52nd Pugwash Conference on Science and World Affairs

Science* <—> *Sustainability* <—> *Security

10-14 August 2002
UC, San Diego, La Jolla, CA

Report of Working Group 2
Missile Defenses and the Uses of Space

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The Working Group on Missile Defenses and the Uses of Space was composed of 22 members from 11 countries. The discussion focused on the status of U.S. plans to develop and deploy both theater and national missile defense systems, the linkage of those systems to the increasing danger of the weaponization of outer space, the possible consequences for future civilian space activities, and the prospects of future space arms control measures. There was in general a high level of consensus within the group.

The group started with an analysis of the technologies and wider implications of the current U.S. administration's declared plans, which include the placement of strike weapons in space. Space weapons are on the one hand devices deployed in space whose mission is to destroy or permanently disable satellites or targets on land, air, sea or space. On the other hand, they comprise weapons on the ground, at sea, or in the air that target satellites, inevitably including exoatmospheric ballistic missile defenses into the subject.

The demise of the ABM Treaty removed important restrictions on the deployment of weapons in space. Current U.S. plans for a multi-tiered missile defense system include not only previously prohibited space-based components but also an inherent capability to destroy from the ground satellites in low-earth orbits. If U.S. plans were to be realized, it would pose an enormous challenge not only for potential US adversaries, but also for the commercial space industry. The treaty prohibited the testing and deployment of not only sensors in space, but also space-based interceptors which have also an anti-satellite capability. The distinction between ABM and ASAT systems has now been lost and a new treaty-based definition is urgently needed.

In the absence of such an agreement, the United States and subsequently other

nations with access to space are free to test and deploy space weapons. It is feared that this process could result in a costly and dangerous arms race in space.

It was noted that advocacy for space weapons in the United States has picked up increasing momentum despite the huge technical, financial and political obstacles that have prevented the development of these weapons to date. A small group of space enthusiasts, especially in the U.S. Space Command, have envisioned missions and technologies for controlling outright the use of space and using the domain of space as a medium for the direct application of military force. A fanciful set of exotic weapons underlies the aspirations of these "space fundamentalists," and there is a wide range of weapons conceivable (if still technically infeasible): maneuverable kill vehicles, space mines, parasite satellites, lasers, trans-atmospheric vehicles, "brilliant pebbles," and others. It was observed that the Commission to Assess United States National Security Space Management and Organization, which was chaired by Donald Rumsfeld prior to his becoming Secretary of Defense, echoed more extreme formulations with its call for the "development of doctrine, concepts of operations and capabilities for space, including weapons systems that operate in space and that can defend assets in orbit."

Despite all efforts to push forward the weaponization of space by a small group of space advocates, it is not yet the policy of the U.S. to weaponize space. Nevertheless funding for the kinetic energy ASAT and the space-based laser continues, albeit on a limited level. A more aggressive program is conceivable.

A discussion about the relation of offensive and defensive technologies in space was conducted. It was suggested not only that is it difficult to distinguish between offensive and defensive weapons in space but also that weapons for destroying satellites are likely to be less costly and more effective than weapons for defending assets in space. In such a context, many countries could interpret the placement of defensive weapons in space as an offensive move and would consider in advance the use of countermeasures. The result would be a competitive weaponization of space. Today there are no strike weapons in space. However, it should be recognized that perceptions of the intentions of others, rather than technical capabilities, will drive the future planning of various states with ambitions in space and trigger new R&D in this field.

Many participants expressed the fear that the vision of a small group of "space warriors" could lead to a condition of U.S. supremacy in space. The U.S. might develop the capability to intervene anywhere on the planet from space if these plans were to materialize. US domination of space could result in a feeling of helplessness and degradation for many countries. In some states this would trigger a call for counteractions. Other countries and their space industries could become totally dependent on the United States. There was considerable skepticism in the

group that such dominance would be feasible, but even the perception of such steps could cause harm in the international relations.

