The State of Space Security Workshop
January 24, 2008
A Summary Report[*]

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Overview

The "State of Space Security" workshop was organized under the auspices of the Space Policy Institute (SPI) of the Elliot School of International Affairs of the George Washington University), the James Martin Center for Nonproliferation Studies (CNS) of the Monterey Institute of International Studies, and the Secure World Foundation (SWF). It attracted wide attention from government, commercial, military, academic, non-government organizations, and the media. The workshop was attended by approximately 150 participants from the United States, Canada, and European and Asian countries. A recurring issue throughout the workshop was the aftermath of January 2007 Chinese ASAT test. The workshop attendees discussed the means to prevent such occurrences from happening in the future and the ways to deal with growing number of intentional and unintentional threats in outer space through space situational awareness (SSA) and space traffic management.

The workshop was divided into four parts. The first part provided an overview of regional perspectives on space security issues. The current U.S. policy on space security was discussed as a second and stand alone issue. The afternoon sessions were dedicated to various perspectives on space situational awareness and concluded an overview of the issues involved in moving towards some form of space traffic management.

Professor John Logsdon, Director of the SPI, in his welcoming remarks emphasized the continuity of the debate on this the topic by referring to the previous workshops organized by SPI and held in Paris in May 2006 and Tokyo in April 2007. He also introduced the work done by the SPI on space security and space weaponization issues done in the past. Mr. Leonard (Sandy) Spector from the James Martin Center for Nonproliferation Studies and Ms. Cynda Collins Arsenaut from Secure World Foundation greeted the speakers and the audience on behalf of co-organizers.

A key note speech was provided by Mr. Gerard Brachet – current Chairman of the UN Committee on the Peaceful Uses of Outer Space (COPUOS). Mr. Brachet outlined the current and future benefits of utilizing space environment for peaceful purposes and expressed his concerns about the lack of long term guarantees that the outer space will be used and explored in a sustainable manner. He called space security "fragile." He emphasized the need to find practical measures to prevent future conflict in outer space and to make space a sustainable environment

[*] Presentations by the workshop speakers and speakers' biographies can be found at www.gwu.edu/~spi/spacesecurity

for all law and treaty-abiding users. Mr. Brachet identified recently adopted UN Space Debris Mitigation Guidelines as a successful take on a bottom-up approach towards security of the outer space environment. Tackling this problem on the technical level first, he said, may pave the way to more concrete and feasible political or legal actions. He also mentioned that focusing on space weapons while discussing space security issues may unnecessary limit discussion of the broader dimensions of the subject.

Perspectives on Space Security

The panel titled "Perspectives on Space Security" was chaired by Professor John Logsdon and included presentations by Professor. James Clay Moltz from Naval Postgraduate School in Monterey, Dr. Xavier Pasco from Foundation for Strategic Research in Paris, Professor. Kazuto Suzuki from University of Tsukuba in Tokyo, and Dr. Nancy Gallagher from the University of Maryland. The panel was aimed to present U.S., European and Asian perspectives on space security. In addition Dr. Gallagher presented the results of a recent public opinion poll held in the United States and Russia on space weapons.

Dr. Moltz outlined a broad historical perspective of the evolution of the US space security policy. He argued for the effectiveness of diplomatic engagement as means to achieve security in outer space. He pointed out that in the cyclical periods between military-first and diplomacy-first strategies which characterize the changes in the U.S. space security policy over the past half-century, the current administration began with a the "military-first" approach. He however envisaged new developments in the American space policy-making, such as attempts to build international consensus on acceptance of non-destructive and non-debris proliferating means to protect space assets and the acceptance of self-restraints from particularly harmful acts in outer space. During the Q&A session Dr. Moltz has also emphasized that it is hard to find adequate analogies to air and sea power theory while developing of a concept of space power. Environmental and technical characteristics of outer space and space objects are so distinct that they require new approach based on the unique nature of operating environment.

