



Security in Space: the Next Generation **31 March–1 April 2008, Geneva**

Conference Summary Report

The conference “Security in Space: the Next Generation” is the latest in a series of annual conferences held by the United Nations Institute for Disarmament Research (UNIDIR) on the issue of space security, the peaceful uses of outer space and the prevention of an arms race in outer space (PAROS).

The purpose of this conference series is, in line with UNIDIR’s mandate, to promote informed participation by all States in disarmament efforts and to assist delegations to the Conference on Disarmament (CD) to prepare for possible substantive discussions under agenda item 3, PAROS. Since beginning in 2002, these conferences have received the financial and material support of a number of Member States, showing the broad political support for these discussions.

This year’s conference focused on three main issue areas:

- a historical overview of outer space diplomacy and possible future developments, including the Outer Space Treaty (OST) and PAROS within the CD;
- the status and challenges to space security, including a discussion of approaches on how to improve space security; and
- the creation of an environment promoting space security through creative thinking and transparency- and confidence-building measures (TCBMs).

In February 2008, The Governments of the People’s Republic of China and the Russian Federation tabled in the CD a draft treaty on preventing the placement of weapons in space. The draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (PPWT) is the result of many years of consultations and expert discussions and aims to contribute to the CD’s work on PAROS. Following a highly successful conference in 2007 marking the fiftieth anniversary of the launch of the first artificial satellite, Sputnik, and the fortieth anniversary of the Treaty on

Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (the Outer Space Treaty), UNIDIR's intent for its 2008 conference on security in outer space was to address the next generation of treaties and technologies and invite the next generation of space-users.

The conference convened in Geneva on 31 March–1 April 2008, organized by UNIDIR, with financial and material support from the Governments of Canada, the People's Republic of China and the Russian Federation, as well as from the Secure World Foundation and The Simons Foundation. Representatives from UN Member States and Observers, from non-governmental organizations and civil society, as well as speakers from Argentina, Canada, China, France, Germany, Italy, Norway, Russia, Sierra Leone, the United Kingdom and the United States brought the total number of participants to over 150.

The following is a summary report of the conference. The keynote speakers are identified along with summaries of their presentations. The Chatham House Rule applied in the ensuing discussions.

Sergei Ordzhonikidze, Director-General of the United Nations Office at Geneva and Secretary-General of the CD, opened the conference. Remarking on the title of the conference, he expressed concern not only for the next generation, but as well for the current generation and how an interruption in the uses of space could harm our daily lives due to the increased dependency on space-dependent technologies, such as cellular phones, satellite television, global positioning systems and so forth. The space age goes hand-in-hand with globalization and thus our aim should be building trust and confidence among countries in order to ensure security in outer space. Fortunately, space cooperation has grown since the end of the Cold War. Indeed, as an example, nationals of the United States, Russia, Canada, Europe, Japan and soon South Korea have lived and worked together on the International Space Station.

Since 1957, hundreds of satellites have been launched into space, many for commercial reasons. However, the security of the space environment has yet not been adequately addressed. For instance, orbital debris is a serious threat due to the potential for collision; despite debris mitigation guidelines, such as those of the Committee on the Peaceful Uses of Outer Space (COPUOS), the problem remains overwhelming and a great threat to space assets.

Another threat that we need to address is weapons placed in space and weapons designed to attack space-based assets, for example anti-satellite (ASAT) weapons. Indeed, it is imperative that an arms race in outer space be avoided. Substantive discussions have been taking place in the CD and in the UN General Assembly and much has been achieved as a result. Ordzhonikidze gave the example of the draft PPWT, tabled by China and Russia, as a supportive approach that has now to be negotiated. Because space belongs to all, humanity needs a collective, universal approach to achieve space security.