Often it is argued that the medium of space is comparable to that of the sea, where navies with a variety of weapons for offense and defense have long been present. This picture seems to be seductive but does not hold up to deeper analysis. Behavior at sea is also regulated by the international law of the sea. It should be clear that space is different: No country "owns" space; unlike the sea, space is not a medium for transporting goods, but rather one for transmitting information; and the loss of assets at sea is not likely to have consequences of a magnitude comparable to the loss of assets in space. A closer analogy to space might be Antarctica, where the major powers have agreed to share responsibility for its safekeeping, and have pledged not to place weapons there.

An examination of existing space regulations revealed that the provisions apply to specific military activities, but do not prohibit the deployment, operation, and the use of conventional weapons in and from space. The preamble of the 1967 Outer Space Treaty (OST) recognizes the common interest in the use of outer space for peaceful purposes and prohibits the orbiting around the earth, and the stationing in outer space of weapons of mass destruction. The 1963 Partial Test Ban Treaty prohibits nuclear weapon tests "or any other nuclear explosions" in outer space. The OST did not define the term "space weapon," though this might now be an advantage because it provides room for introducing new definitions. By asserting that space belongs to everyone, the OST builds a strong norm against the domination of space by one power. The OST was signed by approximately 100 countries and constitutes an important barrier against the deployment of nuclear weapons in space. The regime should be strengthened.

It was generally agreed that the US withdrawal from the ABM Treaty created urgent need for a new system to regulate the peaceful use of space. Although individual proposals exist, the arms control community should devote more time, creativity and awareness to work out new regulations for space arms control. A revival of the ABM-treaty or any similar initiative is quite unlikely as long as the present US administration remains in office. A new government with interest in arms control might come to other conclusions. Active, anti-satellite platforms with "shooting" capabilities must be the next major focus of the arms control community. One key issue is finding an appropriate forum for developing new space regulations. Another is finding arms-control allies in the military as well in the space industry and in space-faring nations including Russia, China, Canada, France, Germany, Sweden Japan, Brazil or others—perhaps even within the United States. The current body of space law needs to adapt to the current political situation and to the new technological realities.

Another subject of the group was the threat and the vulnerability of space assets.

Satellites are certainly fragile against other high-velocity objects in space. Geosynchronous orbit can be "poisoned," but doing so would take time, resources, and determination.

Most of the scenarios that are mentioned in US planning documents as justification for weapons development are highly unlikely and can be matched with different measures. A "space Pearl Harbor" is an unjustified exaggeration. A space system consists of several ground stations with uplink and downlink connections to a space segment. It is more than an single object. The threat of physical attack on ground stations by states or terrorists might be conceivable, but the best protection would efficient safeguards on the ground of key facilities. Communications satellites are mostly in geostationary orbits and are safe given present technologies. With regard to space launchers which are necessary to hit satellites in space, only a threat from major space-faring nations seems to be possible. Conventional ASATs against GEO satellites are not easy to field and need much time for maneuvering and testing. Many in the group felt that a threat to satellites is remote and reminiscent of claims about the long-range ballistic missile threat.

While the threat of ASAT weapons is remote, payload verification and the notification of launches and satellites were believed by many to be problems that were not insoluable. One advantage of space is its transparency. Satellites emit a lot of data. Not only would "killer satellites" look quite different given their function and data flows, they would have to be tested, which could be observed.

On the issue of testing ASAT weapons, the issue of debris was discussed. Testing or launch failures or accidents would aggravate the threat for civilian satellites in low earth orbits.

The group also considered the implications of the US plans to deploy ballistic missile defense systems for space arms control. The planned land or sea based interceptors are also capable of intercepting satellites in LEO. There are strong arguments, that the planned U.S. midcourse missile defense system will not work, or if it works, it will not be efficient. It seems to be also clear that the BM threat is not ballistic, but stems from nuclear weapons or other WMD delivered by simple carriers such as ships or cars. The group felt that an invincible Maginot-line in the sky and in space is illusionary and creates a false sense of security.

