



SAFEGUARDING SPACE FOR ALL: SECURITY AND PEACEFUL USES

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CONFERENCE REPORT

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Introduction

As the peaceful uses of outer space grow in both number and scope, so too does their importance in the day-to-day lives of people across the globe. The use of space-based technologies is no longer the exclusive province of states with domestic space programmes; indeed the widespread dissemination of information and enhanced communications enabled by these technologies have been instrumental in creating the 'global village'. In light of this, it is not surprising that a growing number of governments—including key space faring powers—have signalled that the security of space is of serious concern. Developments in technology that could be used to weaponize space and the growing problem of space debris, for example, are threatening the current secure environment in space. Growing insecurity of the space environment could not only destabilise international relations, but could also severely threaten space-based assets that have become increasingly vital for a wide range of essential human activities, worldwide.

Since 1990, the UN General Assembly has adopted a number of resolutions without any negative votes, reaffirming "the importance and urgency of preventing an arms race in outer space". The political will among states to take action on this vital issue

appears to be growing, but there is a need for action to ensure that space remains safe for peaceful human activity. Concerns of ‘creeping weaponization’—a scenario in which states, in some cases without any well reasoned basis for doing so, move towards an arms race in outer space—seem more and more credible. The window of opportunity to act may not remain open for long.

It was in view of this imperative that a workshop on security and the peaceful uses of outer space was convened in Geneva from 25-26 March 2004. Hosted by the United Nations Institute for Disarmament Research, the Department of Foreign Affairs and International Trade of Canada, the Simons Centre for Peace and Disarmament Research, Project Ploughshares Canada, the Henry L. Stimson Center and the Union of Concerned Scientists, “Safeguarding Space for All: Security and Peaceful Uses” drew together experts from industry, science, governments and non-governmental organizations to explore ways of ensuring that outer space remains a non-threatening environment and available for the peaceful use of all. High-level panellists made presentations on the workshop’s thematic areas: Space Security and Peaceful Uses of Outer Space; Means to Guarantee Space Security and Assurance; International Legal Approaches and the Role of the Conference on Disarmament; and Transparency and Confidence Building.

Building on the success of the conference “Outer Space and Global Security” held in November 2002, the workshop challenged participants to delve deeper into the issues raised two years ago, with a view to providing solid recommendations for action. The aim was to present a new framework for thinking about security in space, a holistic approach that successfully encompassed the wide range of peaceful space uses and the threats which could potentially jeopardize a secure space environment. Through this comprehensive approach, participants strove to provide useful, practical steps policymakers could take to help safeguard space for the peaceful uses of all.

Executive Summary

Over the course of the workshop, several important themes emerged around which participants tended to coalesce. Some of these themes, expressed in simplified form, were as follows:

- *A broader concept of “space security” deserves greater attention, as it encourages the engagement of the broader community in comprehensively considering what humanity has at stake in outer space and the importance of a weapons-free outer space for our collective security and prosperity.*
- *The debate surrounding space security should be widened, envisaging a greater role for civil society, corporate actors, and other UN and multilateral bodies. “Cross-fertilization” between stakeholders will help ensure that all interests are taken into account and help yield effective, viable solutions.*

- Greater attention should be devoted to the interests of developing countries, many of whom rely on space technologies to meet vital development goals.
- For many, the ultimate goal remains an international treaty banning space weapons
- The weaponization of space is not inevitable. Much rests on decisions taken by a small number of states in the near future. It is important for states to consider the wide-range of military, commercial and scientific space uses that would be jeopardized, both today and for generations to come, by space-based weapons.
- It is not obvious that the placement of weapons in space would provide any country with a decisive military advantage. Most participants agreed that the costs of weaponization would far outweigh the benefits.
- Although early consensus on the thorny issue of non-weaponization in space may prove difficult to achieve, there are important unilateral steps that states can take to help safeguard outer space for peaceful uses.
- States should adopt, both nationally and internationally, measures to cope with space debris. The sooner these measures are undertaken, the safer the space environment will remain.
- Confidence building measures, such as “no-deployment”, codes of conduct or “rules of the road”, are also desirable in the short to medium term to reduce the risks associated with increased human activity in space.
- Considerable international legal architecture already exists that could help lay the foundation for agreements to safeguard outer space for peaceful use. The 1967 Outer Space Treaty, the Partial Test Ban Treaty, the Incidents at Sea Agreement, and the Prevention of Dangerous Military Activities Agreement are just some of the existing legal instruments that could provide useful points of departure.
- Most participants agreed, however, that incremental steps should be pursued in the short term. The establishment of international regulatory regimes through treaties, while desirable, is likely to remain challenging to achieve in the short term.
- International bodies such as the Conference on Disarmament (CD) should address those aspects of the issue that are ripe for discussion. This will help lay the foundation for cooperation on more controversial matters at a later stage.
- Like-minded governments and international organizations should consider forming “coalitions of the willing” to push the debate forward.

