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NOTES FOR AN ADDRESS

BY

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Prevention of an Arms Race in Outer Space

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The architecture of arms control and disarmament agreements is under challenge. Direct challenges to existing and pending treaties these days are in fact part of a larger pattern – the undermining of security, environmental, and human rights regimes. Against this background, the prevention of an arms race in outer space is not only an arms control issue. It is also crucial for averting the erosion of international rule of law.

Recent US action, including withdrawl from the ABM Treaty is adding to the perception that law and policy regarding both outer space and international security are at critical junctures. Before 2001, the ideas presented in *Vision 2020* and the *Long Range Plan* of the US Defence Dept were often dismissed as the fantasy of a marginal few "who had consumed too much Star Trek."[1] But these were precisely the plans and visions that informed the Rumsfeld Commission, whose conclusions are now driving US space policy. Increasingly, they see space weaponization as inevitable, as an integral part of US policy.

The dangers of an arms race in outer space are infinite. Though they are literally incalculable, we do know they would include direct security, economic, energy, and environmental risks and losses, as well as opportunity costs for sustainable development and human security. The peaceful uses of outer space, both current and anticipated, would be interrupted. Environmental monitoring, resource management, disaster mitigation and prevention, and application of spin-off technology benefits to sustainable development are simply not compatible with plans to develop and deploy space-based and anti-satellite weapons, or any weaponization of space.

[1] Felicity Hill, "Militarising Space: Quantum Leaping Backwards," paper presented at United Nations Conference on Disarmament Issues in Ishikawa-Kanazawa on "The Asia-Pacific Region: evolution of the scope of security and disarmament in the 21st century," 28-31 August 2001 - Kanazawa, Ishikawa, Japan.

But there is an alternative vision for outer space: as a sanctuary free from war. This is a vision that would naturally resonate across national, religious, economic, and age divides. Commercial and civil interests in space, including US domestic ones, are vast. If these could be mobilized to support governmental and civil society efforts towards prevention of an arms race in outer space, perhaps through a space version of the Ottawa process, the vision of a space sanctuary will become more likely, and space weapons will seem less inevitable. But states and non-governmental coalitions must recognize the urgency and make prevention a priority. We need to know more about the costs of space weaponization – political, economic, environmental, social – and we need governments, experts, and advocates working in coalition, as they did for landmines.

This paper will first look at space on the UN agenda in the security context as well as its peaceful uses and role in sustainable development, states' views and proposals for a ban on space weaponization, and US space weaponization plans. We will then explore prescriptions for prevention, including the space sanctuary concept and a prohibition on space weapons, taking into consideration commercial interests and the civil society support necessary to prepare the way for a space weaponization ban.

Outer Space in Law and on the UN Agenda

The 1967 Outer Space Treaty[2] provides the basic framework on international space law, including the following principles:[3] free exploration, use, and benefit of space for all; no national appropriation, claims of sovereignty, or occupation; no stationing nuclear

[2] The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, opened for signature on 27 January 1967, entered into force on 10 October 1967, 96 ratifications (as of 1 February 2001).

weapons or other weapons of mass destruction in outer space, in orbit, or on celestial bodies; and responsibility for national activities (including non-governmental) and damage liability. Four other treaties address outer space.[4] Five Declarations and legal principles apply.[5]

Prevention of an arms race in outer space (PAROS) has been on the UN Agenda since 1981.[6] The annual GA resolution, in its current form, recognizes that the legal regime applicable to outer space should be consolidated and reinforced in order to enhance its effectiveness, and reiterates the primary role of the Conference on Disarmament (CD) as the single multilateral disarmament-negotiating forum.[7] Support for this resolution is nearly unanimous, typically drawing no negative votes and abstentions this year from Georgia, Israel, Micronesia, and the US. Several states typically take the floor to stress the urgency of prevention of an arms race in outer space.[8]

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[3] For a full list see the UN Office for Outer Space Activities, http://www.oosa.unvienna.org/SpaceLaw/outerspt.htm.

