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Space Cooperation Under Anarchy: Commercialization of Outer Space and Space Security in the Post-Cold War Era

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SPACE COOPERATION UNDER ANARCHY: COMMERCIALIZATION OF OUTER

SPACE AND SPACE SECURITY IN THE POST-COLD WAR ERA

by

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ABSTRACT

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The 20th century brought the most horrific weapons and most devastating wars in the history of human civilization. It also gave us the most breathtaking discoveries and technological breakthroughs, including the opening up of outer space to human reach. The commercialization of outer space is one of the most significant developments of our time, giving us an opportunity to put the richness of this medium to the betterment of human conditions on Earth on an increasingly widening scale.

Technological advances have also made space more important militarily. A puzzle now is whether the commercialization of outer space facilitates international cooperation in the security realm or makes interstate relations more competitive in the fourth medium. This study tries to address the issue of outer space security by placing it within the realist-liberal debate on economic interdependence and international conflict and cooperation. It shows that as the post-Cold War transition era drew to its close, security interests of the United States, on the one hand, and Russia and China, on the other, continued to diverge with regard to space security. The sole international intergovernmental organization charged with the negotiations on space security issues failed to bridge the differences and bring about compromises among the major space players. As a result, a new space security regime regulating expanding military uses of space has not emerged.

Liberal expectations fail on two important accounts. Firstly, the cost-benefit analysis that lies in the heart of the argument of liberal pacification consists of the costs of fighting a war as well as the opportunity costs of war and the former has not necessarily increased with technological progress and, even with greater commercialization of outer space, the latter may not necessarily offset the trend in the former. Secondly, the liberal expectation that expanding commercial relations between states would gradually lead to progressive de-legitimization of the use force has so far failed to materialize with respect to outer space.

To my husband Georgii and our son Andrei

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CHAPTER I

INTRODUCTION

> As was once said, 'War is too important to be left to the generals.' Space likewise is too important to be left to only the self-interested whose choices impact all of us.
>
> Roger Handberg
> 2000

At the dawn of the 21st century, we have been privileged not only to experience the excitement of the changing millennia and "tectonic shifts" in international politics with the end of the Cold War, but also, and perhaps more uniquely, to witness unparalleled technological advances in communications and computing that have truly made our world global.[1] It is thanks, in large part, to the technological advances that we have been also advantaged to witness and reap the fruits of the extension of human commercial activities into the fourth medium—into outer space.[2]

This paper follows the format requirements of *The Chicago Manual of Style*, 14th edition (Chicago: University of Chicago Press, 1993).

[1] The word "global" is taken to mean in this context "interconnected in important ways," "representing a whole." Vogler, for example, uses this definition of "global" in the concept of "global commons." See John Vogler, *The Global Commons: A Regime Analysis* (Chichester: John Wiley & Sons, 1995), 10.

[2] Outer space is most often defined as the Universe beyond the Earth's atmosphere. There is yet no international agreement on definition and delimitation of outer space. These issues have been discussed at the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS). The vast region beyond Earth's atmosphere is a domain of common pool resources to which all nations of the world have a legal access. Outer space is a domain of both natural resources, those material resources that have economic or social value once extracted from their natural state, and spatial-extension resources, those resources that have value due to their location, for example, the geostationary orbit. See more Susan J. Buck, *The Global Commons: An Introduction* (Washington, D.C.: Island Press, 1998), 2-3. Outer space is the global commons most recently opened to human reach. While outer space is vast, only near-earth space—space beyond atmosphere, extending to the Moon's orbit—is involved in human activities. Uses of space have been proliferating as progress in space technology leads to more space applications and safer and more affordable access to space. The most common uses of space have been for placing artificial satellites in various orbits around the Earth. These satellites are used for telecommunications, remote sensing, positioning and navigation, and some other purposes, including scientific research. Space near Earth is divided into Low Earth Orbit (LEO), Medium Earth Orbit (MEO), Geostationary Earth Orbit (GEO), and Highly Elliptical Orbit (HEO). See more on the geography of space Everett C. Dolman, *Astropolitik: Classical Geopolitics in the Space Age* (London: Frank Cass, 2002), 60-85. Approximately 90% of all

As space technology progressed and was joined by the information technology revolution in the recent years, uses of outer space have become an essential part of everyday life, with satellite weather forecasting, telephony, satellite TV and radio broadcasting being just a few examples. Banks and financial institutions all over the world rely today on satellites to make their global transactions. Aircrafts, ships, and various ground transportation use satellites for navigation across the air, water, and land. Information technology and space technology, as they converged, transformed major sectors of modern economy, and with it, the society, the state, and the military.

For more than three decades after the launch of *Sputnik*, outer space exploration and utilization was largely about military competition between the two superpowers of the Cold War, the United States and the Soviet Union. After the Cold War, the new Space Age became more about commercial competition. By the dawn of the 21st century 425 communication satellites offering commercial services orbited the Earth.[3] Overall commercial satellites represented almost 70 percent of all satellites in orbit.[4] With the progress of technology new constellations of communications satellites providing mobile satellite services began to arrive by dozens, and even hundreds, in the later part of the

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satellites at present time are located in LEO and GEO. See, for example, Barry D. Watts, *The Military Use of Space: A Diagnostic Assessment* (Washington, D. C.: Center for Strategic and Budgetary Assessments, 2001), 8-9, 50.