Session I

Providing Space Security for the Next Generation

Alexander Karl of the Space Generation Advisory Council presented a roadmap containing visions and recommendations for the safeguarding of outer space, of the long-term viability of the use of space and of the use of space by new actors. First, a better strategy is needed for addressing space debris—more than the voluntary international guidelines negotiated at COPUOS—as well as improvements to the resolution of debris tracking systems. Second, traffic management should be available and applied to all in space, as a logical consequence of an increase in the numbers of satellites, in order to avoid collisions and to guarantee safe access. Third, space governance, in connection with lunar governance and property rights, requires a broader, more integrated approach. Finally, a way must be found to prevent conflict in space and to prohibit ASAT tests. Progress in treaty negotiations could be made through the creation of a new working group on space traffic, and the introduction of property rights should be considered as a way to prevent conflict.

In looking at how not to repeat historical mistakes, Wang Daxue of the Chinese Ministry of Foreign Affairs reminded the conference that it took several decades of Cold War arms racing for the powers to realize that a nuclear war could never be won and should never be fought. Humanity paid a high price for them to reach this conclusion and we should not repeat the past in regard to space. To achieve strategic and military superiority in space, a state would need to develop a dedicated space weapons programme. This would include planning for space war and therefore would stimulate an arms race. China's support for and introduction of the PPWT is thus aimed at reducing the possibility of an attack from space or a war in space.

The PPWT is in the interest of all states—a legally binding instrument increases security for all. The UN Charter already prohibits the threat of the use of force and so the CD could build on this to create a new international legal instrument, the PPWT. Arms control

cannot rely only on political undertakings—a treaty is needed and the CD should successfully negotiate it. The human race relies on space security, and a weapon-free space environment, for its development. A PPWT should, therefore, be of the utmost importance.

Turning to the uses of space for humanity, Geraint Morgan of The Open University's Planetary and Space Sciences Research Institute (PSSRI) described how space technology can be applied to challenges faced on Earth. PSSRI developed a gas analysis instrument that was sent on the Beagle II mission to Mars. The development of the technology for this instrument—which was funded by the Wellcome Trust because of the applicability of space technology to clinical and medical research—has had an important scientific impact on the health of the next generation. In 2003, for example, 1.7 million people died from tuberculosis. The research carried out by PSSRI has enabled a new form of diagnosis for this disease, which is far faster than conventional methods. Such work thus demonstrates the type of benefits we can expect from space technology for human health—another critical reason for providing for space security for the next generation.

The UN Millennium Development Goals, as well as Hyogo Framework of Action, provide a useful approach to space development for the next generation. Yvette Stevens, former UN Assistant Emergency Relief Coordinator, pointed out that communications satellites have the capability to reach out to remote places and provide people with knowledge and information for education, not only for military needs. Remote-sensing satellites are a persistent and accurate means for observing the surface of the Earth and, in addition, are more cost effective than are other means, such as aircraft or ground-based surveys. Such technologies, combined with global satellite navigation systems, provide powerful tools for monitoring the environment and crises such as natural disasters or refugee flows in conflict. Space-based assets can thus both help to protect the environment and to mitigate risks during disasters. Environmental degradation can be monitored through satellites and action and assistance can be taken earlier than would otherwise be the case. As an example of how satellites can assist humanitarian responses to disasters, following the 2005 South Asian earthquake, satellite maps were used to find open roads and enable humanitarian workers to reach the effected locations. Road blocks were easily seen and clearance equipment was thus sent to the places where they were most needed. There was a reduction in guesswork and thus more effective use of donor aid—and more people were assisted as a result. Due to global climate change, more natural disasters will occur, such as flooding of low-lying island states and regions, such as river deltas. Satellites have great potential for enhancing disaster response and management and therefore for risk

reduction. Thus the next generation must fully incorporate the use of space to ensure that the Millennium Development Goals are met, especially in developing countries.

In presenting the annual Space Security Index, Jessica West of Project Ploughshares Canada discussed the current and future requirements for providing space security. Key measures would include an annual assessment, TCBMs, as well as the development of a global policy to ensure free access to space. The goal of space security should be to secure and sustain freedom in space for all. Key challenges include protecting the operating environment, particularly with respect to preventing space debris to mitigate the risk of collision, given the growing number and diversity of actors in space as well as the proliferation of technologies.