[4] The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the "Rescue Agreement), opened for signature on 22 April 1968, entered into force on 3 December 1968, 87 ratifications; The Convention on International Liability for Damage Caused by Space Objects (the "Liability Convention"), opened for signature on 29 March 1972, entered into force on 1 September 1972, 81 ratifications; The Convention on Registration of Objects Launched into Outer Space (the "Registration Convention") opened for signature on 14 January 1975, entered into force on 15 September 1976, 43 ratifications); The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Agreement"), opened for signature on 18 December 1979, entered into force on 11 July 1984, 9 ratifications (As of 1 February 2001). http://www.oosa.unvienna.org/SpaceLaw/treaties.html.

[5] The Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space (General Assembly resolution 1962 (XVIII) of 13 December 1963); The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting (resolution 37/92 of 10 December 1982); The Principles Relating to Remote Sensing of the Earth from Outer Space (resolution 41/65 of 3 December 1986); The Principles Relevant to the Use of Nuclear Power Sources in Outer Space (resolution 47/68 of 14 December 1992); The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries (resolution 51/122 of 13 December 1996). http://www.oosa.unvienna.org/SpaceLaw/treaties.html.

[6] Annotated UN Agenda, A/56/100.

[7] UNGA Res. A/56/23, 2001.

[8] For country statements to the UNGA First Committee in 2001 see: http://www.reachingcriticalwill.org/1com/2001state/stateindex.html.

The UN Office for Outer Space Activities (OOSA) is tasked with promoting international cooperation in the peaceful uses of outer space through multi-sectoral programmes with political, legal, technological and educational components.[9] OOSA also works as the Secretariat for the Committee on the Peaceful Uses of Outer Space, which has with 64 member states,[10] considers ways and means of maintaining outer space for peaceful purposes, implementation of recommendations from the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), and the spin-off benefits of space technology, among other items.[11] The Committee's most recent exchange of views included concern over weaponization of space and disagreement over the Competence of the committee to consider this issue, some states saying that disarmament aspects belong in other fora, and some states pointing to trends that hinder peaceful uses of space, such as development and use of spy satellites, and restrictions on the flow of information and technology.[12]

Space and Development

The peaceful uses of outer space apply to all aspects of development, including the environment, energy, communications, and technology for sustainable development. The Recommendations receiving highest priority in 2001 include:

- Develop a comprehensive, worldwide environmental monitoring strategy
- Improve the management of Earth's natural resources
- Implement an integrated, global system to manage natural disaster mitigation, relief,

[9] http://www.oosa.unvienna.org.
[10] Albania, Argentina, Australia, Austria, Belgium, Benin, Brazil, Bulgaria, Burkina Faso, Cameroon, Canada, Chad, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran, Iraq, Italy, Japan, Kazakhstan, Kenya, Lebanon, Malaysia, Mexico, Mongolia, Morocco, Netherlands, Nicaragua, Niger, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Sierra Leone, Slovakia, South Africa, Spain, Sudan, Sweden, Syria, Turkey, Ukraine, UK, US, Uruguay, Venezuela, and Viet Nam. http://www.oosa.unvienna.org/COPUOS/membership.htm.
[11] Report of the Committee on the Peaceful Uses of Outer Space, UN Doc. A/56/20, 2001.

and prevention efforts

- Improve universal access to and compatibility of space-based navigation and positioning systems
- Promote sustainable development by applying the results of space research
- Increase awareness among decision makers and the general public of the importance of space activities.[13]

So far, India, the African States, and the US are coordinating work on specific recommendations among these. Some of the other recommendations illustrate the wide reach of peaceful uses of outer space, such as improvement of public health, which Canada has offered to coordinate, and management of natural disaster mitigation, relief and prevention, which China has offered to coordinate.[14]

States' Views and Proposals

The Conference on Disarmament has addressed PAROS over the years, with Sri Lanka and Egypt playing leading roles traditionally. It had an ad hoc committee on PAROS that functioned from 1985 to 1994 but, despite much debate, the CD has not agreed since then on convening an ad hoc committee on PAROS to negotiate a ban on weaponization of space. Various proposals have been presented and supported by several states, including Russia,[15] China,[16] and Canada.[17]

Russian Minister of Foreign Affairs Igor Ivanov has proposed a moratorium on the deployment of weapons in outer space pending a comprehensive agreement on non-