[3] See U.S. Department of Commerce, *Trends in Space Commerce*, Report by Office of Space Commercialization, June 2001, 3-11, http://www.technology.gov/space/library/reports/2001-06-trends.pdf (accessed 05.22.04).

[4] Carrington provides the following numbers for commercial satellites in orbit by the late 1990s: Low Earth Orbit—70 percent of all satellites in this orbit are commercial satellites; Medium Earth Orbit—59 percent; High Orbits—78 percent. Thus, on average commercial satellites constitute 69 percent of all satellites. See Damian Carrington, "The Roaring Business of Rockets," *BBC News Online*, December 9, 1999, http://news.bbs.co.uk/1/hi/sci/tech/556780.stm (accessed 03.17.04). The numbers of commercial satellites usually differ from source to source due to different methods of classifying satellites.

1990s.[5] These new arrivals significantly expanded the presence of commercial communication satellites from the Geosynchronous Earth Orbit (GEO) into the Medium and Low Earth Orbit (MEO and LEO).[6] So much so, that by the early 2000s only 54 percent of communication satellites operated from GEO, while 42 percent operated form LEO.[7] Thus, the commercial utilization of space increased dramatically not only by the number of commercial satellites but also by the geographic space that they utilized.[8] Numerous new commercial actors entered space business providing space services to customers around the world and generating billions in revenues. In 2000, satellite systems enabled $1.7 trillion of business activity worldwide.[9]

Thus, the commercialization of space is changing the paradigm of outer space for the 21st century. The military utilization of outer space that just recently was dominating the fourth medium now increasingly coexists with commercial uses of outer space. A puzzle now is whether the commercialization of space facilitates international cooperation in the space security realm among the main players, or whether it makes their security relationship more competitive. The main focus of the present study is on how space commercialization affects security relations in the fourth medium.

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[5] See, for example, Watts, *The Military Use of Space,* 2001, 121-122. See also Peter A. Swan and Carrie L. Devieux Jr. eds., *Global Mobile Satellite Systems: A System Overview* (Boston: Kluwer Academic Publishers, 2003), 8.

[6] There have been three generation of mobile telecommunications satellites: the first generation – geosynchronous mobile satellite systems such as INMARSAT; second generation – called Global Mobile Satellite Systems (GMSS); and third generation – high data rate systems such as INMARSAT-Horizons or New ICO. Later generations of satellites for global mobile communications are largely in non-GEO. See, for example, Swan and Devieux, *Global Mobile Satellite System*, 2003, 1-8.

[7] See U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 3-11.

[8] Handberg suggests that not only "commercialization of space activities has grown enormously across the past decade," but that projections into the future are also "exceptionally optimistic." See Roger Handberg, *Seeking New World Vistas: The Militarization of Space* (Westport: Praeger, 2000), 3.

[9] See John E. Pike, "The Paradox of Space Weapons," in *SIPRI Yearbook: World Armaments and Disarmaments* (Stockholm: Almquist & Wiksell, 2003), footnote 2, 433.

THE COMMERCIAL SPACE AGE AND INTERNATIONAL RELATIONS

Outer space is the most recently added to human reach global commons. Global commons are often defined as areas, or resource domains, beyond sovereign jurisdiction of states to which all have an equal right of access. Outer space, including the moon, the various orbits and related radio frequencies, was established by the international community as a global commons during the first decade of the Space Age.[10] 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) that went into force in 1967, states in Articles 1 and 2:

> Art. 1: The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. Outer Space, including the moon and other celestial bodies shall be free for exploration and use by all without discrimination of any kind, on a basis of equality and in accordance with international law there shall be free access to all areas of celestial bodies.
>
> Art. 2: Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation or by any other means.[11]

The recognition of outer space as a global commons was an important achievement. It provided a foundation for peaceful exploration and use of outer space during the Cold War. Even though outer space became an arena of superpower competition, a security

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[10] The United Nations took position in 1957 that no nation could assert sovereignty over territory in outer space. See Buck, *The Global Commons*, 1998, 139. The view of space as global commons was reflected in the "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space." See United Nations, "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space," the United Nations General Assembly Resolution 1962 (XVIII), December 13, 1963, http://www.oosa.unvienna.org.SpaceLaw/lpostxt.htm (accessed 02.04.02).

[11] See United Nations, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," January 27, 1967, Articles 1 and 2, http://www.oosa.unvienna.org/SpaceLaw/outersptxt.htm (accessed 02.11.04). See more on definitions of "global commons" in Buck, *The Global Commons*, 5-6.

regime in outer space emerged that helped to prevent space from turning into a batllefield.