Space debris is an indiscriminate threat for all space-faring nations and all space users. The largest increase in debris occurred in 2007 with the destruction of a Chinese satellite. More actors in space will mean increased debris—it should be remembered that the international guidelines agreed by COPUOS are only voluntary. There is still only a limited ability to monitor the space environment. Currently, the United States, Russia, France, China and Ukraine have the capability to monitor space debris. However, objects smaller than 10cm cannot yet be tracked. An increase in the number of actors in space will have the potential to create more fear, threats and misperception, but at the same time to allow increased cooperation and economic development. In order to reduce fear, there should be more international cooperation and transparency, particularly involving all sectors as civil, military and commercial space assets are, or soon will be, indistinguishable.

Another threat is the development of ballistic missiles and anti-ballistic missile systems. Technologies developed for missile defences have many potential threat applications to space-based assets. Currently there is no space-to-Earth strike capability. However, over time, the combination of dependence on space by a growing number of actors increases the likelihood of space weaponization. An international space security proposal is most certainly the challenge of this generation and the next.

Following the presentations by the panellists, the ensuing discussion focused broadly on four issues:

- space debris;
- awareness-raising;
- satellites for disaster prevention and response; and
- treaties compared to TCBMs.

Discussion centred on the need for guidelines to mitigate space debris, potential actions to reduce debris and the need for transparency regarding the issue. Transparency especially seems to be an important component of addressing this challenge. It would not reduce debris, but would assist in our reaction to it. Few states have the ability to identify and track the debris that threatens space assets, and even the most advanced technology needs to be improved. Still, a primary concern is that such information has national security implications.

Questions were raised concerning the level of awareness that is exhibited in relation to space issues. Currently, the general public, sometimes even scientists, tend to be relatively uninformed about the state of space security, and furthermore seem to have little interest. This was made clear in the lack of public response to the destruction of the Chinese and American satellites. Steps must be taken to better educate the public regarding the potential and dangers of a compromised space environment, perhaps by emphasizing the dependence of our daily lives on space technologies. The media should play an important role to this end. However, it is also necessary to remain on guard against the spreading of misinformation.

Many satellite applications provide valuable information for identifying and responding to crises on Earth. However, the utility is limited by lack of means to translate this information into action. There needs to be a focus on developing mechanisms for communicating and applying this information on the ground. Moreover, these same applications could be of even greater use in disaster prevention. The monitoring of high-risk areas would enable advance warning of a potential crisis, and thus allow for preventive measures to be taken.

The question was raised as to whether a treaty would be more beneficial than TCBMs in promoting space security, and into which path we should put our energy. On the one hand, TCBMs are much easier to agree and keep updated. They can also show parties the benefits that an eventual treaty could provide. On the other hand, a treaty is a legally binding instrument, states are accountable to their obligations and, in case of a dispute, the International Court of Justice can have jurisdiction to mediate. In addition, it is more difficult to withdraw from a treaty because in most cases a treaty becomes part of national law. The opinion was expressed that most states would prefer a legally binding instrument in order to feel more secure concerning others' commitments and are willing to negotiate a treaty within the CD. However, as there is not yet consensus to negotiate a treaty on outer space security—such as the PPWT—TCBMs may be a more realistic option for near-term positive action.

Session II

Building Trust in the Future

In looking at one of the keys to confidence building, Samuel Black of the Henry L. Stimson Center discussed how to prevent harmful interference activities in space, proposing an international agreement on space security with the aim of increasing stability in space activities. A no-harmful-interference clause would be an indispensable provision in any agreement on outer space security. A code of conduct could be more advantageous with respect to existing problems than would a treaty in that it would be quicker to negotiate and implement. This is particularly true in regard to the United States, as a treaty might fail to be ratified as happened with the Comprehensive Nuclear-Test-Ban Treaty. Thus, a code of conduct would be more politically viable. In addition, focusing on behaviour and actions avoids the difficulty of ascertaining intentions of space-faring countries and avoids the difficulties of defining what qualifies as a space weapon.

