, space weapons do not have to be defined in order to maintain a provision banning harmful interference. The prohibition of harmful interference with satellites is specifically designed to take into account the multi-purpose nature of space technology. Missile defence systems, satellites capable of shifting their orbits and even the Space Shuttle could be used to interfere with satellites. While some of these systems are considered more threatening than others, the fact remains that when negotiators seek to define space weapons, their definitions will always be too encompassing or too narrow, depending on the perspective of their respective states. Banning the act of interference rather than the existence of "weapons" bypasses this difficulty altogether. Doing so is not without precedent—weapons of mass destruction (WMDs) have been stockpiled for decades without being used. Though WMDs obviously have more horrific effects, and thus have not been used for somewhat different reasons, the analogy holds because the first use of a space weapon in military conflict, like the use of a WMD, is unlikely to be a singular event. The existence of weapons does not imply their eventual or inevitable use if the consequences of such use can be devastating for both combatants.

An additional benefit of seeking to define harmful interference rather than seeking to ban space weapons is that it eases the dilemmas associated with verification. As noted by numerous critics of space weapons treaties, it would be extremely difficult to verify the absence of space weapons from the arsenal of a potential adversary. This problem would be exacerbated by the existence of numerous dual-use technologies and weapons systems. However, parties to a code of conduct do not need to concern themselves with what constitutes a space weapon or engage in the seemingly hopeless task of agreeing on a common definition of one. Instead, they need only focus upon one application of multi-purpose technologies—their use to interfere harmfully with satellites and other space objects. Monitoring and verification of this singular application would be left to national technical means, as would the choice of a response in the event that purposeful, harmful interference occurs. Clarifying harmful interference and ensuring

verification would take hard work by national authorities; attributing harmful interference could be difficult in some cases. None of these tasks would be anywhere near as difficult as deciding on and verifying a common definition of space weapons or dominating space militarily.

Nonetheless, states cannot be assured that others will honour their pledges. A hedging strategy, in which states actively research and field systems with dual-use capabilities, will surely continue during the negotiation and implementation of a code of conduct. Indeed, there is no feasible way of stopping this from happening. Spacefaring nations will therefore reserve the right and probably have the capability to pursue whichever avenues of research seem appealing—as long as in this pursuit they do not test these technologies in ways that interfere with space objects. Hedging strategies that respect a norm against harmful interference can serve as a deterrent against subsequent anti-satellite tests.

AGREEMENT FORMAT

To this point, I have assumed that a provision banning harmful interference with satellites would operate virtually identically as part of any code of conduct. Such a code could take the form of a legally binding treaty, an executive agreement (an instrument often used in the United States and that, under international law, has the standing of a treaty) or a politically binding agreement. In this section I lay out the relative benefits associated with each of these paths. Political compacts between states, such as the proliferation security initiative, do not have the standing under international law as treaties or, in the United States, as executive agreements. They oblige states involved to abide by certain rules, refrain from taking certain actions, or adhere to a set of best practices. A treaty in the United States requires the advice and consent of two thirds of the Senate. When approved, it becomes law. Treaties usually take considerable time to negotiate, especially if many parties are involved and if consensus is required for their completion.

While many states favour a treaty to deal with the problems posed by anti-satellite tests and space weapons, it is difficult to envision how a consensus might be reached in this regard, or how a treaty can be negotiated in a timely manner. There is far more flexibility available if a code of conduct for responsible spacefaring nations is negotiated in the form of an executive agreement. It could be negotiated in any one of several possible multilateral

forums. It could be negotiated by a large number of countries, or it could initially be drafted by a core group of spacefaring nations. It could be negotiated under consensus rules, or if a small number of states oppose consensus, an agreement could be reached among like-minded states that could seek broader support later.

US law makes a peculiar distinction between treaties and executive agreements. Both are legally binding and thus, from the perspective of the international community, should be considered in the same way.⁵ Executive agreements do not require the consent of 67 Senators, a very high hurdle for any agreement, regardless of its content. In rare instances, executive agreements are brought before both houses of Congress for their consent by a simple majority vote. The best known of these congressional–executive agreements is the 1972 Interim Agreement between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms. It was submitted to Congress by President Nixon, where it won the support of all but two Senators and two members of the House of Representatives.⁶ Thus, there is an avenue for executive agreements to gain legislative consent if doing so is deemed important, which it may be for reasons related to American domestic politics. Other executive agreements do not, however, require legislative voting or approval. A code of conduct for responsible spacefaring nations may well fall into this category. Since it would not obligate any state to reduce its armaments, it might not be subject to treaty ratification as per the conditions of the Arms Control and Disarmament Act of 1961.⁷ Using the vehicle of an executive agreement would allow a code of conduct to avoid the peril of legislative purgatory, in which a treaty has been fully negotiated but languishes in the Senate, un-ratified, for years. Entry-into-force of the Comprehensive Test Ban Treaty has fallen victim to this—the treaty was submitted to the Senate during the Clinton administration and has yet to be ratified. Indeed, in 1999 the Senate voted to deny its advice and consent to the ratification of the treaty.⁸

