Space Deterrence Workshop Report

As the United States updates its space policies, and the space "global commons" becomes increasingly more complicated, experts see a compelling need to ascertain the role deterrence plays in space security. On May 3, 2010, in order to elucidate the role deterrence should play in space activities, the Secure World Foundation (SWF) and the Center for Strategic and International Studies (CSIS) convened a not-for-attribution workshop attended by a select group of DC-area space security experts. These space and national security policymaker experts discussed a number of questions, including: What role is there for deterrence in providing for the protection of satellites and space capabilities? What can and should deterrence achieve in space? What is needed for space deterrence to work effectively? How do deterrence theories hold up if placed into space-related scenarios? Discussions focused on the position of the United States in relation to its potential adversaries and examined other related issues, such as what is the role that deterrence might play in a broader security strategy. Further, from the deterrence perspective, how can the United States shape future space-related security interactions?

The 2010 workshop was a follow-on to one hosted in 2009 by Secure World Foundation in association with the Naval Postgraduate School, the Air War College, and George Washington University. It looked at how deterrence thinking is evolving to meet the unique challenges of the space environment.

This report summarizes the discussions that ensued. It is important to note that it is not a consensus document; rather, it is intended to describe the various questions and issues that participants raised.

NB: This document does not necessarily reflect the positions of SWF or CSIS, but instead expresses the timbre of the discussions that took place during the workshop.

Deterrence and Assurance – Definitional Developments

A short brief on the Chinese conceptualization of deterrence opened the conversation. China's view is markedly different from traditional Western deterrence thinking as developed during the Cold War.

Western thought typically has looked at deterrence as something that prevents an entity from carrying out a course of action. Chinese deterrence thinking goes a step further—it seeks to compel an actor to carry out a course of action that they do not favor, or in other words, "Compel an opponent to bow."

It was suggested that Chinese thought depends on the concept that escalation/de-escalation can be used much as one turns a thermostat up or down, i.e. that pressure can be increased or decreased as needed. In contrast, the American attitude towards deterrence includes the possibility that momentum could make it extremely difficult to de-escalate tensions, should policy-makers decide such a step is warranted. The danger of these conflicting approaches is that Chinese officials may take a step, thinking that they can de-escalate with no ill effects, and do so under the belief that the United States has the same attitude toward escalation. Instead, the move could create such a situation where the nascent conflict spins out of control.

One key example of signals not being sufficiently clear and generating unforeseen consequences that the group discussed was the lead-up and immediate reaction to China's January 2007 anti-satellite (ASAT) test. The Chinese were very surprised by the strength of the international community's condemnation—they had expected only token complaints, but not the significant criticisms that were leveled against them after the test. Perhaps the amount of debris created by the intercept was not anticipated by Chinese government institutions. The point was made that although there was a lot of international opprobrium about the event, the workshop was hard-pressed to identify any tangible consequences for China for its role in carrying out the test.

Chinese officials are now paying attention to the political dimension of intercept tests. For example, they conducted outreach activities before and after their January 2010 missile defense test. This approach was very different and much more transparent than how they presented the January 2007 ASAT test. Perhaps the Chinese learned from the United States' approach in February 2008 when it demonstrated its own kinetic ASAT capability by destroying de-orbiting satellite USA-193. By managing the issue in the media and doing careful outreach to key allies, the United States managed to avoid, for the most part, the condemnation of the international community, and provided an example of the importance of proper messaging.

An interesting discussion followed about whether signals being sent are understood on either side. The group also considered how the Chinese define a space weapon. There is no clear definition of the term space weapon, and it may or may not include jammers or on-orbit or direct ascent kinetic energy systems that can intercept satellites. Additionally, the Chinese have not established an unambiguous threshold of aggressive action to which they might respond, and that response may not be understood by the United States. It is possible that the United States may not recognize an action that the Chinese believe to be a strategic signal.

Strategic Communication: Messages and Intent

The group also discussed issues of strategic communication. It was highlighted that there currently are not tangible norms of behavior in space, so it is very difficult to draw a red line or state that someone has undeniably behaved irresponsibly. How can a state definitively be said to have carried out irresponsible behavior in space if what constitutes responsible behavior has not been agreed upon?

One participant pointed out the need for a nation to have a clear hierarchy of value for space assets or capabilities that should be protected, and to think through all the possible reactions from steps taken to deter, in order to avoid unintended consequences. It was argued that after China's 2007 ASAT test and the United States' 2008 interception, a norm seems to be coalescing on a politically acceptable way to destroy space objects and perhaps test ASAT capabilities. This norm seems to be that such actions may be acceptable if carried out with prior notification and consultation and designed to minimize the creation of long-lasting space debris. It is uncertain whether the international community wants to allow this concept to harden into an established norm.