As outer space is becoming now an increasingly vital part of the economic mainstream, the process whereby this is materialized—the commercialization of outer space—raises a number of new, challenging questions: What are the emerging patterns of space exploitation? Who are the main actors? What is the nature of their interaction? Is it cooperative or fraught with potential conflict? How do national interests play out in outer space, the world's largest global commons, as it becomes an arena of commercial competition, as well as a crucial medium for modern warfare? Do space activities in this era of space commercialization add a new dimension to the international relations? What is the influence of space commercialization on inter-state relations? How does the commercialization of space affect space security regime? How should increasing uses of space for commercial and military purposes be regulated? Who should formulate the global space policy as the creation of wealth increasingly depends on outer space? What purposes should this global space policy serve? How could a balance between various national interests, both commercial and security interests, of all states be found? How could an efficient utilization of outer space resources and equity be achieved? These are but just a few questions that arise in the era of outer space commercialization.

These important questions still largely await their answers by international relations scholarship, for there is still a lack of attention to outer space as a subject of the mainstream international relations discourse. While outer space issues have been intensively discussed within the space business community, by international space law and strategic studies scholars, in arms control communities and military establishments around the world, the international relations scholars have not taken up the challenge of thoroughly incorporating outer space issues, as they emerged in the last decade of the 20th century, into their scientific inquiry.[12] This is probably, at least in part, because challenges presented to international relations studies by the end of the Cold War and the

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[12] *Project 2001: Legal Framework for the Commercial Use of Outer Space* is an example of the international discussions on outer space legal issues. The project was initiated by Institute of Air and Space Law of the University of Cologne and the German Aerospace Center (DLR), http://www.uni-koeln.de/jur-fak/insstluft/project2001/legal-materials.html (accessed 02.17.02). See Susanne Reif's report "Project 2001: Shaping a Legal Framework for the Commercial Uses of Outer Space," *Space Policy* 15 (1999): 109-112. The space security issues were extensively discussed by strategic studies scholarship in the 1980s, particularly in the context of the Strategic Defense Initiative announced by President Reagan in his famous speech on March 23, 1983. The debate revolved around the possibility of reconciliation of two conceptual opposites, as they were seen then—strategic deterrence and strategic defense. The debate produced voluminous literature on this subject. See, for example, Edward Teller, *Better a Shield Than a Sword: Perspectives on Defense and Technology* (New York: Free Press, 1987); Wolfgang Heisenberg, *Strategic Stability and Nuclear Deterrence in East West Relations* (New York: Institute for East-West Security Studies, 1989); Ashton B. Carter, David N. Schwartz, *Ballistic Missile Defense* (Washington D. C.: Brookings Institute, 1984); William J. Durch, *The ABM Treaty and Western* Security (Cambridge, Mass.: Ballinger Pub. Co, 1987) and William J. Durch, *Anti-Satellite Weapons, Arms Control Options, and the Military Use of Space* (Washington D.C.:ACDA, 1984); W. J. Durch, ed., *National Interests and the Military Use of Space* (Cambridge, Mass.: Ballinger Pub. Co., 1984); Michael Charlton, *From Deterrence to Defense: The Inside Story of Strategic Policy* (Cambridge, Mass.: Harvard University Press, 1987); Joseph S. Nye, James A. Schear, eds., *On the Defensive: The Future of SDI* (Lanham, MD: University Press of America, 1988); Raymond L. Garthoff, *Policy vs. Law: the Reinterpretation of the ABM Treaty*, (Washington D. C.: Brookings Institute, 1987); Walther Stetzle, Bhupendra Jasani, and Regina Cowen, eds., *The ABM Treaty: To Defend or Not to Defend*? (New York: Oxford University Press, 1987); Zbigniew Brzezinski, Richard Sincere, Marin Strmecki, and Peter Wehner, eds., *Promise or Peril, the Strategic Initiative: Thirty-Five Essays by Statesmen, Scholars, and Strategic Analysts* (Washington D. C.: Ethics and Public Policy Center, 1986); Bhupendra Jasani, ed., *Outer Space – A New Dimension of the Arms Race*, SIPRI (London: Taylor & Francis, 1982); Bhupendra Jasani, ed., *Space Weapons and International Security*, SIPRI (New York: Oxford University Press, 1987); Franklin. A. Long, Donald Hafner, Jeffrey Boutwell, eds., *Weapons in Space* (New York: Norton, 1986); T. K. Longstreth, John. E. Pike, L. B. Rhinelander, *The Impact of U.S. and Soviet Ballistic Missile Defense Programs on the ABM Treaty* (Washington D. C.: National Campaign to Save the ABM Treaty, 1985); Joseph S. Nye, Jr., James. A. Schear, *Seeking Stability in Space: Anti-Satellite Weapons and the Evolving Space Regime* (Lanham MD: University Press of America, 1987); J. Sheffran, "Verification and Risk for an Anti-Satellite-Weapons Ban," *Bulletin of Peace Proposals*, Vol. 17, No. 2, 1986, 165-174; John Tirman, ed., *The Fallacy of Star Wars* (New York: Vintage Books, 1984); Paul B. Stares, *Space and National Security* (Washington D. C.: Brookings Institution, 1987); Jack Manno, *Arming the Heavens: The Hidden Military Agenda for Space, 1945-1995* (New York: Dodd, Mead & Co, 1984); Bhupendra Jasani and Christopher Lee, *Countdown to Space War* (London: Taylor & Francis, 1984); Keith B. Payne, ed., *Laser Weapons in Space: Policy Issues* (Boulder: Westview Press, 1982); John M. Collins, *Military Space Forces: the Next 50 Years* (Washington D. C.: Oergamon-Brassey's International Defense Publishers, 1989); Thomas H. Karas, *The New High Ground: Systems and Weapons of Space Age War* (New York: Simon and Schuster, 1983); David E. Lupton, *On Space Warfare: A Space Power Doctrine* (Maxwell Air Force Base: Air University Press, 1988); Kenneth N. Luongo and W. Thomas Wander, *The Search for Security in Space* (Ithaca: Cornell University Press, 1989); David Ritchie, *Spacewar* (New York: Atheneum, 1982); Nicholas L. Johnson, *Soviet Military Strategy in Space* (London: Jane's, 1987); David Baker, *The Shape of War to Come* (New York: Stein and Day, 1982).