Dr. Xavier Pasco from the French Foundation for Strategic Research (FRS) explained how space security can be approached in the European context, especially within the EU framework. Dr. Pasco provided three facets of the take on the problem in Europe. It can reflect the sense of political maturity and identity formation within the EU, he said. The benefits of research and development, especially within the civilian R&D framework, have also been proved effective incentives (cf. EURATOM). Space surveillance can in addition be a source of "soft power," which is important in the context of accelerating agenda of the common European Security and Defence Policy and the fact that the concept of the "security of European citizens" is gaining momentum.

Dr. Pasco explained that the activities related to space security architecture in Europe are considered by the individual member states primarily in strategic and economic terms. Nevertheless the European Space Policy adopted in May 2007 regards space surveillance as one of the areas of forthcoming coordinated engagement, one of increasing priority.. Dr. Pasco expected that the enhanced European interest in space surveillance and/or space situation awareness will become a factor of recently adopted national space or defence policies in France, Germany and the UK. Moreover ongoing convergence of existing national programmes and

capabilities poses an inevitable question on collective space security efforts to protect European space assets from intentional and unintentional threats. The next ESA ministerial council meeting in November 2008 is expected to bring political endorsement of a dedicated European SSA architecture. Answering the question concerning fiscal appropriations with regard to the latter Mr. Pasco estimated that the process of constituting European SSA will be ongoing notwithstanding to the potential financial hurdles.

Dr. Kazuto Suzuki from University of Tsukuba in Japan started by pointing out that there is no coherent "Asian" approach to space security issues and described consultations and discussions between Asian countries as lagging behind if compared to those held in Europe or the United States. To date, security on the ground is more important than that in space, he said. One could hardly find any institutionalized approach towards the subject. There are different objectives, timing and capabilities of Asian nations' involvement in space activities. He also noted that implicitly there is rivalry rather than a concord governing relations between major Asian space powers on most space issues (i.e. missile defence finds support by the Japanese and South Korean governments but not the others). Dr. Suzuki also noted that using the term "safety of operations in space," and considering it in a civilian context, is more appropriate that using the term "space security," which inherently associates with the framework for military activities. The preference for keeping "space security" under civil leadership is also induced by the fact that Asian countries' military organizations rely on space assets to much lesser extent than their American or European counterparts.

Dr. Suzuki recognized the clash of ambitions in space between the United States and China as resulting less from an actual conflict of interest and more from misunderstanding of intentions. In the concluding part of his speech Mr. Suzuki recalled the outcomes of the space security conference held in Tokyo in April 2007, during which the need for regional institutionalized forum had been voiced in order to facilitate discussions and exchange of views and information on space security issues.

Dr.. Nancy Gallagher from the University of Maryland made the first public presentation of a public survey on space weaponization which was recently conducted within the framework of the Programme on International Policy Attitudes (PIPA) on the American and Russian attitudes towards the space weaponization issues. In general, the poll demonstrated high levels of public concern and high levels of support for international cooperation to prevent weaponization of outer space. Answering the question on the possibility of having a wider choice between formal and informal legal framework on space security (such as recently adopted UN Resolution on Space Debris Mitigation Guidelines), Dr. Gallagher pointed out the respondent's preference for a clear cut legal obligation with verification procedures. She has also reminded the audience of the results of a poll on the use of nuclear power sources in outer space in which the respondents indicated a support for legally binding framework rather than informal cooperation.

Ds. Gallagher said that the survey on Russian attitudes towards space weapons contradicted general perceptions that Russia is non-cooperative and increasingly competitive. It has also challenged the views that arms control is a remnant of Cold War and that it is a U.S. standpoint that if new competition happens the US should "out-compete" potential rivals. The major findings provided that 85 per cent of Americans and Russians thought avoiding an arms race in outer space should be a top priority or important priority for their policy-makers. Similar large

support was noted on reciprocal restraints and on a "no first use" policy. However, Dr.. Gallagher emphasized, high levels of support in all these areas do not necessarily translate into action or active support. In the same vein, the lack of partisan differences on this issue between Republicans and Democrats in the United States will make it less likely to become a campaign issue and keep it less politically sensitive.