Following are summaries of the panel presentations and ensuing discussion for each of the panel sessions, along with an overview of the synthesis and discussion session held at the end of the workshop.

Space Security

Opening the debate on the current status of space security, Jeffrey Lewis of the University of Maryland argued that American commitment to space weaponization may not be as strong as it appeared on the surface. Official United States space policies were articulated primarily through documents drafted during the Clinton era and therefore provided little insight into the actual intentions of the Bush administration. Lewis also pointed out that broad policy documents did not indicate which programs would successfully surmount substantial political, technical and budgetary obstacles. Through an analysis of the administration's 2004 and 2005 budget requests, Lewis argued that the two 'weaponization' programs most likely to reach operational status were space-based anti-ballistic missile (ABM) systems and micro-satellites capable of autonomous proximity operations. Although the latter technology had legitimate civilian applications—namely the repairing and refuelling of satellites—it also carried with it the ability to conduct clandestine anti-satellite (ASAT) operations and was therefore a source of international concern. Were any country to test such a proximity operation, tensions would undoubtedly mount. Lewis concluded by arguing that, inasmuch as neither program had reached operational status, the opportunity still existed to restrict their progress.

Robert McDougall of the Department of Foreign Affairs and International Trade of Canada, presented the findings of an independent research report commissioned by his department, which assessed the current status of space security. The report defined 'space security' as "secure and sustainable access to and use of space; and freedom from space-based threats". In evaluating the current environment, researchers identified twelve components of space security. These elements fell broadly within the following three categories: the space environment; intentions of space security actors; and capabilities of space security actors. On balance, experts concluded that space security decreased somewhat in 2003. However, not all indicators of the space security index revealed the same trend. Some aspects of space security have remained static, while some improved. McDougall also reported that some indicators produced a sharp division of opinion, and argued that their impact is therefore unclear. Noting that the report did not represent Canadian government policy, he solicited comments from governmental and NGO representatives on the utility of the concept as an analytical framework for space security issues.

In the discussion that followed the workshop's introductory presentations, several participants expressed support for the concept of space security as a nexus around which concerned actors could mobilise. Objective analysis of the status of space security, perhaps on an annual basis, was suggested as a means to unite the efforts of governments, NGOs and research institutes. Other participants expressed concerns that civilian space programmes might currently be used as smokescreens for more aggressive programmes, thereby circumventing budgetary restrictions imposed by

bodies such as the United States Congress. The dual-use aspect of many space technologies was identified as an area of particular concern, making it difficult to distinguish peaceful programmes from militarised ones.

Peaceful Uses of Outer Space

In his address on the civil context of the peaceful uses of outer space, Victor Kotelnikov, United Nations Office for Outer Space Affairs (OOSA), highlighted the increasing difficulty associated with separating military from civilian space-based technologies. He underscored the lack of attention paid by space-faring powers to the needs of developing countries, countries which often paradoxically relied upon space technology to an even greater extent than their more developed counterparts. In places such as Afghanistan, for example, where land-based communications remained problematic, satellite technology was crucial for providing adequate health care. E-health, e-learning and disaster management were all heavily reliant on space-based technologies, as was the monitoring and protection of natural resources.

John MacDonald, Chairman Emeritus of MacDonald Dettwiler, spoke of the commercial applications of space technology. He asserted that communications was the only field in which a commercial enterprise could be successful as an operator; in all other uses of outer space, governments were the primary user. As a result, communications was the sole application in which the commercial sector has any influence over the uses made of its output. MacDonald stressed that “a customer is a customer” and thus the commercial sector did not concern itself with whether the applications of its products were peaceful or non-peaceful. Moreover, given that the three major civilian applications of space infrastructure—communications, earth observation and navigation—had significant military use, outputs of the commercial sector could either greatly enhance quality of life or severely damage it, depending upon the decisions of governments.