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[12] Ibid., pp. 3-4.
[13] Ibid., p. 6.
[14] Ibid., p. 7.
[15] "Russia wants ban on space-based weapons," The Guardian, 28 September 2001.
[16] Statement by Ambassador Hu Xiadodi, Conference on Disarmament, February 7, 2002, Geneva. http://www.reachingcriticalwill.org/cd/chi070202cd.pdf.
[17] Canadian position on non-weaponization of outer space: http://www.dfait-maeci.gc.ca/arms/outer3-e.asp.

deployment and non-use of force or threat of force in outer space.[18] China has strongly advocated the formation of an ad hoc committee on PAROS and has recently submitted a working paper on "Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space."[19]

Canada sees the urgency of preventing weapons in space, and has been trying to highlight the need for more action and transparency. During the years 1996 to 2000, specifically, Canada sought to draw attention to this issue. In 1998 Canada proposed that an ad hoc committee be established with the mandate to negotiate a convention for the non-weaponization of outer space,[20] noting that many useful ideas on verification already exist and welcoming "a realistic and early reappraisal of these basic concepts." On matters of transparency, Canada's freedom of information laws were used to disclose internal defence briefing notes on the Rumsfeld Commission, its implication, and possible Canadian decision points.[21] Canada has continued to emphasize the need to keep space free of weapons and the urgency of preventative diplomacy.[22]

Proposals for prevention of space weaponization, including through the "Amorim proposal" for a CD work programme, and repeated calls of support, cut across the political spectrum. In addition to strong backing for PAROS from non-aligned states, France and

[18] Statement by Deputy Foreign Minister Sergey A. Ordzhonikidze, UNGA First Committee, October 11.2001, New York.
[19] Statement by Ambassador Hu Xiaodi, Conference on Disarmament, June 7, 2001, Geneva. http://un.fmprc.gav.cn/eg/12869.html.
[20] "Working Paper Concerning CD Action on Outer Space," CD/1487, 21 January 1998.
[21] Documents released under AIA included briefing notes for the Minister of National Defence and others on topics such as Priorities of U.S. Secretary of Defense Donald H. Rumsfeld (24 January 2001), Report of the Commission to Assess U.S. national Security Space Management and Organization (23 Feb. 2001), United States Space Command (13 March 2001), and Pentagon Response to the Report of the U. S. Space Commission (8 May 2001), among other related issues.
[22] Statement by Ambassador Christopher Westdal, UNGA First Committee, 10 October 2001, http://www.reachingcriticalwill.org/1com/2001state/cane101001.html. Statement by Ambassador Christopher Westdal, Conference on Disarmament, 7 February 2002, Geneva, http://www.reachingcriticalwill.org/cd/can070202cd.pdf.

Germany[23] have voiced concern about weaponization of space. In short, the potential for a universal groundswell is there, if the real urgency is recognized.

Trends Towards Weaponization of Space

Evidence of plans and intent to weaponize space is abundant. US Secretary of Defense Donald Rumsfeld has begun to restructure the operation of US space programs, implementing recommendations of the "Rumsfeld Commission."[24] This Commission to Assess United States National Security Space Management and Organization, chaired by Donald Rumsfeld (before becoming Secretary of Defense) recommended that US national space policy should be brought into the center of defense planning, through review and revision of policy priorities. One of these measures makes the command of Air Force Space Command independent and headed by a four-star general. Previously this command linked US Space Command and North American Aeropspace Defense Command (NORAD) through one commander-in-chief.[25]

The Rumsfeld Commission concluded that it is in the US national interest to: "promote the peaceful use of space; use the nation's potential in space to support its domestic, economic, diplomatic and national security objectives; and develop and deploy the means to deter and defend against hostile acts directed at US space assets and against the uses of space hostile to US interests."[26] The Commission found US vulnerabilities based on its extensive dependence on space and calls the US "an attractive candidate" for a "Space Pearl Harbor."[27] Regarding the international legal and regulatory environment, the Rumsfeld Commission said the US "must participate actively in shaping the space