dramatic developments that followed it have eclipsed outer space commercialization and space security issues. In the meantime, the recent developments in outer space, and those that are planned for a short and medium-term future,[13] are likely to have far-reaching implications for international relations in the military and economic realms. More generally, what happens in outer space will exert a strong influence over the shape and feature of the world order emerging after a decade of post-Cold War transition, as we face a fundamental choice—to weaponize, or not to weaponize outer space.

THE COMMERCIALIZATION AND WEAPONIZATION OF OUTER SPACE

The weaponization of outer space is often understood as emplacement of weapons, weapon systems or their components, into the medium of outer space and their use in, or from, this medium. It is a form of space militarization, which is distinct from "military uses of outer space," or the use of outer space for military purposes, such as space reconnaissance and satellite navigation and positioning.[14] Outer space was utilized for military purposes from the early beginning of the Space Age. Space weapons and anti-satellite weapons were tested in outer space, but they have not been yet placed in outer space.

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[13] For example, according to a RAND publication, an official DoD timetable calls for a ten to twenty year period for acquisition of space-based weapons for the United States. See Bob Preston, Dana J. Johnson, Sean Edwards, Michael Miller, Calvin Shipbaugh, *Space Weapons Earth Wars* (Santa Monica, CA: RAND, 2002), 1. There are also plans to start testing space-based interceptor missiles within the national missile defense program as soon as 2006. See Nader Elhefnawy, "Four Myths about Space Power," *Parameters, U.S. Army War College Quarterly,* Spring 2003, http://carlisle-www.army.mil/usawc/Parameters/03spring/elhefnaw.htm (accessed 01.29.04).

[14] There is no internationally agreed definition of space weapons and space weaponization, but ballistic missiles passing through space have not been considered as part of "space weaponization." See more on these definitions and discussion of the issue in Pericles Gasparini Alves, ed., *Building Confidence in Outer Space Activities: CSBMs and Earth-to-Space Monitoring* (Aldershot: Dartmouth, UNIDIR, 1996), 31-32. The problem of defining "space weapons" is complex. For example, the Soviet Union objected to the U.S. space shuttle arguing that it could be used as a platform to carry anti-satellite weapons and it had the capability to "snatch" satellites in orbit. See, for example, Stares, *Space and National Security,*1987, 112.

The weaponization of outer space has been at the center of the intense debate in international politics twice during the Cold War: early in the Cold War, there was a debate over the possibility of bombardment satellites carrying nuclear weapons and, in the closing years of the Cold War, over the possibility of space-based defenses against nuclear missiles.[15] These debates involved the United States and the Soviet Union, opposing each other on the issue of placing weapons in outer space in the context of the bipolar confrontation. Now, after the end of the Cold War, the issue of space weaponization is again at the heart of international contention, with the United States, Russia and China trying to pursue their national interests in this increasingly important medium. The weaponization of outer space has emerged as one of the most important and most contested issues in interstate relations in the post-Cold War era.

This third debate over weapons in space takes place in a very different international environment. The East-West confrontation has been fading rapidly into the background of history, with the threat of nuclear holocaust becoming increasingly remote. The world has become highly interconnected due to the advances in transportation and communication and interdependent economically due to the expansion of global markets. New transnational threats have emerged, with terrorism dominating the list of threats ever since the tragic events of September the 11th, 2001.