Representing the Indian Space Research Organisation, Gopalakrishnan Narayanan outlined some of the specific ways in which space technology could be applied to development goals. Programmes that targeted critical issues such as food security and disaster management benefited enormously from sophisticated satellite imaging systems. These systems allowed for the collection of important data regarding wasteland, groundwater levels and watersheds, droughts and ocean productivity. Agricultural forecasting had also improved thanks to satellite imaging, helping farmers to anticipate pricing and allowing the government to determine buffer stocks for the upcoming season. And the monitoring of forest and coastal areas enhanced policymakers’ ability to take sound environmental decisions, a principle Narayanan called “digitally empowered decision making for development”.

Narayanan's presentation also underlined the importance of space-based communications technology, which enabled vital information such as expert medical advice to reach even the most remote villages. Narayanan argued that space technologies were particularly important for developing countries with poor infrastructure. It is critical, he concluded, that the peaceful use of space be guaranteed and protected for all.

In the discussion that followed these presentations, it was suggested that the peaceful uses of outer space could not meaningfully be considered without also addressing space security. Given the current use of civilian space infrastructure for military purposes, peaceful and non-peaceful uses of space were inextricably linked. Therefore, states' continued reluctance to address space security in multilateral forums hampered efforts to collaborate in the achievement of scientific and developmental goals as well.

In a related vein, some participants, while expressing support in principle for an international control regime restricting the militarisation of space, highlighted several potential difficulties in doing so. It was particularly argued that verification of compliance would be extremely demanding, due in part to the currently limited capacity to monitor space-based assets after lift-off and in part to the difficulty posed by the increasingly dual use (civil-military) nature of key satellite systems. Perhaps more problematically, several participants also expressed concern that control regimes might impact negatively on the use of space technologies for peaceful purposes, and that dual use civilian space assets would be targeted in the event of a conflict erupting in space.

Means to Guarantee Space Security and Assurance

Noting the continued absence of consensus in the Conference on Disarmament (CD), Jonathan Dean of the Union of Concerned Scientists argued that there were nevertheless steps the international community could take to help safeguard outer space for peaceful uses. In particular, he advocated a series of individual national declarations from major space-faring nations enshrining a commitment not to be the first to deploy weapons in space. He argued that these declarations would, at no cost to states, create an important protection for space-based assets and provide a practical preparatory stage for negotiating a treaty prohibiting weapons in space. Dean offered a sample of what such a declaration might look like, including a working definition of 'weapons' and an explanation of when such a weapon would be considered 'in space'.

Dean argued that a major motivation for the weaponization of space is states' fear that unless they seized the initiative, another state could surely do so. Such fears, he suggested, would be mitigated by the widespread adoption of voluntary declarations,

both by virtue of the reassurance value of such statements of intent and because the declarations would become invalid if any other state tested a weapon in space. He also pointed out that such an approach would help test the feasibility of a treaty to ban the weaponization of space. He also, however, stressed that the proposed measure would not proscribe all military activity in space. Rather, it would prohibit the deployment in space of weapons which could destroy or damage objects in space, in the atmosphere or on the surface of the earth. Dean underscored the practicality of unilateral moves such as these, since they avoided the burden of consensus. He concluded with an appeal to CD Member States to make no-first-deployment declarations a reality.

Michael Krepon of the Henry L. Stimson Center also suggested measures that states might take to help safeguard space for the peaceful uses of all. He argued that the United States would soon face a fundamental choice between pursuing either space weapons or 'space assurance', the latter reflecting a policy choice to leave space unencumbered by weapons. He asserted that the weaponization of space was not inevitable, and that therefore it would be wise to strengthen efforts to promote space assurance. He outlined several key elements of a space assurance posture, including: unilateral initiatives to enhance situational awareness in space and reduce satellite vulnerability; research and development programmes to deter others from crossing important thresholds; and cooperative measures, international agreements and codes of conduct for responsible space-faring nations. In pursuing these latter confidence building measures, Krepon argued that it was wise to attempt first what was politically feasible, while still pursuing other avenues of cooperation in space that were not yet ripe for accomplishment. He identified as particularly valuable a code of conduct or agreed 'rules of the road' for responsible state-faring nations. Alternatively, he noted, a single state or grouping of states might usefully take the lead in tackling the issue of space arms control.