[23] UN Press Release, 28 February 2002, Geneva. http://www.unog.ch/news2/documents/newsen/dc0208e.htm
[24] Report of the Commission to Assess United States national Security Space Management and Organization, Washington DC (Public Law 106-65), January 11, 2001. ("Rumsfeld Commission")
[25] Wade Boese, "Rumsfeld Restructures Operation of U.S. Space Programs," in *Arms Control Today*, June 2001, p. 23.

legal and regulatory environment," adding,

> There is no blanket prohibition in international law on placing or using weapons in space, applying force from space to earth or conducting military operations in and through space. The US must be cautious of agreements intended for one purpose that, when added to a larger web of treaties or regulations, may have the unintended consequences of restricting future activities in space.[28]

Earlier documents, such as US Space Command's *Long Range Plan* and *Vision 2020* indicate the perspective of space weapons advocates. *Vision 2020* includes slogans such as "US Space Command – dominating the space dimension of military operations to protect US interests and investment. Integrating Space Forces into warfighting capabilities across the full spectrum of conflict" and "full spectrum dominance."[29] The *Long Range Plan* develops the ideas presented in *Vision 2020* with specific details, a "deliberate effort to extend the national defense planning horizon and ensure military space is postured to exploit future opportunities and meet future challenges." It includes four operational concepts:

- control of space (assure or deny access)
- global engagement (surveillance, missile defences, force capabilities)
- full force integration (space forces with air, land, sea, and information forces)
- global partnerships (augmenting military space capabilites through civil, commercial and international space systems, including partnerships with US allies). [30]

[26] Rumsfeld Commission, p. 7.
[27] Rumsfeld Commission, pp. 12-13.
[28] Rumsfeld Commission, p. 17.
[29] United States Space Command, *Vision for 2020*, February 1997.
[30] United States Space Command, *Long Range Plan*, March 1998.

Prescriptions for Prevention of an Arms Race in Outer Space

In addition to the proposals, resolutions, and working papers calling for the Conference on Disarmament (CD) to work on prevention of an arms race in outer space already mentioned, there have been suggestions for concrete cooperation and confidence-building measures by governments, national parliamentary or legislative efforts, a model treaty banning weapons in space, and petitions. Crucial to the success of these efforts is greater global awareness and engagement in the preservation of space as a sanctuary.

Space Sanctuary

The vision of a "Space Sanctuary" has received some attention within military circles. An overview of this perspective was put forward by Lt. Col. Bruce M. Deblois, of the US Air Force in 1997.[31] Rebecca Johnson summarizes:

> Where Rumsfeld's Commission argued that the attendant vulnerabilities must be met with aggressive development of military space capabilities, Deblois describes three approaches for defending space assets: i) diplomatic/political defences (agreements aimed at building collective security); ii) passive defences (hide and seek), and iii) active defences (essentially Rumsfeld's option of deploying ground ASAT and space-based weapons). Deblois recommends combining options i) and ii) and the "active, aggressive avoidance of the third".[32]

Deblois's thesis of a space sanctuary draws on the history of US policy towards space, starting with the Eisenhower era open-skies philosophy and continuously seeking robust intelligence, surveillance, reconnaissance and communications capabilities rather than space dominance.[33] In this context, "everyone spying on everyone" would reduce paranoia and aid stability. Deblois notes that claims of adversarial space weapons are not founded, there is virtually no threat to US space dominance, and that there are less provocative

[31] Bruce M. Deblois, "Space Sanctuary: A Viable National Strategy" Airpower Journal 12, no. 4:41-57 Winter 1998, http://www.airpower.maxwell.af.mil/airchronicles/apj/apj98/win98/deblois.html.
[32] Rebecca Johnson, "Multilateral Approaches to Preventing the Weaponisation of Space," in *Disarmament Diplomacy* Issue No. 56, April 2001.

means than preemptive weaponization to deal with concerns that do exist, such as access to space reconnaissance data by others. Deblois argues that a decision to weaponize space is not a purely military decision ("seeking short-term military advantage in support of national security"), but is a matter of higher-level national policy, ("seeking national security, economic well-being, and worldwide legitimacy of US constitutional values").[34]