Garold Larson of the Permanent Mission of the United States to the Conference on Disarmament made it clear that the United States strongly supports the peaceful use of outer space and is fully committed to the 1967 Outer Space Treaty. Fundamentally important to the United States is the increasing problem of persistent space debris and possible collisions between debris and functioning satellites. The United States has been working in cooperation with other states to address this problem, for example through the Inter-Agency Space Debris Coordination Committee (IADC) in producing its Space Debris Mitigation Guidelines, which laid the foundation for those endorsed in 2007 by COPUOS and the General Assembly.

The United States strongly supports involving private sector satellite operators in the dialogue on collision avoidance and space debris mitigation, given the experience such operators have developed in coordination and cooperation among themselves. Scientists and engineers from a wide range of government and commercial organizations have an increasing interest in sharing space situational awareness, and an expert dialogue would lead to clear guidelines and the comprehensive coordination of action. However, deliberations take time and so the United States proposes that bilateral agreements on transparency measures should also be undertaken in parallel. One suggestion in this regard would be to install or expand hotlines between capitals to facilitate direct communication regarding space incidents. Another measure could be regular exchanges of senior space officers and their staffs, as well as operations officers. Such exchanges can help to build trust and understanding, two key elements of cooperation and effective crisis management.

Andrey Makarov of the Russian Ministry of Defence addressed TCBMs, which are integral to the international legal framework. They are recognized by the United Nations as a mechanism to promote understanding and to lessen tensions. They can assist in strengthening international peace and security, and in helping to prevent war. However, they must not take the place of disarmament efforts, distract attention from such, nor substitute for the implementation of agreements that have been reached. Still, they may be developed independently to promote favourable conditions for agreement, or be used as parallel measures to strengthen agreements.

TCBMs are recognized as important for regulating space activities. Again, such measures must strengthen international peace and security, but to be effective they must respect national security concerns. They must as well account for differing capabilities of actors, as these differences in the realm of space activities is extreme. For many states, the time has come to proceed with negotiations on a treaty banning the placement of weapons in space. But national concerns make this a difficult step. TCBMs can and should be considered as being easy first steps to strengthening space security, and laying the foundation for stronger legally binding agreements. For this reasons, TCBMs and a treaty banning weaponization should be pursued in parallel.

Following the presentations by the panellists, the ensuing discussion focused broadly on two issues:

- codes of conduct; and
- information sharing.

The question was raised about the difference between legally binding and politically binding in relation to the proposals for a code of conduct in outer space. The discussion centred around the sense that a politically binding instrument would receive greater support currently and is not dependent on ratification processes, thus perhaps would be easier to obtain.

Interest was expressed as to whether the commercial owners of satellites are willing to share information about assets in space. The answer was that this information is already available, because of the obligation to register every space object with the UN Secretariat. This information is accessible to all and experts are able to quickly ascertain the purposes of the satellites listed according to their orbits and types.

Session III

From Confrontation to Cooperation

Nancy Gallagher of the University of Maryland discussed how the end of the Cold War and increasing dependence on space started a debate in 1990s about the proper approach to the use of space. For most space actors, the assumption is that space is an environment where cooperation is and must be the norm, and where the management of debris, traffic, resources and so forth could be accomplished through informal tools, such as codes of conduct. For an important minority of space actors, the environment is one of increasing competition, wherein the security of space assets and uses is assured through dominance of that environment.

Which of these approaches will provide the better route to space security? One way to evaluate this is to examine the results achieved by the minority of actors that seek space dominance. How much have proponents of space dominance achieved to this end? Vast amounts of money have been spent on developing the capabilities that would enable control of the space environment. Yet, none of these actors are anywhere close to realizing this goal. Incremental progress has been made in terms of existing technologies, but none have been able to achieve decisive advances in space technology. Rather, the real development has been in terms of intentions and policies. In pursuing of dominance, these actors undermine the potential for cooperation in space affairs.

This leads to a second question: if these actors continue to seek dominance of the environment, have they the potential to achieve it, and thereby achieve security of space? This does not seem to be the case. By manoeuvring to maintain freedom of action in space, these actors undermine legal and political protections of space assets and actors. Furthermore, developments in capabilities spur other actors to do likewise. The result would be a space environment in which it would be more dangerous, and contentious, to operate than it is now.