Krepon emphasized that there was no need for the United States to test and deploy dedicated space weapons since, like many states, it already possessed capabilities that could, if necessary, act as space weapons. He suggested that such latent capabilities deterred others from flight-testing and deploying space weapons. Krepon concluded that if the United States retained its ability to respond if others flight-tested or deployed space weaponry, while refraining from doing so itself, there was a reasonable chance that these thresholds would not be crossed.

Addressing the issue of space debris, Theresa Hitchens of the Center for Defense Information (CDI) observed that there remained challenges to characterizing the exact nature of the debris problem, as well as disagreements about the gravity of the situation and how best to address it. Failure to stem the creation of debris, however, would doubtless undercut the security of all assets in space. Hitchens explained that the danger of space debris stemmed primarily from its potential to collide with and/or

damage objects both in space and on the ground. Space debris also caused light pollution, however which posed problems both for civil astronomy and for military efforts at space surveillance.

Hitchens noted that it was much easier to prevent space debris than to clean it up, and that states seemed to be moving towards recognition of this fact, but she also argued that the current legal environment was likely inadequate to the task. To that end, she proposed a series of immediate steps the international community should take to mitigate the creation of space debris. These steps were aimed both at international bodies such as the United Nations and at Member States themselves, encouraging national and international legislation to address the problem. Hitchens allowed that some of her suggestions, particularly those that revolved around trying to create a new body of international law, would be controversial and time consuming. This, she argued, was good reason to begin legislation at the national level. She concluded, however by insisting that outer space was a global resource, and that as such it would ultimately require protection by all if it was to be preserved for the benefit of all.

Jürgen Scheffran of the International Network of Engineers and Scientists Against Proliferation in Berlin (INESAP) discussed in his speech the possibilities of verifying a weapons ban in outer space. He emphasized the tight link between space security and verification. As he demonstrated, a space object's anti-satellite (ASAT) capabilities are detectable by technical means. For example, satellite tracking systems and on board sensors can detect with high probability whether an approaching space object has residual ASAT capabilities. As any precisely manoeuvring space object can perform an ASAT attack, a regime of advance notice would also be helpful. Scheffran thus proposed partial arms control measures such as a ban on testing, deployment and use of weapons above a particular altitude, or restricting activities beyond a given stage in the life cycle of a weapon. He foresaw great dangers in space-based BMD weapons due to their inherent ASAT capabilities and urged countries to push ahead with a treaty while there are still many technical and economic obstacles to the weaponization of space.

The ensuing discussion deliberated steps that could be taken in the short term to ensure space security. Participants debated whether it would be easier first to implement Dean's idea of national declarations or to come up with a "code of conduct". The majority of speakers called for countries to publish national declarations first, as this was easier to achieve. It was also mentioned how similar the content of Dean's sample declaration was to the Russian-Chinese draft proposal of June 2002 to the Conference on Disarmament (CD/1679). Some participants pointed out that "rules of the road" in space would also be useful for the United States, as they provide for overall space stability. The need for an international surveillance network to monitor adherence to a code of conduct was also stressed.

Participants debated which issues could first be included in a code of conduct. Many participants pointed out that the topics of debris mitigation and verification could be viable points of departure. A participant proposed taking the issue of ASAT weapons out of the code of conduct at first, for reasons of simplicity.

The discussion also focused heavily on the problem of traffic congestion and space debris. Debris in outer space could not easily be removed, participants noted, cluttering up orbits irreversibly. While some of the testing done in outer space by the United States and other countries was performed so as not to cause space debris, this was done on a voluntary basis and would presumably not apply in cases of actual conflict. One participant pointed out that the mitigation of debris was especially costly for developing countries. Furthermore, others pointed out, satellite density in lower orbits was becoming a problem. While outer space was vast, only a limited number of orbits were useful for human purposes.

International Legal Approaches and the Role of the Conference on Disarmament

Thomas Graham Jr. from the Eisenhower Institute in Washington, DC spoke on the law and the military use of outer space. He pointed out that military activity in space was largely unregulated, and there was as yet no legal regime preventing the weaponization of space. The Outer Space Treaty (1967) laid the groundwork for international order in outer space, but was limited in its application, as it did not cover outer space *in toto*, but only celestial bodies. In addition, the Outer Space Treaty and the Partial Test Ban Treaty (1963) had few inspection or verification provisions. As Graham also pointed out, however, there existed a large arsenal of international resolutions attesting to the intended peaceful use of outer space. Examples included several United Nations General Assembly declarations, specific domestic national legislation governing space related activities, and parts of the Outer Space Treaty. This legal corpus might serve as a point of departure for devising an international legal regime securing outer space as a common good.