The commercialization of outer space has created a new set of factors that affect space security, which did not exist during the previous debates on outer space weaponization. On the one hand, commercialization of space allows those states who invested in space technology to serve their military needs to turn space technology now, at least in part, to the private sector and place it in the service of an ever-increasing

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15 See, for example, Preston, Johnson, Edwards, Miller, and Shipbaugh, *Space Weapons*, 2002, 1.

number of consumers in their own countries, as well as all over the world. In doing so they make returns on their investment by promoting technological progress and the economic prosperity of their societies. Throughout the 1990s, the global space industry was one of the world's vital economic engines. Space activities fueled some of the most important high-tech sectors of the economy, such as software and hardware development, sophisticated electronics, telecommunications, advanced materials research, which in their turn contributed to a whole range of other industries. Space activities served as a "trailblazer for technological development" and as "the key to an environment which has only just begun to reveal its treasures."[16]

On the other hand, the commercialization of space means that there are greater incentives for various states—and non-state actors—to obtain their own space capabilities, firstly, because of the benefits that space activities bring to the economy, and secondly, because it may be easier now, as some technological components can be acquired in a global space market. Given the inherently dual-use nature of space technology, this proliferation of space technology and capabilities raises serious security concerns. Security concerns also arise with commercial space services that are provided to an increasing number of customers around the world, such as, for example, accurate timing and navigation data and other critical information generated by satellites. These services may be used towards hostile ends and empower potential foes that otherwise would not have had access to such information.

Moreover, the more modern economies become dependent on space services, the more they become vulnerable to threats from hostile acts against space assets.

[16] See Kevin Madders, *A New Force at a New Frontier: Europe's Development in the Space Field in the Light of its Main Actors, Policies, Law and Activities from its Beginnings up to the Present* (Cambridge: Cambridge University Press, 1997), 593-594.

Commercialization of outer space activities coupled with the reduction of military budgets in the 1990s has also led to a significant reliance of the military on commercial space service providers.[17] As a result, commercial constellations can be appealing as "soft" targets, since they provide services to the military. Therefore, commercialization of outer space creates incentives to defend commercial space assets, not only because the economy increasingly depends on them, but also because the military depends on them as well.[18]

On the other hand, placing weapons in space to defend space assets may not be welcomed by those commercial actors who operate in space. Most commercial systems, including those that are used for communications, neither carry extra fuel for maneuvering against kinetic energy weapons nor are they hardened enough – against jamming or nuclear explosions, for example, – to share space with weapons. Hardening of commercial satellites and providing them with extra fuel will inevitably raise the costs of operating in space, making space services less affordable and cutting thereby the market. This will impede further technological and economic progress, particularly among the developing countries, and the development of space sector itself.[19]

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[17] See, for example, Frank P. Todd, "Current National Space Security Trends and Implications for the Future," Strategy Research Project, U.S. Army War College, 2002.

[18] See Linda L. Haller and Melvin S. Sakazaki, *Commercial Space and United States National Security*, Report prepared for the Commission to Assess United States National Security Space Management and Organization, 2001, http://www.fas.org/spp/eprint/article 06.html, accessed 09.20.02. See also Tom Wilson, *Threats to United States Space Capabilities*, Report prepared for the Commission to Assess United States National Security Space Management and Organization, http://www.fas.org/spp/eprint/article 05.html (accessed 09.20.02).

[19] See Theresa Hitchens, "U.S. Weaponization of Space: Implications for International Security," Presentation at the Workshop on Outer space and International Security, Center for Defense Information, September 29, 2003, http://www.cdi.org/ (accessed 01.29.04).

As space competition becomes tougher and tougher in the international market, the desire to succeed may lead commercial actors to turn to governments for help.[20] Since the World Trade Organization's rules restrict subsidies to industries and services, commercial space actors have an incentive to obtain help under the "umbrella" of defense, thereby fueling further militarization of space activities.[21] The commercialization of outer space that led to the reliance of the military on commercial space providers has also made the military dependent for their technological edge upon the success of their national space firms in international competition and therefore made the state eager to help these firms under conditions of tough international competition in order to prevent the loss of a technological edge to foreign competitors.[22] In the meantime, the reality of technology-based competition has also led many space firms to form multiple, complex international strategic alliances with foreign firms, and therefore raises concerns about technology transfers.[23] Internationalization is characteristic not only of the space-manufacturing sector but also of space service providers, who are often

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[20] One of the rationales for pursuing military space programs within European Security and Defense Policy is to improve the competitive position of the European space industry. The European space sector suffers from a lower competitiveness in comparison with the U.S. space industry because recurrent and fixed costs, such as research and development, are born by the commercial and civil space sector. Overwhelming dependence on the commercial space market also makes the European space industry particularly vulnerable to the effects of economic cycles, as the military space sector is too small to create anti-cyclical demand. See Stefano Silvestri, *Space and Security Policy in Europe*, Executive Summary, Occasional Paper No. 48, December 2003, Institute for Security Studies, European Union, http://www.iss-eu.org/occasion/occ48.pdf (accessed 04.19.04).

[21] Commercial space activities remain highly dependent on various forms of government assistance, including subsidies. WTO rules restrict subsidies, leaving states with just a few options to help out their national firms. See, for example, Anders Hansson and Steven McGuire, "Commercial Space and International Trade Rules: An Assessment of the WTO's Influence on the Sector," *Space Policy*, Vol. 15 (1999), 199-205. See also Haller and Sakazaki, *Commercial Space and United States National Security*, 2001.

[22] See Beverly Crawford, *The New Security Dilemma under International Economic Interdependence*, Working Paper, German and European Studies, University of California, November 1992, and Richard C. Doerer, *National Security Implications of Commercialization of Space*, Strategy Research Project, U.S. Army War College, 2000.