Current U.S. Space Security Policy

Ambassador Donald A. Mahley, Acting Deputy Assistant Secretary, Bureau of International Security and Nonproliferation, Department of State, gave a very clear presentation of the current US space security policy. He emphasized its historical continuity in which the support for freedom of access and use of outer space has played and continues to play the most important role. The only difference from past policy, said Ambassador Mahley, is that the current administration explicitly opposes becoming a party to any binding legal arms control agreement in space. This change in policy has been reinforced by the skepticism regarding Chinese intentions after the successful ASAT test in 2007. Ambassador Mahley stated that as long as China does not provide a satisfactory explanation regarding the purpose of its ASAT test, the United States will treat it as a demonstration of capability to destroy non-Chinese objects in outer space. This test contradicted Chinese statements at the Conference on Disarmament said Ambassador . Mahley. He also expressed his doubts concerning the future of the new Russian-Chinese proposal on the treaty banning space weapons. He evoked the commitment of the United States to fulfill the obligations of four existing space treaties and criticized the Russian/Chinese proposal's loopholes, such as lack of verification procedures, the "breakout" problem and the definition of space weapons.

Ambasador Mahley emphasized the strategic importance of space and the need to protect U.S. space assets and those of its allies, especially whose space assets would protect U.S. interests in return. He emphasized the importance of transatlantic dialogue crucial for best practices and guidelines in space security domain and reasserted the willingness of the United States to share its SSA capabilities with its allies. He has also expressed U.S. support for creating Transparent Confidence Building Measures (TCBMs) in outer space as means to reach the goal of reduction of misinterpretation and misuse of defensive measures.

During the Q&A session Ambassador Mahley was asked about practical means to stop further ASAT testing, which are different than binding legal obligations. He responded that the only way to prevent ASAT tests is to convince China, or any other state, that it is not in its national interest to continue such activities by demonstrating that it has a stake in commercial and peaceful uses of outer space. In the future potential aggressors may become potential victims, he said. Commenting on the potential of TCBMs, he underlined a value of voluntary commitments, which may bring spacefaring states to agree on common security measures quicker and more effectively than a formal multilateral treaty. Agreeing on the latter, Mahley said, would necessarily imply engaging those countries which do not have explicit interests in outer space, making the entire process less effective. Moreover, such a treaty would bear the burden of potential loopholes as the relevant technology is dual-use. Adhering to the letter of the treaty, not to its spirit, may always give the opportunity to skirt the treaty's obligations, making it, again, ineffective.

Responding to the claims that the United States seeks too stringent requirements for legally binding instruments and that ad hoc anti-arms control arguments are not specific to space security problems, Ambassdor Mahley pointed out that the arguments behind the policy rationale happen to apply to arms control debates and, in this particular case, non-effective measures are being suggested,; hence it does not seem to be a fruitful path to follow.

Enhancing Space Situational Awareness

The first afternoon session provided an overview of issues associated with space situational awareness. The panel was chaired by Ms. Theresa Hitchens from the Center for Defence Information and brought together the representatives of the largest satcom operator (Intelsat General), the largest European aerospace defence company (EADS Astrium), and the government office with the lead in developing policy for SSA within the U.S. government (National Security Space Office). Ms. Hitchens reminded the audience of the complexity of space situational awareness architecture, which involves two kinds of activities: the ability to observe the objects in outer space (space surveillance) and the ability to understand what those objects are doing (situational awareness).

Richard DalBello from Intelsat General commented that space situational awareness is crucial for companies which need to manage satellite fleets on the daily basis. Despite the fact that commercial operators are long time actors in this field, there are no common practices for them to follow. He described space environment as getting congested but not in "terrestrial" terms (satellites are to be separated at least by two degrees longitude which equals app. 700miles (~1200km)). Even though today these rules seems sufficient to avoid collisions or other interference in orbit, we could already observe conflicts (*e.g.* between Telestar Canada and US over who has rights to a specific orbital position.). In the future we will be observing even more intensive use of GEO and, as a result, the advent of more maneuverable spacecrafts. The problem is that currently the systems which are used for collision monitoring/prevention, such as TLE, give only information on satellite positions but do not provide information on satellite maneuvers. Therefore, if there will be more maneuverable spacecrafts in orbits, the collision margins will increase. Mr. DalBello further argued the need to augment current SSA systems, encourage new data sources and provide more understanding on what kinds of information these new data sources can offer. This can be done through cooperation between satellite operators and data providers, he said.