On the issue of international lawmaking on outer space, Lucy Stojak from the McGill Institute of Air and Space Law (Canada) presented a snapshot of the current situation. She argued that legal norms could emerge in incremental steps and at the initiative of few countries. The Partial Test Ban Treaty (1967), which prohibited nuclear weapons testing in outer space, started out as an initiative of the United States, the United Kingdom, and the Soviet Union, with these countries recognizing that regulation was in their own self-interest. She also referred to the Registration Convention (1975) and the Moon Agreement (1979) as being the first incremental steps to arms control in space, as these treaties required that certain information on satellites be provided to the United Nations body by space-faring nations. Stojak also stated that the United States, even though it withdrew from the ABM Treaty (1972) in 2002, still adhered to

the principle of non-interference with foreign owned space objects. While the Conference on Disarmament is the designated forum to discuss outer space issues, she concluded, countries should go ahead with designing a comprehensive legal framework on outer space in any form or forum.

Rebecca Johnson from the Acronym Institute for Disarmament Diplomacy in the United Kingdom outlined her action plan for outer space. Johnson advocated a holistic approach, where issues fed into each other, establishing behavioural norms and eventually resulting in legally binding treaties. Firstly, Johnson advocated making more use of networking to foster cross-fertilization between commercial and government space users. Secondly, while the Conference on Disarmament should continue to work towards a treaty on PAROS, for example by building upon the useful Chinese-Russian draft proposal of 2002, other forums should be used in the meanwhile. This could include work in the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) or the First Committee of the General Assembly. Such forums should begin negotiating issues such as mitigating space debris, pre- and post-launch notification of satellites, or building an international space security index. Lastly, legal documents could be expanded including treaties under the International Telecommunication Union (ITU) or the 1990 Treaty on Conventional Arms in Europe (CFE). Alternatively, a protocol could be added to the Outer Space Treaty, for example detailing a code of conduct or banning ASAT weapons. Johnson urged countries to take action, as she viewed the new Bush Space Agenda's push for Mars as a clear sign on the road to the weaponization of space. More specifically, she feared that Bush's plan to establish ABM —capable satellites by 2008 was a pretext for establishing space objects with ASAT capabilities—in other words, the first weapons in space.

Anton Vasiliev from the Permanent Mission of the Russian Federation to the Conference on Disarmament reiterated in his speech Russia's firm stand behind its proposal made with the People's Republic of China in the Conference on Disarmament in 2002 (CD/1679) on the prevention of the weaponization of outer space. This proposal urged the banning of weapons placed in space, including space objects with ASAT capabilities. However, as Vasiliev pointed out, the Russian-Chinese proposal did not prohibit the militarisation of space, i.e. the use of space for military purposes such as surveillance or other data gathering operations. In Vasiliev's eyes, the Conference on Disarmament was ripe to negotiate these issues. Transparency in space matters, he concluded, led to a framework of trust and world stability.

Participants varied in their views about the right approach to treaty making with regard to outer space. Most participants favoured a step-by-step approach to treaty making as opposed to trying to negotiate a comprehensive treaty in one go. They favoured treating the outer space issue in different forums and coming up with an international division of labour. Regional bodies were proposed as an option.

The role of the Conference on Disarmament was also debated. Most participants favoured discussions there on a treaty while at the same time treating the subject of outer space in other bodies. Some participants were worried that taking the issue of PAROS away from the CD would complicate matters. Many participants recommended bringing in experts and conducting informal discussion meetings in the Conference on Disarmament.

Some participants urged certain countries just to go ahead with a treaty. They believed that this move would have a snowballing effect, drawing in more signatories to the treaty at a later stage.

Transparency and Confidence Building

Peter Zimmermann of King's College insisted that the international community required "rules of the road" and increased transparency with regard to space operations. What constituted, as he put it, so-called "reckless driving" in space? Many satellites were not yet technically able to manoeuvre in a precise manner or to detect approaching satellites. Furthermore, a change of orbit by satellites did not have to be disclosed, nor did the payload of a satellite have to be fully laid open. These few examples showed that there were huge deficiencies in regulating space traffic. Zimmermann advocated coming up with an analogue to the Incidents at Sea Agreement (1972), where the contracting parties agreed to behave with courtesy and due regard for others. Furthermore, Zimmermann saw a real need to draw scientists and technical experts into the policy making debate on space.