The conclusion is that seeking dominance of space is a self-defeating route to space security. This minority of actors would be best advised to pursue negotiated strategies to achieving security in space that would address the interests of all and apply common expectations and rules to all actors.

The security of the space environment faces many challenges. Maureen Williams of the Space Law Committee of the International Law Association pointed out that foremost among these is orbital debris. We know of some 12,000 particles of 10cm or greater in size.

Many thousands more are of a size smaller than this, and these cannot be tracked using current technology. Given the great velocity of these particles (some 8km/sec in low Earth orbit), even very small pieces of debris have the potential to cause catastrophic damage to space assets.

Unfortunately, this issue, and the consequent obligations of space actors, are not adequately addressed by the Outer Space Treaty. Article 9 states that if a party has reason to believe that its activities might cause damage to the environment or harmful contamination, they should take the necessary measures to avoid that. But the article does not specify when contamination is considered harmful, or if all contamination is considered harmful. Neither does it specify measures that should be taken. Does this apply to future activities? Does this apply to abandoned or inactive assets that nevertheless fill valuable orbital slots? Article 9 also states that in these cases actors should engage in consultations, yet no time limit is defined. Great damage can take place while consultations proceed. In any case, the article is vague and insufficient.

Thus the Space Law Committee of the International Law Association continues to elaborate its draft International Instrument on the Protection of the Environment from Damage Caused by Space Debris. This instrument posits that cooperation in space activities is an obligation for all actors. There is also the obligation to inform (not simply to exchange information, but rather to be proactive and provide anything of possible relevance). The instrument also provides for a dispute settlement mechanism, in order to pave the way for compulsory jurisdiction. To correct the weaknesses of the Outer Space Treaty, the instrument limits such consultations to 12 months.

Tommaso Sgobba of the International Association for the Advancement of Space Safety argued that, in terms of ensuring space security, the true problem that we face is not the lack of a treaty governing military space activities, but rather the lack of a civilian regulator for space activities. While a treaty would address possible future threats, there are very real, current threats that must be faced now. For example, orbital debris is a safety concern, and only peripherally a strategic concern. Would a treaty on military space activities prevent debris? No. Even if the COPUOS guidelines on debris mitigation were mandatory, the threat would remain. The problem of orbital debris does not need to be mitigated, it needs to be resolved.

The space age is rooted in a military heritage. For this reason, the space age has been driven by the primacy of the “mission”, rather than of its safety. As the number of space actors continues to grow, and activities become more commercial, the traditional

distinctions between public and private, and domestic and international are blurring. In terms of investment, 80% of space activities are now civilian. Space actors must move beyond the military heritage and mindset, and resist applying models that are more relevant to the past than to the future.

It is imperative that we move beyond general principles concerning space and define the rules and standards that will enable us to progress into a new space age, one that stresses the civil regulation of activities. As a specific example, the International Association for the Advancement of Space Safety proposes that the mandate of the International Civil Aviation Organization be expanded to include Earth orbit—not only are we seeing the development of hybrid aircraft/spacecraft, but the management of air traffic relies on orbital space assets.

Gérard Brachet, Chairman of the United Nations Committee on the Peaceful Uses of Outer Space, related how for 50 years, space systems have contributed to peace and economic development through their three main areas of application—defence and security, the support of everyday activities, and scientific research. But over the next 50 years, our use of space cannot be guaranteed. The reason is simple, and that is the multiplication of actors, both governmental and private.

More discipline will be needed in space activities. From the beginning of the space age to the end of 2007, there were 4,457 space launches. Currently there are 660 operational satellites. These account for only 5% of the approximately 12,500 objects being tracked that are 10cm or larger in size. The rest is junk. And between 10cm and 1cm, there are perhaps 300,000 objects, and several million pieces in the millimetre range. The debris situation is thus a real and pressing concern. And, it must be remembered, this situation has resulted without any deployment of space weapons (although ground-based weapons can target space assets, thus posing a serious threat to near-Earth space). Space security is fragile and, in the long term, an open question.