A politically binding agreement may be even quicker to negotiate than either an executive agreement or a treaty. However, it would not be legally binding. This may be a rather severe disadvantage for those states that seek the security that may be provided by legally binding instruments. There may be ways to reassure such states that other signatories take their political commitment seriously. In the United States, for example, the president could issue an executive order (not to be confused with the executive agreements

discussed above) which is binding on the conduct of federal agencies. Such signalling devices would not be binding on the United States vis-à-vis other signatories. As noted by the Congressional Research Service, "... [political] agreements may be considered morally binding by the parties, and the President may be making a type of national commitment when he enters one".⁹ This notwithstanding, legally binding agreements are preferred to other agreements by many nations.

There is no treaty banning space weapons that is likely to be verifiable and have reassuring enforcement provisions. It is also likely that any treaty that is not verifiable and enforceable will be unattractive to several of the major spacefaring nations, including the United States. A code of conduct sets aside issues that are likely to bedevil treaty negotiators for a decade or more. In a code of conduct, verification and determination of compliance would be left to national authorities. One substantive task of negotiators would be to define precisely what constitutes "harmful interference". This task is far simpler than trying to reach agreed definitions of what a treaty regarding space weapons would seek to ban. Regardless of the precise definition of harmful interference, participating states can request consultations when they witness ambiguous events or events they perceive as interference. A refusal to comply with such requests would be a show of bad faith and would reinforce negative assessments. The dilemmas associated with enforcement will continue to exist regardless of the form in which a space security agreement appears. All potential agreements would require consultation measures, and at times these consultations may prove to be unsatisfactory. If signatories to a space security agreement violate their pledges, states that feel disadvantaged have the sovereign right to respond, including the right to withdraw from the agreement.

In the wake of the tests carried out by the Chinese and American governments, near-term actions are required to strengthen norms against harmful interference with space objects. The best option may be to employ a hybrid formulation consisting of a political agreement during the initial norm-building period, to be reinforced subsequently by the force of international law. An instrument negotiated in a forum which does not require consensus and that is considered by the US government to be an executive agreement would be attractive for the reasons outlined above. Agreement on a code of conduct that includes a no-harmful-interference provision would reinforce the norm-building process created by the network of other treaties that relate to outer space. Besides those setting the

precedent for non-interference with satellites, there are also the Liability Convention, the Rescue Agreement, the Registration Convention and the Moon Agreement, all of which have been adopted by the UN General Assembly.¹⁰ The existence of this body of existing law indicates that the norm against satellite interference is present, but in need of reinforcement.

CONCLUSION

My goal has been to convince the reader that a code of conduct accompanied by a ban on harmful interference with satellites would significantly enhance space security. I have further argued that, even in the absence any significant movement forward from the status quo, a measure preventing harmful interference would have significant benefits. I have explained how this proposal bypasses many of the common objections to formal arms control measures in outer space. By continuing the current efforts to improve space situational awareness, the strongest objections to a harmful-interference ban—those about the inability to verify the banned activity—will be rendered moot. It is my sincere hope that such a proposal will be seriously considered and advanced in the coming years.

Notes

- ¹ For a copy of the draft code of conduct, see <www.stimson.org/pub.cfm?ID=575>.
- ² Tonga initially registered the last 16 available slots in 1988 and then reduced its claim to seven slots following the receipt of numerous protests.
- ³ David Shiga, "Mysterious source jams satellite communications," *NewScientist.com*, 26 January 2006, <<http://space.newscientist.com/article/dn11033-mysterious-source-jams-satellite-communications.html>>.
- ⁴ Robert Joseph, "Remarks on the President's National Space Policy—Assuring America's Vital Interests", Center for Space and Defense Forum, 11 January 2007, <www.state.gov/t/us/rm/78679.htm>.
- ⁵ US Congressional Research Service, "Treaties and other International Agreements: The Role of the United States Senate", 2001.

- ⁶ Christopher Stone, "Signaling Behavior, Congressional-Executive Agreements, and the SALT I Interim Agreement", *The George Washington International Law Review*, vol. 34, no. 2, 2002.
- ⁷ US Congressional Research Service, "Treaties and other International Agreements: The Role of the United States Senate", 2001, p. 251.
- ⁸ *Ibid*, p. 254.
- ⁹ *Ibid*, p. 23.
- ¹⁰ "United Nations Treaties and Principles on Space Law", UN Office for Outer Space Affairs, 2006, <www.unoosa.org/oosa/en/SpaceLaw/treaties.html>.