Future intercept-technologies, such as the Airborne or Space Based Laser could not only deny the access to space by shooting down space launchers but could also intercept satellites. The "Brilliant Pebbles" concept which consists of some 1500 satellites could either be used for missile defense or as an attack system to destroy satellites in orbit.

The implications of BMD for nuclear deterrence and for regions such as South or

South East Asia were also discussed. Missile defense can turn defense into offense and might trigger new arms races in different regions. For the regional context, the situation for countries such as Japan, India or China is more complicated, if the U.S. deploys Theater Missile Defenses. The combination of missile defense, space support and the ideas of the "Nuclear Posture Review" will increase the risk of the use of nuclear weapons in local conflicts.

The working group session ended with several proposals and recommendations for future work and action:

1. With respect to actions for Pugwash, it was recommended that Pugwash should become more deeply engaged with the problem of the weaponization of outer space. There was unanimous support for the idea that Pugwash establishs a continuing working group to study the subject in depth. The group should examine issues such as the nature of the ballistic missile threat, missile defense and its linkage to outer space activities, the dual-use problem, future space threat scenarios and their likelihood, the possibility for a space arms control treaty or "rules of the road," as well as the regional and global consequences for nuclear disarmament and arms control. The group could start with a workshop that would include not only scientists and policy experts from like-minded nations but also officials from the space industry and the military. One participant proposed that the chairman of such a group should not be from Russia, China or the United States. The group welcomed a paper by the Student Pugwash-Group that outlined their vision of the problem and proposed a full set of concrete steps. Pugwash should emphasize the space issue in their Goals for the tenth Quinquennium. Pugwash should be also be present at the "Space Policy Summit" in Houston, USA in October 2002. The next Pugwash conference in Halifax, Canada should establish the working group on the subject.

2. Regarding options, the "easy-to-handle" proposal would an amendment to the Outer Space Treaty which should prohibit the placing in orbit of any kind of weapon, not only objects carrying nuclear weapons or other WMD, as it is the case today. Many countries have signed the Treaty and this amendment would increase the pressure on the U.S. to abide by the principle of the treaty, which recognizes the common interest in the use of outer space for peaceful purposes. An exclusion of the United States should optimally be avoided. The so-called Registration Convention of 1976 which provides for the recording of all space objects launched from earth, which is adhered to by over 40 states, should be expanded.

3. Another concrete step favored by the working group would be an effort to internationalize the agreement on non-interference with "peaceful" assets orbiting in space, enlarging upon the thirty-year old examples contained in

the SALT and START dealing with the protection of "National Technical Means." This effort could perhaps take the form of an United Nations Resolution.

4. Concerning the international level and the appropriate fora, a set of ideas for strengthening existing treaties were discussed. First, there is some hope but not much confidence that the CD would overcome its stalemate. The new joint Chinese-Russian working paper was welcomed as a useful starting point for a fruitful discussion on the subject. Second, there was a proposal to initiate an Ottawa-II Process, modeled after the Landmine treaty to establish an international movement for the prevention of an arms race in Outer Space. Such a conference could start with a common statement to create common set of principles and standards. Like-minded governments, NGOs, and representatives from the space industry could elaborate details. A goal for the future is certainly a comprehensive and freestanding treaty that would forbid attack vehicles in space and weapons against space objects and include verification measures. Additionally, an international space agency could be founded

- to bring international capabilities such as PAXSAT into Outer Space,
- to regulate and maintain space traffic and
- to help less developed countries to achieve access to space for peaceful purposes.

In addition, the United Nations General Assembly should also accelerate its efforts to maintain space as a domain free of weapons. A caucus of state parties to the OST this fall in NY during the General Assembly should enable a first discussion of the above proposed elements.

Having discussed space policies and the possible future danger of an arms race in space the group came to the conclusion that in this very critical moment urgent action is needed. Pugwash can and should contribute to this by informing the public and the parliaments about the danger of space weaponization. Again, the group thinks that no state has the right to put arms into space. Space belongs to all mankind and should only be used for peaceful and scientific purposes, international cooperation and the prevention of conflicts. A costly arms race in space can be avoided if decisive steps by the international community are starting now.