Ambassador Hu Xiaodi of the Permanent Mission of China to the Conference on Disarmament spoke about the relevance of verification in the context of a treaty banning space weapons. He said that verification could play an important role in ensuring observance and implementation of a treaty but could also delay the conclusion of treaty negotiations. He said that two types of outer space verification measures had been envisaged: remote sensing survey and on-site inspections. He said the most important step would be to agree to a legally binding treaty on PAROS/non-weaponization, and in order to achieve this, it might be advisable to put the verification issue aside for the time being, owing to political, technical and financial problems that would need to be addressed before meaningful verification provisions could be codified.

James Clay Moltz of the Monterey Institute of International Studies in California spoke about so-called restraint regimes for space from an American perspective and the chances for current American restraint in outer space. In his view, the United States chose restraint over space weapons competition in the 60s and 70s, as shown exemplarily by the Outer Space Treaty (1967). Today, however, the momentum of

American policy was pointing towards keeping all defensive and offensive options in space open, especially as there was no other serious competitor in sight. This development of American space policy was reflected in blueprints like the Air Force's "Vision 2020" and the Rumsfeld II report of January 2001, identifying space vulnerabilities: "The United States must develop, deploy and maintain the means to deter attack on and to defend vulnerable space capabilities." (Rumsfeld II).

Nonetheless, Moltz also pointed out that the last word on American space policy had not yet been spoken. There were people within the military that doubted the practicability and strategic usefulness of weapons in space. They might prefer so called pop-up defences that could potentially be employed during crises. There was also military opposition to debris from tests. Furthermore, even the Republican congress had cut budgets for space weapons considerably, delaying space initiatives.

Moltz added that the United States' position therefore seemed murky. It wanted to investigate near-term ASAT capabilities for space "denial" and to limit debris, but only on a voluntary basis. A treaty to ban space-based weapons, in Moltz's view, was at the moment unlikely. Moltz saw possible routes for the CD to take in the form of establishing non-offensive norms, greater civilian cooperation among key space powers, formation of "coalitions of the willing" (bilateral, multilateral), promotion of universal adherence to the Outer Space Treaty (1967) or Limited Test Ban Treaty (1963), joint action to condemn "aggressive" activities, and support for pre-launch notification.

Götz Neuneck from the Hamburg Peace Research Institute looked at incentives for space security and space cooperation. He identified three core issues. Firstly, there was the problem of congestion: some orbits were overcrowded by satellites and space debris was irreversibly cluttering up orbits. Secondly, space warfare would put satellites at risk, including satellites vital for commercial use. In this respect, the civilian space industry might be a future ally in attempts to establish a regime for the prohibition of space-based weapons. Thirdly, the potential advent of BMD weapons in space was leading to mistrust, as such weapons have inherent ASAT capabilities. It was thus vital to make an international arms agreement banning ASAT weapons. This ban could include a ban on tests of ASATs, "keep out zones" in space, radar detection and surveillance by international organizations, and a ban of new weapon principles. Such a treaty would be more effective than costly investments in hardening satellites or space based weapons. Furthermore, the current threat to American military satellites should not be met by near term weaponization of space, but by passive measures and early warning mechanisms.

The discussion that followed focused on general confidence building measures and incentives for space faring nations to keep outer space a safe environment. Some participants argued that the advent of more commercial space users would make a

difference. Drawing the private sector into the outer space debate would lead to a legal framework on space. One participant pointed out that industry bodies in the aerospace sector have proposed rules of the road, which might be of interest to the international community.

Some participants hoped that the issue could be moved forward through greater media attention, especially related to new topics such as micro satellites; and recommended that civil society representatives should begin lobbying their governments. If the awareness and engagement of the broad range of stakeholders increased, it would be easier to generate political will and move on the issue of outer space.

Some participants emphasized the role of developing countries with regard to outer space issues. They saw the great benefit to developing nations from the peaceful use of outer space. Beginning to remind governments of the humanitarian aspect of the outer space issue would help in preventing the weaponization of space.

Many participants emphasized the importance of linking different stakeholders with each other in the outer space debate, especially the public with the private sector, or civil servants with respective think tanks and scientists. One participant suggested enhancing linkages with think tanks like the UK-based DEMOS.