Although the debate within US military circles, specifically the Air Force, tends towards development and deployment of space-based weapons,[35] the concept of space sanctuary has received serious attention. Its military proponents ground their arguments in security, economic, domestic, and political interests, and they provide evidence that the US can reduce its potential vulnerabilities in space without weaponizing. A thorough exploration of space sanctuary thought by Major David W. Ziegler (US Air Force) notes that "attempts to understand the counter-arguments against deploying space weapons are scarce" and seeks to further that debate.[36] Ziegler counters claims that space sanctuary is a form of "unstrategy" or a "head-in-the-sand" perspective, using examples to illustrate "how sanctuary tenets demand coordinated action of all national instruments of power."[37]

The sanctuary perspective recognizes that weaponization of space is highly provocative and would lead others to seek to develop and deploy weapons to protect their space assets. In space, moreover, "asymmetric" responses would easily offset the space-capability differential of the US.[38] National opportunity costs are astronomical, and the US is likely to front the costs of research and development later imitated by other nations given the well documented "parasitic behavior of corporations and nations," all of which

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[33] Deblois, p.4.
[34] Deblois, p.1.
[35] See, for example, William L. Spacy II, "Does the United States Need Space-Based Weapons?" Air University Press, September 1999.
[36] David W. Ziegler, "Safe Heavens: Military Strategy and Space Sanctuary Thought," Thesis presented to the faculty of the School of Advanced Airpower Studies, Maxwell Air Force Base, Alabama, June 1997, p.4.

"could lead to the demise of US international prowess." [39] In other words, the regular rules of business and free market competition could contribute to making US plans for space dominance backfire. In addition, distinguishing "space friend from space foe" during a conflict, given the many roles and nationalities of satellites, would be difficult. "Discriminating impartial, commercial space assets from adversarial space assets will be problematic," making space weapons "economically provocative because they can appear to threaten [global] commerce."[40]

Deblois also offers sound military reasons for not weaponizing space, arguing that space weapons strategies lack the element of survivability and they maintain a bogus "center of gravity," meaning that the vulnerability of intelligence, surveillance, reconnaissance, and other communications systems is better addressed by decentralizing these capabilities and enhancing the sanctuary approach. Other considerations are that space-weaponization strategies are provocative, escalatory, militarily self-defeating, politically self-defeating, and expensive.[41]

Within the US those who see space weapons as inevitable then pose the question whether the US will lead. But the question can be reversed. Given that the US will lead the world in space capability and use, what practices and standards should it seek to establish? Assuming major global warfare and preparing for it would "condemn ourselves to that future" and doing so "assumes determinism," according to Deblois.[42]

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[37] Ziegler, p. 6.
[38] Deblois, p. 9.
[39] Deblois, p. 10.
[40] Deblois, p. 11.
[41] Deblois, pp. 11-13.
[42] Deblois, p. 16.

An Ottawa Process for the Prohibition of Space Weapons

In the CD, past disagreement over treaty vs. confidence-building approaches to space could be submerged in collective efforts to overcome or work around current procedural deadlocks. Although repeatedly affirmed as the appropriate multilateral body for space security matters, the CD has not been able to act. Efforts aimed at complementing and eventually reinforcing its role deserve consideration in the meantime.[43]

Rebecca Johnson has proposed a space focussed "Ottawa Process" whereby civil society and a few supportive governments lead efforts for a new treaty banning weapons in space.[44] According to Johnson, negotiations on a Treaty to Prohibit Weapons and War in Space would have to cover at least three main components:

- a ban on the deployment and use of all kinds of weapons in space, thereby extending and strengthening the 1967 Outer Space Treaty's prohibitions on weapons of mass destruction in space so that laser and other directed energy weapons and kinetic energy weapons are also banned, as well as any other potential offensive innovations that military researchers or planners might dream up;
- banning the testing, deployment and use of anti-satellite (ASAT) weapons, whether earth-based or space-based; and
- establishing a code of conduct for the peace-supporting, non-offensive and non-aggressive uses of space.[45]

Proposals along these lines have been put forward in the past decades, but did not progress because space was not seen as a priority. That has now changed, suggesting that the foundation for serious consideration of such a treaty might exist. A treaty prohibiting space weaponization, however, would have to be the consequence of global mobilization.