[23] See, for example, Haller and Sakazaki, *Commercial Space and United States National Security*, 2001.

represented by multinational consortia. This means that distinguishing friendly assets from those of an enemy in space has become increasingly problematic.

All in all, the commercialization of outer space that led to space technology proliferation, increased accessibility to outer space, globalization and privatization of space industries has created a qualitatively new space security environment, in which there are incentives both for and against space weaponization. It has also created international conditions conducive to international cooperation in regulating the security externalities of space commercialization. These developments have also tempted the United States, as the leading spacepower to take unilateral steps, for it more than any other state depends on space for its economic well-being and national security.[24]

THE SPACE WEAPONIZATION DEBATE

Nowadays, in the face of the proliferation of Weapons of Mass Destruction (WMD) and means of their delivery around the world combined with the threat of terrorism, there is rather limited public discussion of the issues of space weaponization. Nonetheless, there is an ongoing debate over space weapons. Those who support weaponization of space argue that it is inevitable: very much like the ground, the sea and the air were once militarized and turned into battlefield at times of violent conflicts, outer

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[24] The authors of a RAND study on space as a source of national power define the term "spacepower" as "the pursuit of national objectives through the medium of space and the use of space capabilities." This study adopts this definition as it is broad enough, and at the same time, it focuses on national objectives, the use of space and space capabilities. It should be pointed out that spacepower does not presupposes the use of military force as a necessary requirement to qualify as a spacepwer. In the future, however, a full emergence of spacepower is envisioned as being accompanied by full range of space military capabilities for conducting space control missions and space force application. See Dana J. Johnson. Scott Pace, and C. Bryan Gabbard, *Space: Emerging Options for National Power* (Santa Monica: RAND, 1998), xi. Grey and Sheldon use a definition that underscores military connotation of spacepowers: "the ability in peace, crisis, or war to exert prompt and sustained influence in or from space." See Colin S. Grey and John B. Sheldon, "Space Power and the Revolution in Military Affairs: A Glass Half Full?" *Airpower Journal* 13, (fall 1999): 23-38, http://www.airpower.maxwell.af.mil/aircronicles/apj/apj99/fal99/gry.pdf (accessed 04.23.04).

space will also be weaponized and used as a battlespace.[25] There is a great premium to the country that puts its weapons in space first. The argument goes further to suggest that the United States must do it first in order to ensure its national security, which otherwise would be seriously threatened. The image of a "Space Pearl Harbor" is invoked to support the argument for space weaponization.[26] It is maintained that the development of space weapons "will buy generations of security that all the ships, tanks, and airplanes in the world will not provide" and that it will bring a real "peace dividend."[27] There are also suggestions that American weapons in space will have positive implications for world peace: in a position of overwhelming strategic superiority the United States will be able to impose a Wilsonian international order, with major wars becoming a relic of the past.[28]

Those who oppose space weaponization argue that the proponents of space weaponization have based their position on the problematic assumption that U.S. steps towards introduction of weapons in space would be unchallenged by other states. Furthermore, they argue that "[u]nlike the strategy for nuclear weapons, there exists no obvious strategy for employing space weapons that will enhance global stability."[29] They see a military conflict in space as highly escalatory and therefore extremely dangerous

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[25] See, for example, Thomas D. Bell, *Weaponization of Space: Understanding Strategic and Technological Inevitability*, Occasional Paper No. 6, Center for Strategy and Technology, Air War College, January 1999, http://www.fas.org/spp/eprint/occppr06.htm (accessed 09.20.02).
This point of view is also reflected in official U.S. documents, such as for example, the so-called Rumsfeld Report, where the Commissioners state in the Summary: "...[W]e know from history that every medium – air, land, and sea – has seen conflict. Reality indicates that space will be no different. Given this virtual certainty, the U.S. must develop the means both to deter and to defend against hostile acts in and from space." See Commission to Assess United States National Security Space Management and Organization, Report, Executive Summary, Washington D.C., January 11, 2001, 10, http://www.defenselink.mil/pubs/space20010111.html (accessed 02.12.04).

[26] See Commission to Assess United States National Security Space Management and Organization, Report, 2001, 13.

[27] Bob Smith, "The Challenge of Space Power," *Airpower Journal* 13, (spring 1999): 33, http://www.airpower.maxwell.af.mil/airchronicles/apj/apj99/spr99/smith.pdf (accessed 04.15.04).

[28] Elhefnawy, 2003.