One participant pointed out the importance of redefining concepts with regard to outer space. Destroying satellites, which was not prohibited under international law, was said to be like using a weapon of mass destruction. One could also look at voluntary compliance issues as in the case of India, which had voluntarily started to implement the Institute of Space and Astronautical Science (ISAS) guidelines. The EU White Paper on outer space (Brussels, 2002) provided alternative concepts of space.

Synthesis and Discussion

Patricia Lewis, Director of UNIDIR, provided a summary and synthesis of the issues addressed in the workshop, noting a need to remain vigilant even where progress had been made. She noted that the tone of discussion during this seminar was different from that in previous seminars, perhaps because the issue had evolved. She said that the Canadian research paper (Space Security 2003) was a useful publication, in part because of its contribution to establishing a definition of space security and in part because it enabled a systematic and scientific measurement of space security. She continued by expressing appreciation for the workshop's having shown how space technology from the wealthiest countries can provide benefits to the poorest of the poor, including by contributing to education, health and environmental support. She said it was important to remember demand issues (as they were considered by those who use space) and the link between the efforts made in Geneva (disarmament/non-

weaponization) and Vienna (commercial use). She called on commercial entities and governments to work more closely together, noting that space debris is now part of the security environment.

Lewis summarized some of the technical issues addressed by the workshop, including micro-satellites, space-based test-beds and rules of the road. Space debris, she said, fit in clearly as a danger for space access. She reminded participants that various measures had been identified to help provide a balance between use and security, including No First Deployment Declarations (NFDDs), Rules of the Road and Codes of Conduct. She also added that such assurances could underpin and support an eventual treaty and that these initiatives did not need to be seen as competing. She suggested that verification and other elements of a PAROS convention required more discussion (including scientific/expert discussion). Partnerships between countries were also important (i.e. China-Russia), she noted, as was the avoidance of an “either/or” debate on a comprehensive versus a step-by-step approach. She called instead for an overall vision with step-by-step implementation.

Participants differed in opinion regarding the best approaches to pursuing space security and a space weapons ban. The following topics were among those considered: (i) the current American position with regard to outer space, (ii) treaty making in a post Cold War environment, (iii) concrete and complementary interim steps that could be taken while a comprehensive treaty is in the making, and (iv) general confidence building measures.

i) Some participants expressed concern about indications in U.S. policy that funding for research into space weaponization had been allocated and that deployment was already being actively planned.

ii) Most participants favoured a holistic step-by-step approach to treaty making, thus not exclusively confining discussions on outer space to the Conference on Disarmament. Some participants favoured an open discussion of a protocol to the Outer Space Treaty along with a drive for all space-faring nations to sign on.

iii) While a more comprehensive treaty was in the making, concrete first steps (like national NFDDs) could be welcomed in order to reduce vulnerabilities. A number of participants pointed out that the issues of verification or debris mitigation could be starting points in devising a code of conduct, and could go forward with or without movement on the treaty side. Some participants called for an international agency for verification purposes. Others advocated heightening compliance with existing outer space rules, such as those pertaining to pre-launch notifications.

iv) Some participants suggested that the commercial sector and big investors had significant incentives for ensuring restraint in outer space. Other participants hoped that more media attention would help to move the issue forward. Many participants emphasized that developing countries also had an important stake in ensuring space security. Attention to the humanitarian and developmental aspects of outer space security could also help prevent weaponization.

The differing views on these issues illuminated questions for further consideration, including (i) which proposals attracted the most support? (ii) what new issues were raised in the discussions of outer space security? and (iii) why was it in the United States' interest to have an international treaty banning the weaponization of space?

(i) There was strong support for taking certain incremental steps to ensure space security. The mitigation of space debris, rules of the road for both launches and satellite manoeuvres in line with the principle of non-interference with national technical means, and satellite quality standards were among the potential initiatives which attracted the most support.