[43] Suggestions to amend the 1967 Outer Space Treaty are likely to meet resistance from states as well as bodies involved in the peaceful uses of outer space, based on fear of undermining what the Treaty provides, including the ban on weapons of mass destruction and foundation for peaceful cooperation. An amendment requires majority support but would become effective for each state only upon its acceptance.
[44] Johnson, p. 12.
[45] Johnson, p. 13.

The Ottawa Mine Ban Treaty process cannot be completely reproduced, and in particular space matters differ because of the unique role of the US, more so than in the case of landmines. Nevertheless, consideration of the Ottawa process can offer guidance. Crucial to progress on the landmine issue was the support of developing nations, especially those most affected. By the same logic, the link between outer space and sustainable development should raise concerns and motive developing nations.

It is possible that existing and potential civil society concern, support of allies and other governments, and civil and commercial interests within the US would make it difficult for the US to sustain a boycott of the treaty, particularly "if its code of conduct included technology sharing and commercial incentives for countries abiding by rules prohibiting the aggressive or offensive uses of space and loss of trade for enterprises belonging to countries that are not party to the agreement."[46] If the US chooses not to participate in a prohibition on space weapons, the international community – including many Americans for whom sanctuary is not an alien idea – will have to send a strong message.

The potential consequences for security, sustainable development, and the environment, as well as the energy requirements of space weaponization, suggest the need for a wide-ranging and open debate with increasing transparency on space-related policies and plans. Potential political mechanisms for prevention have been identified, but these will need support from the private sector and civil society. Although their interests are implicated in the future of outer space, their level of awareness is low. Recognizing that there is no one-step solution or simple formula, public education can draw on and support the efforts of civil society groups and coalitions already involved, and reach out to

[46] Johnson, p. 14.

those in environmental and development sectors, as well as anyone concerned about the rule of law, outer space, and the future of the planet.

Commercial and US Domestic Interests

International and US domestic commercial and industrial uses of space are significant and increasing. There are more than 1,100 companies in 53 countries now using space.[47] According to the Satellite Industry Association in Washington DC, worldwide revenue for the satellite industry was $61.4 billion in 1999 and $81.1 billion in 2000. The US portion of revenues for 1999 was $31.9 billion, of which over half was from exports. According to Theresa Hitchens,

> Whereas military officials often refer to space as a domain for action, like air or sea, space also is a market sector, and unlike many other sectors, it is growing at a phenomenal pace. The commercial space and telecommunications sector is also arguably the most globalized of today's economic sectors. Not only is the customer base international, commercial space market activities are characterized by multinational alliances among companies and consortia, including joint government programs….
>
> Financial projections make clear that the market—from space launch to satellite manufacturing to the telecommunications packages to satellite services—is exploding around the world. Although U.S. firms remain firmly in the lead, the booming market has also meant a boom in competition that has been made sharper by actions the U.S. government has taken in the name of national security.
>
> Satellite manufacturers are concerned about the effects of U.S. regulatory requirements and export controls on their bottom line….
>
> U.S. industry officials also worry when they hear the Pentagon talk about the need to deny "enemies" access to space assets. The U.S. Army is perhaps the most highly vocal of the services about the increasing availability of space-based assets (such as high-speed communications, navigation capabilities, and, perhaps most importantly, commercial imagery) that could empower an enemy and make U.S. ground operations abroad much more difficult.[48]

[47] Theresa Hitchens, "Rushing to Weaponize the Final Frontier," *Arms Control Today* (September 2001), p. 20 (citing John E. Hyten, "A Sea of Peace or a Theater of War: Dealing with the Inevitable Conflict in Space," ACDIS Occasional Paper, April 2000).
[48] Hitchens.

The Space Sanctuary perspective described above incorporates economic arguments that assume an interest in space technology and use. This is an interest shared by developing states seeking technology for sustainable development, in the context of peaceful uses of outer space.

In both the House and the Senate of the US Congress there is actual and potential support for ideas along the lines described above. In the House of Representatives, Dennis Kucinich (Democrat – Ohio) introduced the Space Preservation Act of 2002 (HR 3616) which calls on the US to ban all research, development, testing, and deployment of space-based weapons and if passed would require the US to enter negotiations towards an international treaty to ban weapons in space. Rep. Kucinich also plans a major media effort to promote the bill and has apparently found a Senate sponsor for the bill (not announced as of the time of this writing).