[29] Bruce M. DeBlois, "Space Sanctuary: A Viable National Strategy," *Airpower Journal* 12 (winter 1998): 41-57.

when it involves nuclear-capable states.[30] The U.S. advantage in space might not be so overwhelming, as weaker spacepowers may effectively use asymmetric approaches.[31] Miscalculations and other errors will be very likely in this new, yet uncharted, medium for militarized conflicts.[32] Any military exchange will have almost no internationally recognized rules to rely upon and lines to draw to limit the conflict. Furthermore, space is a uniquely unsuitable for supporting war-fighting: it is one of the most fragile environments that exists because it has very small capacity for self-repair. The visual image of our planet encased by a shell of whizzing debris, making the near space unusable for manned flight, as well as commercial and military activities, powerfully illustrates the argument of space weaponization opponents.[33] It is for these reasons that they argue for making space a weapon-free sanctuary.[34] Somewhat between these two opposing opinions there is a point of view that the weaponization of space is not an all or nothing issue, and that military uses of space, including those involving space weapons, should be regulated by an international regime, with certain areas of space preserved free of any weapons.[35]

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[30] See, for example, Hitchens, 2003. See also Jurgen Scheffran, "Options for Rules in Outer Space," International Network of Engineers and Scientists Against Proliferation, Prevention of an Arms Race in Outer Space, Bulletin 20, http://www.inesap.org/bulletin20/bul20art02.htm (accessed 07.06.04).

[31] Lloyd Axworthy and Merav Datan, "Prevention of an Arms Race in Outer Space: Notes for an Address," International Network of Engineers and Scientists Against Proliferation, Bulletin 20, August 2002, http://www.inesap.org/bulletin20/bul20art01/htm (accessed 06.06.04).

[32] Handberg, *Seeking New World Vistas*, 2000, 17.

[33] See Joel R. Primack, "Debris and Future Space Activities," in James C. Moltz, ed., *Future Security in Space: Commercial, Military, and Arms Control Trade-Offs,* Occasional Paper No. 10, Center for Non-Proliferation Studies, Monterey Institute of International Studies, Southampton, England, May 2002,18.

[34] DeBlois, 1998, 41-57. The vision of outer space as a weapon-free sanctuary found its supporters in the U.S. military circles. DeBlois argues that preserving space as a sanctuary is a viable option serving U.S. national interests.

[35] Hays provides a more detailed classification of the whole spectrum of opinions with respect to outer space weaponization: "space hawks," "inevitable weaponizers," "militarization realists," and "space doves." "Space hawks" believe that space either already is or holds a great promise to become the dominant source of military power and that the United States should move quickly to extent its mission in space to control space and project power from this dominant theater of combat operations. "Inevitable weaponizers" differ from "space hawks" in that they are not convinced that space weaponization would be

THE PURPOSE, SCOPE, AND STRUCTURE OF THE STUDY

The purpose of this dissertation is not to analyze the merits of different positions in this debate or possible future outcomes in military utilization of outer space. The goal of the study is to gain an insight into space security issues by putting the discussion of outer space in the context of one of the major international relations debates. The realist-liberal debate on the relationship between economic interdependence, and international institutions, on the one hand, and security relations between the states, on the other, provides an intellectually attractive and methodologically appropriate venue for the discussion of the relationship between space commercialization and space security cooperation.[36] This international relations debate tries to analyze and explain the

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beneficial to the United States or global security and they are more open to the idea of space arms control and international cooperation. "Militarization realists" are opposed to space weaponization since they think that status quo serves the U.S. interests better. They support arms control and international cooperation that preclude other states from pursuing weaponization of space, while at the same time they believe that the U.S. should prepare to fight in space. "Space doves" oppose space weaponization on various grounds: moral, arms control, conflict resolution, stability, and ideological. See more on the debate Peter L. Hays, "Military Space Cooperation: Opportunities and Challenges," in Moltz, *Future Security in Space*, 2002, 32-44. See also Peter L. Hays, "Current and Future Military Uses of Space," Outer Space and Global Security, Project Ploughshares, November 26-27, 2002.

[36] See on this debate among the recent publications that include issues from international relations theory to foreign policy Edward D. Mansfield, Helen V. Milner, and B. Peter Rosendorff, "Why Democracies Cooperate More: Electoral Control and International Trade Agreements," *International Organization* 56 (summer 2002): 477-513; Erik Gartzke, Quan Li, and Charles Boehmer, "Investing in the Peace: Economic Interdependence and International Conflict," *International Organization* 55 (spring 2001): 391-438. See in *Security Studies* 9, 1-2 (autumn 1999-winter 2000) Jean-Marc F. Blanchard, Edward D. Mansfield, and Norrin M Ripsman, "The Political Economy of National Security: Economic Statecraft, Interdependence, and International Conflict," 1-14; Dale C. Copeland, "Trade Expectations and the Outbreak of Peace: Détente 1970-74 and the End of the Cold War 1985-1991,"15-58; Peter Liberman, "The Offense-Defense Balance, Interdependence and War," 59-91; Edward D. Mansfield, Jon C. Pevehouse, and David H. Bearce, "Preferential Trading Arrangement and Military Disputes," 92-118; Rawi Abdelal and Jonathan Kirshner, "Strategy, Economic Relations, and the Definition of National Interests," 119-156; Paul A. Papayoanou and Scott L. Kastner, "Sleeping with the (Potential) Enemy: Assessing the U.S. Policy of Engagement with China," 157-187; Daniel W. Drezner, "The Trouble with Carrots: Transaction Costs, Conflict Expectations, and Economic Inducements," 188-218; Jean-Marc F. Blanchard and Norrin M. Ripsman, "Asking the Right Question: When Do Economic Sanctions Work Best?" 219-253; David M. Rowe, "Economic Sanctions Do Work: Economic Statecraft and the Oil Embargo of Rhodesia," 254-287; Michael Mastanduno, "Economic Statecraft, Interdependence, and National Security: Agenda for Research," 288-316. See also in *Journal of Peace Research* 36 (1999) Katherine Barbieri and Gerald Schneider, "Globalization and Peace: Assessing New Directions in the Study of Trade and Conflict," 387-404; Solomon W. Polachek, John Robst, and Yuan-Ching Chang, "Liberalism and Interdependence: Extending the Trade-Conflict Model," 405-422; John R. Oneal and Bruce Russet, "Assessing the Liberal Peace with Alternative Specification: Trade Still