The wandering of the uncontrolled yet functional Galaxy-15 satellite was discussed. It can cause significant radiofrequency interference in the GEO belt. Some contend Intelsat is setting a norm for responsible space behavior by its extensive communication, coordination, and mitigation efforts with other GEO satellite operators. The question was raised about whether the United States government was content to let Intelsat establish the precedent for dealing with uncontrolled satellites. As a consequence, in a similar incident, Washington might be held to the standards that Intelsat is now setting. This was put forward as another argument for nations to participate actively in the creation of norms of responsible space behavior.

Reprisals

During the next discussion, participants examined conventional and non-conventional reprisals in space. The debate focused largely on questions of whether reprisals against non-space assets and capabilities were a useful response to attacks on satellites or space capabilities. Space has been irrevocably integrated into international security dynamics and issues; as such, space cannot be isolated from the broader security picture. Several participants pointed out that, at this point, the United States' response options against space assets and capabilities are very limited, so it must consider a broader range of options, beyond space-based responses.

Although military counterspace capabilities exist, the consequences of using them must continue to be studied. The potential use of counterspace capabilities poses several concerns. Their use by the United States may provoke a counterspace reply by the adversary against a U.S. asset. The use of such capabilities might also escalate or destabilize the situation. Since an overall strategic goal of the United States is to preserve its ability to continue to use space for military and other purposes, the existence and use of specific counterspace capabilities, which may affect the long-term sustainability of the space environment, must be thoroughly considered.

If and when deliberate interference with a space asset occurs, the boundaries for response are presently uncertain. Reprisal attacks could be carried out against adversaries' space capabilities, but reprisals against terrestrial targets might serve as a better option. In some cases, the appropriate responses may only be in kind, i.e. jamming with jamming or kinetic attack with kinetic attack. What roles do conflict escalation concerns and existing international humanitarian law regarding proportionality play in developing reprisal options and decision-making? For instance, if an unmanned satellite is attacked, is an attack on a manned ground station, which could result in the loss of human life, appropriate?

Some participants suggested that once a greater number of countries benefit from space, that may deter attacks on space assets: in essence, the proliferation of actors, and especially potential adversaries, using space for their own benefit is one a way to lessen the vulnerability represented by the asymmetric American dependence on space.

Attribution is also an issue - how can retaliation occur if the attacker is unknown? Both timeliness and assuredness are crucial elements for reliable attribution.

There seemed to be implicit agreement among the group that there are significant policy and strategic challenges in employing a reprisal-based deterrence strategy as a means of protecting space assets, although it was clear that not everyone at the workshop was willing to dismiss the option entirely.

Denial Deterrence: Removing the Benefits of Hostile Action

This session examined architecture choices and the idea of denial deterrence, in other words, removing the benefits of hostile action and complicating the geopolitical implications of attacks on space assets. Participants suggested that one way the United States might pursue deterrence is by developing space capability architectures that minimize the effectiveness of kinetic attacks, for example, developing large satellite constellations that contain inherent redundancy and robustness. This, in theory, removes the allure of kinetic attacks and instead funnels an adversary's strategies towards less permanent methods, namely electronic warfare, jamming, and cyber attacks. While these methods still represent a threat, they would have only minimal long-term negative impacts on the space environment.

While the long-term goal of a denial deterrence strategy might be to develop new satellite architectures and space assets, in the near-term, international cooperation might be the best route. Cooperation's potential to develop a sort of interdependence among space actors could increase the geopolitical costs of attacking a specific space asset or capability. As an example, one of the best ways to protect GPS is to ensure that as many actors use it as possible, so that no one will want to interfere with it. For this to work, however, others have to be willing to depend on another actor's system (i.e., be ready to share the U.S. satellite navigation system in lieu of developing one's own).

Developing shared motives is important to completing any move towards universal acceptance of norms of behavior. Work by the United Nations' Committee on Peaceful Uses of Outer Space (COPUOS) to foster long-term space sustainability may be an example of the beginnings of developing mutually

understood parameters. Of course, with different space powers at different levels of development of and engagement with space, establishing any shared motive may prove difficult to achieve. One participant noted that interconnectedness may really mean that we are beholden to others. China, for example, could use its checkbook diplomacy to convince a U.S. partner to change its mind on a space security issue. If national decision-making comes down to regime or State survival issues, cooperation with the United States might not be a top priority.

The United States' leadership in space situational awareness (SSA) is an example of the interconnectedness discussed above, yet it may not be permanent. The United States is the de facto leader in SSA not because of any particular strategy, but more because of historical circumstance. This leadership role may need to be reexamined to determine if and how the United States should continue in this capacity.

Options for International Engagement

The session on the international aspects of space deterrence focused on the need for norms, current international initiatives, possible fora for progress, and the current state of political negotiations. Discussions about space are part of a much broader dialog on U.S. foreign policy and strategic deterrence. Because of the unique physics of space, everyone is potentially at risk from the irresponsible actions of others. States must consider not just potential adversaries, but also inexperienced actors that could create a negative impact through an uninformed decision or accident. It may be a sensible strategy for space-faring states to work with emerging space-faring states in order to foster stability in space and safeguard interests overall.