(ii) Four main new issues were brought forward in the discussions. First, participants focussed on developing countries and the great benefit they would increasingly reap from the peaceful use of outer space. Second, in addition to the humanitarian dimension to space security, the conference touched upon the potential environmental devastation that could be caused by unregulated space weaponization. Third, ways for reforming the space debate were put forward, such as moving from a strategic into a humanitarian discourse, as well as enhancing the engagement of civil society in general and the interaction between governments, NGOs, business and the scientific community. Many participants pointed out the importance of bringing NGOs to the table. One participant identified a need to define a very specific set of space subjects to tackle and work on together—and to pick up the pace. Another noted that a main consideration now seemed to be the need to control behaviour in space, rather than the need to establish a non-weaponization treaty. He said that controls on how actors conducted themselves were fundamental. He added that the CD would only address one aspect of space security and that the CD's contribution should, therefore, only be considered as part of a full approach. Fourth, the workshop demonstrated that there were large numbers in the United States Administration and Armed Forces that were still undecided on the weaponization of space (the middle ground). Their influence could be significant.

(iii) The discussions also elucidated why a space weapons ban would be in the United States' interest. Many participants pointed out that the strategic

benefit of space-based weapons is negligible, as ground-based weapons are in many ways more effective. The high costs of developing, testing and deploying space weapons, the difficulty of subsequent calibration, maintenance and repair, and the arms race that would likely ensue compare especially unfavourably with the greater security, commercial and other benefits of a legally regulated weapons-free outer space.

Lewis' remarks prompted wide-ranging discussion. A participant said there was a need to integrate national/international efforts, adding that the British White Paper on space was a refreshing approach which incorporated both civilian use and security considerations. One participant identified the military/industrial complex as a crucial lobby and suggested building pressure from the bottom up by mobilizing people to call on their governments to choose non-weaponization. Another participant said that, if it ever adopted a Programme of Work, the CD would not have sufficient time for serious discussion of space security. While there were some dissenting voices, there was general acceptance that the issue might have to be addressed outside of the CD.

Ambassador Meyer closed the workshop by concluding that space was the final frontier and that it shouldn't be left lawless. He suggested that it could perhaps be envisioned as a world heritage park where weapons were left at the gate and guests took out any debris they generated.

Conclusion and Next Steps

This workshop presented participants with a wider picture of factors influencing continued universal access to space for peaceful purposes. While this included the potential weaponization of outer space, it also introduced participants to an array of other factors which must be monitored and addressed to keep space secure. Participants heard about the United States Air Force and its space aspirations as well as about possible "codes of conduct", "rules of the road" and "no first deployment declarations". The conference brought the multilateral community closer to a definition about what space security could look like and how space should best be seen—as a new frontier, or a common good.

A repeated theme of the workshop was that the growth in the impact of space meant that the separation of CD and COPUOS space activities was no longer effective, and that some coordinating mechanism should be explored to integrate common objectives.

The following were identified as being among possible steps forward: commencement of discussions in the CD or elsewhere, possibly towards treaty negotiations; unilateral moratoria on space weapons; steps to lead to the

development of rules of the road and codes of conduct; and better definition of terms. It was suggested that if the "middle-ground" on the issue could discredit space weapons, political will in support of non-weaponization would increase in the US. An enhanced interface between technology and policy through the heightened involvement of scientists was considered crucial. It was however questioned whether the debate at the UN could be taken to regional bodies (NATO, EU, ARF, OAS, AU, OSCE etc); how the success rate of existing instruments could be increased; and how best to unite current actors.

A participant encouraged incremental approaches that included multilateral action and flagged the immediate need to build up a norm through No First Deployment Declarations by space-faring nations and others. Such steps would not interfere with the work of the CD or efforts to take the larger step of establishing a legal framework banning space weapons. OST members and observers could be brought together to discuss rules of the road and legal issues of space weapons, as it could be considerable time before the CD is able to do so. Another participant advised that the American Institute of Aeronautics and Astronautics (AIAA) had put forward a set of rules of the road for industry which should be examined.

While this conference helped participants to think about these ends, it also helped them to begin to think about the means. How does one push the issue of weaponization in space forward in a post Cold War world, where the definition of security is still up for grabs and where the designated multilateral body for disarmament issues stays deadlocked? The overwhelming opinion of the speakers at this conference was to widen the discourse, draw in different stakeholders and make use of different fora and legal instruments. It may very well be that issues like security and military strategy need rethinking in the age of one-power dominance and an ever greater divide between the poor and the rich. As a matter of fact, times of strategic transition as we have now are an excellent opportunity to do so. There is still hope that all the space-faring nations will realize that an international legal regime on outer space is in the interest of all and everyone. Conferences such as this are vital to provide education about current outer space issues and technical advances. As such, these discussions must be continued year by year to share developments and to help shape the discourse on outer space.