The question is what can be done to guarantee long-term, sustainable access? The work by the IADC on debris mitigation was most useful and fed into the guidelines put forth by COPUOS and adopted by the General Assembly. Hopefully this can be a step towards developing a regime addressing the issue. Can COPUOS address the issue of long-term sustainability in a like manner, that being a bottom-up approach based on operational analysis? It is hoped so, and working groups have been organized to this end, bringing together space-faring nations and commercial operators. Hopefully outputs from these

groups can be incorporated into the COPUOS agenda, and be put forward as best practice guidelines.

Working to preserve the long-term, sustainable use of space is an issue that must be engaged now. The benefits of doing so will be shared by all stakeholders. Because all space operators must share the same environment, it is imperative that a common approach to sustainable use be found.

Following the presentations by the panellists, the ensuing discussion focused broadly on three issues:

- space debris; and
- space activities and actors.

At this very moment there is no practical, economical way to clean up debris in space. There are guidelines requiring that low Earth orbit satellites should re-enter the atmosphere naturally within 25 years, and that satellites in geostationary orbits should be decommissioned in a graveyard orbit after their useful lives. Compliance with these guidelines is encouraging and increasing, and it is good to see that voluntary rules are having an impact on actual behaviour. Nevertheless, a parked satellite is still clutter, so efforts and resources must be expended to develop economical methods for cleaning orbital debris.

Widespread frustration with the lack of progress to regulate activities in space was strongly evident within the discussion. Hope was expressed that changes in political approaches over the coming years could overcome such obstacles and negotiations could begin in the CD. It was also noted that space-faring nations are not the only actors involved in discussions on regulations and ways forward. Many states, while not technically space-faring, do operate or have involvement in the operation of space assets. Representatives from such states are prominent in the bodies negotiating space issues.

Session IV

Treaties, Agreements: the New Generation

Victor Vasiliev of the Russian Mission to the Conference on Disarmament discussed how a treaty prohibiting the placement of weapons in space is essential. The weaponization of that environment could bring about grave and unexpected challenges, as did the development of nuclear weapons. For this reason, Russia and China have put forth the draft PPWT. The rationale behind this initiative is that modern space law does not prohibit

the placement of weapons in space, unless they are weapons of mass destruction. However, given the global reach that space weapons would have, as well as the high possibility of their use, the placement of such weapons—or even the threat of their use—would generate fear and mistrust. In this sense, the impact of space weapons makes them similar to weapons of mass destruction.

But why a treaty, rather than other more simple forms of control? Without such a binding agreement, it will be difficult to predict future developments in the strategic situation both in space and on Earth. The international situation would be destabilized by the use or threat of use of space weapons, and it is likely that arms racing would result. This is compounded by the fact that, unlike weapons of mass destruction, space weapons could be used selectively and discriminately, thus making this likely. An arms race to achieve superiority in space would only result in all kinds of symmetrical and asymmetrical responses, and thus the climate of cooperation and confidence in space activities would be destroyed.

The PPWT seeks to avoid this potential situation by keeping weapons out of orbit. But it must also be remembered that space assets can be targeted with ground-based systems, thus the PPWT's additional focus on prohibiting the threat or use of force against such assets. We should not be distracted in negotiating what hardware to concern ourselves with, but rather with the behaviours that must be regulated or prohibited. The CD has discussed the basic elements of a treaty for over five years. There are no real arguments against a PPWT, so it is time to focus on substantive discussions.

Theresa Hitchens of the Center for Defense Information reminded participants that the work done towards a PPWT has been important in keeping space weaponization an important topic of deliberations. However, in regard to the draft text put forward by China and Russia, the language raises questions of viability.

It is not clear that the PPWT definitively addresses the development, testing and use of terrestrial ASAT weapon systems. The proliferation of such systems is a serious concern, and is in the interest of no one. Furthermore, such technology is difficult to restrict (for example because so many technologies are dual-use). But it is possible that an agreement could be reached to ban the testing and use of such systems. This would have the advantage of being easily verifiable, as we could concentrate on observed behaviour rather than technology.