Mr. DalBello further made the comment that as long as governments are least willing to supply information on their satellites (esp. military ones) they will have to bear the burden of avoiding collisions in space. He has also envisaged that the standardization and coordination practices between commercial operators will inevitably impact the way that TCBMs for space security are drafted. Mr. DalBello postulated the concept of a "data warehouse" where all satellite operators could share information with another. Questioned about his attitude towards the ASAT threat, he responded that although so far Intelsat satellites are not affected by debris problem in LEO, commercial operators in general would want the safest environment for their operations as possible. In response to the question about his views on non-kinetic energy weapons, Mr. DalBello recalled incidents when satellite operators had to deal with intentional interference with

their signals transmissions (i.e. Falung Gong taking over Chinese satellite programme, Tamil Tigers making similar attempts on Intelsat satellites broadcasting in South Asia, etc.) and referred to them as rare but likely to occur in the future. He expressed his hopes for keeping these incidents as infrequent as possible.

Mr. Joseph Rouge from the National Security Space Office (NSSO) started his remarks with clarifications of the U.S. policy attitudes with regard to the international cooperation in supplying information on satellites' positions and maneuvers. There has been a lot of progress recently, he said, especially when cooperation with industry sector is considered, but as a first step one could rather expect coordination among commercial operators before they enter deeper cooperation with the NSSO. Mr. Rouge emphasized the U.S. government commitment to minimize the space debris proliferation in all operations. He advocated expansion of capabilities to include automatic system of notification of in-orbit maneuvers as ways to exchange data with commercial entities. International cooperation could, in his mind, be compared to a "neighborhood watch," where all the benefits of coordinated commitments to provide safer environment for everyone lead to a final goal of advancing spacel security.

Mr. Rouge has also discussed the steps to develop and implement Commercial and Foreign Entity Pilot program (CFEP). He called the "definition phase" well developed, despite the fact that services are not clearly defined yet. The NSSO still determines the needs, requirements and the affordability of the program, if it (or its parts) is going to be internationally accessible, and whether it will be operated on no-fee basis. More clarifications should come within next months, he said. Asked about the chances to operate in an open and transparent environment Mr. Rouge clarified that the practice of "red-flagging" of all objects in outer space would not make much sense and emphasized that one hundred per cent transparency is unlikely to be achieved under even most favorable conditions.

General (ret.) Bernard Molard, begun with remarks that he would speak on behalf of the EUROSPACE, which is the association of European space industry, rather then EADS Astrium. Space, An expression of a state's power may provide a level of uneasiness while drafting national space policies vis-à-vis assets and capabilities of the others, General Molard said. He outlined a handful of conditions and risks that countries have to face while considering their security in outer space. These were the growing accessibility of striking technology (such as ballistic missiles, lasers, jamming devices, EMPs, etc.), deterrence postures among space faring nations (urge to gain retaliatory capabilities against the threats arising from new technology proliferation), the fact that waging conflicts in outer space is paradoxically easier than on ground (as, for example, compared to the public attitudes and consequences of nuclear confrontation), and the fact that growing digital divide provides for temptation and motivations on behalf of those who do not have vested interests in space to strike against space-faring and space-dependant nations. General Molard voiced the need to invest in research and development to counteract the chances of successful attacks in space. He pointed out that laser firing systems with adaptive optics can be bought online currently. Assuming deterrence in outer space (i.e. through developing early warning systems such as French Spiral) and developing the ability to identify potential aggressors (i.e. developing technology to detect laser signals as an indication of aggression) is another way to go.

Space terrorism was described by General Molard as one of the most worrisome problems to deal with. He mentioned catastrophic consequences of nuclear explosions in space and reminded the concept of responsive space (quick replacement of lost assets) which are on the table in the United States, France and other countries in Europe.