Senator Tom Daschle (Democrat – South Dakota) has called the notion of putting weapons in space "the single dumbest thing I have heard so far from this administration...It would be a disaster for us to put weapons in space of any kind under any circumstances. It only invites other countries to do the same thing."[49]

The issue of space weaponization appears to resonate more with the public than nuclear weapons, and various peace and disarmament advocacy and research groups have chosen to focus much of their energy on space weapons issues. Some examples include:

- Global Network Against Weapons and Nuclear Power in Space: A grassroots and activist-oriented approach, focusing on petitions, demonstrations, and disseminating information to the "general" public. Their tone is considered alarmist by some groups that work more closely with government circles although their information is generally grounded in factual evidence. (www.space4peace.org)
- Moving Beyond Missile Defense: A joint project of the International Network of Engineers and Scientists Against Proliferation and the Nuclear Age Peace Foundation

[49] Peter Grier, The New Nuclear Theology, Christian Science Monitor, May 8, 2001 (cited in Johnson).

that brings together scientists and activists to explore alternatives to missiles and missile defenses, with attention to implications for space. Recent activities include a petition and a science-based study on a missile control regime. (www.mbmd.org)

- The Institute for Cooperation in Space has a mission to educate about US legislation H.R. 3616 – the Space Preservation Act of 2002 – and forthcoming Senate bill, and related issues. ICIS offers a model Space Preservation Treaty to ban space-based weapons(www.peaceinspace.com)
- Mainstream Media Project: US-based effort to bring disarmament advocates into mainstream radio. Current campaigns include missile defense, with a strong focus on implications for space and potential of space weaponization. MMP also plans a broad-based education and advocacy campaign specifically on space weaponization. (www.mainstream-media.net/current_camp.html)

- Stop Star Wars: Greenpeace campaign offering basic educational material about missile defence and focusing currently on 17 activists arrested for direct action in California in July 2001. (www.greenpeace.org)

These examples are not exhaustive, and recent interest in the roles and potential of citizen monitoring and societal verification in security matters complement them. In such areas as nuclear and biological weapons, for example, we are seeing new proposals and discussions of the part that transnational civil society can play. But these initiatives do not yet match the range of involvement or breadth of expert and academic input that drove the effort to ban landmines. In comparison to the advocacy and diplomatic activity behind the Mine Ban Treaty, space weaponization matters also lack the constructive interaction of experts and advocates.

The space equivalents of International Committee of the Red cross assessments of landmines effects, for example, could include scientific studies of potential environmental effects from space weapons systems, the energy needs of current and pending systems supporting space weapons, the economic costs, both direct and indirect, and the resulting security environment. The case studies of hypothetical use of nuclear weapons in specific cities – the "bombing runs" – that physicians and medical experts undertook to educate

the public during the Cold War[50] are another example of the kind of research and debate needed to prevent an arms race in outer space.

Conclusions

Prevention of space weaponization is the key to prevention of an arms race in outer space. Space weaponization includes the research, development, or deployment of space-based weapons and anti-satellite weapons. Most of the world's states and broad citizens' networks have clearly expressed a determination to keep space free of weapons and war. Advocates of space weaponization are essentially taking national security out of the international context. They are also reversing strategic planning by first developing weapons, then capabilities, then strategies, and they do this without considering the consequences domestically or globally.

Space weapons plans, combined with the influence of the interested industries and the responses of other states, might make an arms race in outer space look like a pending reality. But prevention is also a possible reality. The complexity and costs inherent in developing and deploying space-based weapons, the logistical and technological gaps in military space plans, the lack of support for space weapons internationally, and the public outrage that is likely to erupt on security, economic, environmental, sustainable development, moral, and religious grounds if plans are pursued to turn outer space from a sanctuary to a war zone – all these provide the basis for a strategy of mobilization.

16 March 2002

[50] Physicians for Social Responsibility (www.psr.org) and International Physicians for the Prevention of Nuclear War (www.ippnw.org).