There are also difficulties with Article 3 of the draft PPWT, concerning the threat or use of force. The concept of threat is a matter of perception. Could stated national policies, if considered adversarial, be considered a threat? Could continued research into ASAT technologies, even without testing, be considered a threat? What of missile defences or laser tracking stations? It would be very difficult to define what should be considered a threat, yet a failure to do so would severely weaken a PPWT. The same applies to defining what is considered the use of force.

The language of the draft PPWT also faces the difficulty of how to define what is or is not a weapon. Again, a primary issue is that of dual-use technologies. For example, proposed systems to clear space debris could just as well be used against operational assets. There could be a process created for classifying space assets, although this would be politically contentious. In any case, the PPWT makes no reference to such a process. It would be critical to adequately define what is a space weapon. Without such a definition, there would be no way to develop a verification regime for the PPWT, which at the moment it is lacking.

Despite these shortcomings, the PPWT is a worthy goal. Yet, to be effective it must be given more clarity. The current language may not prevent deployment of space weapons, and could in itself cause continuing conflict over compliance issues. But the work being done is nevertheless valuable. All members of the CD should work towards the goals of this treaty, considering as well near-term alternatives such as TCBMs, codes of conduct and a space weapons test ban.

David Koplow of Georgetown University spoke about how, in terms of securing the space environment, we commonly speak of two possible methods: one being treaty law, and the other being non-law mechanisms such as TCBMs or rules of the road. But a third possible method is present in customary international law. This is as strong and reliable as treaty law, but yet is not as definite, in that it is unwritten. Customary international law is based on the long-term, widespread behaviour of states, as well as an ingrained acceptance that such expressed behaviours are obligatory. It can be argued that there exists customary international law restricting the testing of ASAT weapons.

For example, we could say that there is a rejection of the destruction of space assets in combat. There have been many conflicts during the space age, but never have space assets been aggressed in such a manner. As for testing, such was undertaken on occasion during the Cold War. And in the last 20 years, there have been perhaps three ASAT weapon tests. The pattern seems to be that states accept that they must refrain from such activities.

However, there does not yet seem to be an acceptance that use or testing is illegal or illegitimate, so no norm could be said to exist.

But in regard to the law of armed conflict, it can be argued that ASATs would fail the tests of discrimination and proportionality. The debris created in the destruction of space assets is persistent and poses a serious threat to all space activities. In regard to protection of the environment, it is accepted that states will not damage the environment in the territory of other states or beyond territorial borders. This arguably should extend to space as well. Thus, the production of debris again should make ASAT use and testing not legally acceptable.

Customary international law was applied in the case of chemical weapons. A norm against them had emerged, which enabled the agreement of a treaty prohibiting them. Thus, even states not party to the Chemical Weapons Convention are bound by the norm against the use of such weapons. Perhaps the same approach could be applied in regard to space weapons.

Following the presentations by the panellists, the ensuing discussion focused broadly on two issues:

- customary international law; and
- treaty negotiations.

Questions were raised vis-à-vis whether we should consider customary international law as effective in the case of nuclear weapons. Furthermore, doubts were raised as to the fact that for customary law to be established repeating patterns are required and therefore time is required to establish customary international law. In addition, it is difficult for customary international law to deal with future threats.

However, the weak reaction of other countries, for example to ASAT tests in the past, means that such tests are not illegal today. The quickest way to create a legal norm is an immediate response to actions that are considered illegitimate and this reaction, over time, will brand them as illegal. An example of customary international law would be the acceptance of satellites in orbit or their overflight. When Sputnik was launched in 1957, no one knew if satellite overflights were legal and, indeed, many experts declared the contrary. Rules in space became accepted as a result of practice—that is, it became customary international law.

However, it was stated, customary international law does not replace a treaty, quite the opposite. But, in the absence of a treaty, the customary practice would allow agreement on certain activities quickly and inclusively.