Commenting on the Chinese ASAT test General Molard referred to the problem of space debris as requiring coordinated reactions on behalf of responsible space-faring nations. If the Chinese motivations concerning the test are not clean and transparent then potentially affected states should come together and agree on the treaty to prevent actions causing debris. The idea of a space treaty narrowed to the problem of space debris is a priority, he said, however it needs the US on board. The space security workshop which brings together a variety of actors is a promising forum for rising awareness on these issues.

On the practical level the capabilities to secure such treaty verification is vested in SSA systems. Considering European take on the problem a solution will be proposed to ESA in November 2008 to provide dependable, accurate, timely information of non-compliant entities, support risk management on orbit and vehicles reentry as well as support secure use of space through networking the existing capabilities and creating data centers including information on space weather.

During the Q&A session General Molard was asked about the origins of the proposal on a space debris treaty. His answer pointed to communities at EUROSPACE and French Air and Space Academy. Asked about the reasons for Europe's quest for autonomous capabilities in space (i.e. SSA, Galileo) he explained the need for independent reference data to support negotiations and broader need to build a European potential in a variety of areas.

Space Traffic Management (STM)

The panel on space traffic management was chaired by Dr. William Marshall from the NASA Ames Research Centre. The first presentation was by Dr. Kai-Uwe Schrogl, Director of the European Space Policy Institute (ESPI), who gave a broad overview of the state-of-art studies in space traffic management. He outlined a long standing history of international debates on these issues which go back to 1980s. In his mind, as historically was the case for sea and road traffic, the principal question about STM is not if it is needed but when it will happen.

Dr. Schrogl focused on the kinds of challenges that the STM is posing to the development of space law, especially with regard to "flags of convenience." From a regulatory point of view a new type of thinking may be required when tackling a whole range of issues beginning from the definition of launching state to weaponization. What is already noticeable is the advent of new rulemaking procedures which bring more attention to UNGA resolutions, technical specifications, rules of the road, as well as ICAO or ITU regulations. He mentioned the success of the Hague Code of Conduct which requires pre-launch notification. Dr. Schrogl also indicated that there are new institutions which are becoming involved in STM, such as the International Academy of Astronautics (IAA) which issued a Cosmic Study on space traffic management in 2006.

In response to the question on the practical means to implement any existing or forthcoming regulations dealing with space traffic Dr. Schrogl shortly referred to renouncing licenses as one of the possibly most effective measures which, for example, routinely guard the safety of aviation.

The last presentation was by Mr. Brian Weeden and Mr. Ben Baseley-Walker from the Secure World Foundation, who jointly provided the overview of the study on space traffic management completed at the 2007 summer session of the International Space University in Beijing, China. Mr. Weeden's presentation was aimed to explain the unique properties of outer space and objects placed in orbit which make it different from any other operating environment. Mr. Baseley-Walker's presentation tackled economic, military, scientific and policy perspectives which are involved in the management of space traffic. He argued that building civilian structures for space traffic management is essential to a safe space environment. As space resources are becoming more intensively sought after around the world, rules of road or codes of conduct on how to manage this increased interest (and related activities) is necessary. Transparency and Confidence Building Measures (TCBMs) based on clear cut technical rules can only add greater stabilization to world politics and, in addition, more opportunity for consensus based approach. Even open and fully internationalized SSA capabilities are within the reach of international community if it realizes that raw data collection is much less politically sensitive than, for example, processed data.. As the United States remains the key, or even unilateral, provider of such data today, it is crucial that other countries expand their data gathering capabilities. Since, however, technically, politically and economically speaking this is not an easy path to pursue, international coordination should be encouraged along with domestic budgetary discussions.

The workshop was concluded by Professor John Logsdon. His closing remarks attempted to clarify the enigma behind the title of his talk ("What about space weapons?"). He explained that the aim of the workshop was to give space security issues a wider dimension, and not be a discussion of space weaponization alone. That does not remove the need to keep a focus on the issue of space weaponization, which remains a pressing issue. That focus, he argued, is likely to be most productive when it complements the other space security issues that had been discussed during the day. The answer to the question "What about space weapons?" then is that they remain an important topic for debate, one obviously crucial to space security, but not the whole of that concept. Is it possible, he asked, to develop and deploy space weapons, and still have a secure space environment, at least in the absence of armed conflict?