It was pointed out that the days of big global negotiations for binding treaties are over, as are the days of bilateral negotiations between two superpowers that effectively represented the interests of two blocs of space-faring States. It may be productive to bring like-minded countries together for discussions.

There is value in the process of having multilateral talks on space issues. International cooperation regarding deterrence creates transparency and accountability. Although United Nations discussions often take time to yield results, they offer a potential venue for examining these issues. Despite the current deadlock of the UN Conference on Disarmament (CD), it can still serve a useful role in shaping discussions on important topics such as fostering agreement on norms of behavior or on other non-treaty matters that allow for relationships to be built and develop the intellectual framework for later discussions.

It is unclear how effective national implementation of international law will be, compared to just implementing best-practice guidelines. Essentially, any international agreement depends upon national implementation. There is more clarity surrounding legal agreements and treaties, but that clarity has its own drawbacks. Language is always going to be a key issue. The U.S. government, for example, does not

like to discuss arms control in space, yet is very supportive of international engagement and the establishment of norms. For some diplomats, security in space means solely discussing ASATs, while others look at the broader security picture. But for negotiations on space security to work, there has to be some common understanding as a starting point for discussions.

Achieving different space deterrence and security goals probably will require different sets of guidelines. For example, a very specific instrument may be developed among a small group of nations in order to make SSA data available, while another set of guidelines may be required to ascertain how to achieve future SSA goals, and so on.

International outreach cannot be separated from interactions occurring with the commercial sector. Satellite communications generally are not provided by an individual, national company. About 75 percent of DoD satellite bandwidth is bought from international consortia, for example. Given the truly international nature of most major satellite companies, engagement with the commercial sector must happen internationally. The increased influence of commercial actors in providing satellite communications bandwidth could serve as a game-changer in how the United States carries out its deterrence objectives.

It was pointed out that there are four elements of space deterrence. First, norms of behavior are needed for dealing with an increasingly congested, contested, and competitive space environment. Second, there is a need to establish international partnerships and interdependence. Other countries can be engaged, providing benefits up-front and increasing awareness; this will allow the introduction of norms to prevent damaging behavior and could influence actions down the road by other actors as well. Furthermore, there is great interest among emerging nations to cooperate and be a part of the space dialogue. Third, denial of benefit takes away the advantage an adversary may get from attacking space assets, partly achieved by interdependence but also by how the United States structures the architecture of its space capabilities. Finally, there is imposition of cost, or what has what traditionally been known as retaliation. In the past, this last element was the first option considered by the U.S. military when considering space security. The fact that the option has moved to the end of the line of possible responses to aggression in space is quite indicative of how much the United States has changed its thinking about space security and deterrence.

Concluding Thoughts

Deterrence in space, by its very nature, requires an international approach. The international security landscape in space is in a state of flux, given the rise of number and types of actors that are now participating in space activities. When assessing the value of deterrence in space, the United States must consider the benefits and costs associated with each of the various types of responses. This requires ascertaining how potential adversaries understand deterrence, as different countries have different definitions and concepts for escalation. A big picture perspective must be used when

considering different options for space deterrence, as space security is connected to the overall international security situation.

Applying deterrence thinking to the space domain is not something that is widely discussed outside of a small policymaking community. This workshop brought key thinkers together to look at how the application of deterrence theory has moved from a Cold War perspective and the issues that are now most relevant as we look forward. The concept of deterrence in space is still somewhat amorphous both for the United States and its potential adversaries, and thus further examination of these concepts is necessary, which will yield substantial benefit for future space security.

About Secure World Foundation

Secure World Foundation is a private operating foundation dedicated to the secure and sustainable use of space for the benefit of all.

SWF engages with academics, policy makers, scientists and advocates in the space and international affairs communities to support steps that strengthen global space sustainability. It promotes the development of cooperative and effective use of space for the protection of Earth's environment and human security.

SWF acts as a research body, convener and facilitator to promote key space security and other space-related topics and to examine their influence on governance and international development.

About The Center for Strategic and International Studies

In an era of ever-changing global opportunities and challenges, the Center for Strategic and International Studies (CSIS) provides strategic insights and practical policy solutions to decisionmakers. CSIS conducts research and analysis and develops policy initiatives that look into the future and anticipate change.

Founded by David M. Abshire and Admiral Arleigh Burke at the height of the Cold War, CSIS was dedicated to the simple but urgent goal of finding ways for America to survive as a nation and prosper as a people. Since 1962, CSIS has grown to become one of the world's preeminent public policy institutions.

Today, CSIS is a bipartisan, nonprofit organization headquartered in Washington, D.C. More than 220 full-time staff and a large network of affiliated scholars focus their expertise on defense and security; on the world's regions and the unique challenges inherent to them; and on the issues that know no boundary in an increasingly connected world.

Former U.S. senator Sam Nunn became chairman of the CSIS Board of Trustees in 1999, and John J. Hamre has led CSIS as its president and chief executive officer since 2000.

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