The proposed PPWT generated a great deal of interest. One suggestion was to use more general language in the treaty—more of a framework treaty—whereas the opposite view, calling for more specificity, was also put forward. In support of generality, a concern was raised that defining a weapon in space would be senseless because in the environment of space just about anything could be a weapon. In addition, the assumption that if weapons in space were to be forbidden they would not be developed—whether or not they were deployed—was questioned. There are a number of examples of treaties prohibiting the deployment of weapons that do not curb their development entirely. In response, those in favour of a PPWT pointed out that the financial costs of space technology are sharply higher than most other weapon systems and therefore it would not make much sense to develop them if they cannot be deployed—of course, the same criticism could be made of any arms control treaty.

Session V

Next Generation, Next Steps

Pearl Williams of Foreign Affairs and International Trade Canada noted that, since the beginning of the space age, there have been significant developments in space exploration and space-based applications. For example, we have become increasingly dependent on space as part of our collective infrastructure—from global communications and navigation links, to the collection of environmental and natural resources management information. Other developments in the space arena have included a greater expansion in the number of space actors, not only in terms of states, but of commercial actors too. For such reasons, there is a growing appreciation of the need for a rules-based operating environment in order to safeguard space exploration and its benefits for all. But we face shortcomings in regard to rules. What can be done? What structures could be put in place to contribute positively to preserving space as a global resource for the coming generations?

The CD is the pre-eminent body dealing with disarmament issues, and among these the issue of PAROS. But the CD has been deadlocked for years. Nevertheless, forward movement is possible, for example in pursuing discussions on the draft PPWT. Likewise, we need to address the fact that many of the technologies used to access the benefits of space fall into the category of “dual-use”. This affords the opportunity for COPUOS and its subcommittees to play a central role in responding to the challenges and opportunities

posed by the international community's increased reliance on outer space. But at the same time we must move beyond the increasingly misleading distinction between what is a peaceful use and what is not. Moreover, we need to broaden our concept of space security, not only addressing military concerns, but civilian and commercial as well. As we move forward in our efforts to preserve the secure and sustainable access to space, it is critical that we do not overlook the awareness-raising that will contribute to creating a better understanding among our fellow citizens.

Space applications (such as communications and Earth observation) are greatly affected by space security, as noted by Francesco Pisano and Einar Bjorgo of the United Nations Institute for Training and Research. As the number of space actors grows, this raises challenges for space security. This is problematic, as greater security means greater accessibility and potential for space applications.

From the perspective of the United Nations, space security is not simply a goal in itself. The application of space technologies has much promise for helping the United Nations to achieve its broader goals. From monitoring and managing crisis situations, to responding to changes in climate, to providing maps and aiding logistics to operators in the field, the United Nations has become a user and a provider of the benefits of space applications.

To maintain this ability, the United Nations must be user-driven in its pursuit of these technologies and, more than that, must always be guided by the needs of the beneficiaries of these technologies—all the people of the world. The work in which the United Nations utilizes or makes available these capabilities is of such importance that it should look toward developing an independent capacity. Space security must be confronted head on, for a threat to that environment is a threat to the United Nations' primary goals.

Ray Williamson of the Secure World Foundation stated that today we face many space security challenges, including orbital crowding, debris, effects of space weather, and of course the possible use of space weapons. The challenges must not be underestimated. For example, assets in a Sun synchronous orbit bunch together in the polar segment of the orbit. In July 2007, a US-Canadian satellite in such a situation had to be moved from its standard orbit to avoid a possible collision with an Iranian satellite. This reinforces the growing recognition of the need for international, cooperative approaches to traffic management and space situational awareness. This is a question of resources, and they must be provided for this. Then there is the ultimate issue of the development and use of space weapons. Military solutions to this issue are pursued, such as active and passive defences. However, we must not forget that there are diplomatic solutions as well. Instead

of continuing discussions about the best approach to these security issues, we must move beyond and apply a broad range of activities in seeking solutions.

The session concluded with a brief assessment of the next generation of steps that must be taken to preserve and protect space activities. Many proposals have been made, and much understanding has been gained, but there seems to be resistance in moving forward in a concrete fashion. There will be many opportunities in the coming years to make these concrete steps, and we must be prepared to take them.