relationship between the economic and political realms, specifically the relationship between economic interdependence and international conflict and cooperation, war and peace. With regard to outer space, it provides tools for incorporating new developments in outer space—the commercialization of space—and military uses of outer space, as they evolve in parallel to space commercialization, into a single framework with the analytical focus on the interaction of the two.

On a more philosophical level, the debate tries to answer the questions: Do we, as human civilization, have a choice or are our actions determined by the unchanging nature of the anarchy of the international system? Do we have a hope for progress and peace, for betterment of human lives, or we are compelled to repeat in vicious circles our history of violence on ever-increasing scale as our technological capabilities grow? The present study does not aim at answering these fundamental questions. It attempts to answer the questions: Does commercialization of outer space affect international cooperation in the space security issue area? More specifically, does it make it easier for states to establish

Reduces Conflict," 423-442; Han Dorussen, "Balance of Power Revisited: A Multi-Country Model of Trade and Conflict," 443-462; Katherine Barbieri and Jack S. Levy, "Sleeping with the Enemy: The Impact of War on Trade," 463-479; James D. Morrow, "How Could Trade Affect Conflict?" 481-489. See James D. Morrow, Randolph M. Siverson, Tressa E. Tabares, "The Political Determinants of International Trade: The Major Powers, 1907-90," *American Political Science Review* 92 (September 1998): 649-661. James D. Morrow, "When Do 'Relative Gains' Impede Trade?" *Journal of Conflict Resolution* 41, (February 1997): 12-37; Michael W. Doyle, *Ways of War and Peace. Realism, Liberalism, and Socialism*, (New York: W.W. Norton and Company, 1997); John. R. Oneal and Bruce M. Russett, "The Classical Liberals Were Right: Democracy, Interdependence, and Conflict, 1950-1985," *International Studies Quarterly* 41(June 1997): 267-293; Paul A. Papayoanou, "Economic Interdependence and the Balance of Power," *International Studies Quarterly* 41 (1997): 113-140; Dale C. Copeland, "Economic Interdependence and War: A Theory of Trade Expectations," *International Security* 20 (spring 1996): 5-41; Katherine Barbieri, "Economic Interdependence: A Path to Peace or a Source of Interstate Conflict?" *Journal of Peace Research* 33 (February 1996): 29-49; John R. Oneal, Frances H. Oneal, Zeev Maoz, Bruce Russett, "The Liberal Peace: Interdependence, Democracy, and International Conflict, 1950-85," *Journal of Peace Research* 33 (February 1996): 11-28; Peter Liberman, "Trading with the Enemy: Security and Relative Economic Gains," *International Security* 21 (summer 1996): 147-175; Rafael Reuveny, Heejoon Kang, "International Trade, Political Conflict/Cooperation, and Granger Causality," *American Journal of Political Science* 40 (August 1996): 943-970.

an international regime regulating space security or it makes the security environment more competitive?

This study is divided into two parts: Part I provides a theoretical and historical ground for the analysis of space commercialization and security interests and interstate interactions in the security realm, and Part II contains an analysis of space commercialization and security strategies and interests, bilateral relations, and interactions at the level of global governance in the post-Cold War transition period.

As its first step, the study examines the main arguments in the economic interdependence and cooperation/conflict debate and analyzes where the findings and arguments might help us better understand the potential for cooperation in space. Chapter II of the dissertation deals with this task. Quantitative analyses produced in the course of the contemporary realist-liberal debate have systematically tested a number of realist and liberal hypotheses related to economic interdependence and international conflict and cooperation. These studies have allowed us to disconfirm some hypotheses, such as, for example, that approximate equality in the distribution of power in the international system is associated with more peaceful interstate relations,[37] and confirm others and therefore improve our understanding of the relationship between economic interdependence and international conflict and cooperation. Overall these studies have lent more support for the liberal propositions than realist ones.[38] However, they have left

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[37] Russett and Oneal find no support for the argument that relatively equally distributed power in the international system leads to more peaceful interstate relations. They instead find that it is preponderance of power that is associated with relatively less conflict among the states. See Bruce Russett and John Oneal, *Triangulating Peace: Democracy, Interdependence, and International Organizations* (New York: W. W. Norton & Company, 2001), 109.

[38] McMillan analyzed twenty empirical studies—formal models, case studies and quantitative research—and came to a conclusion that the majority of them support the hypothesis that interdependence measured in terms of trade, inhibits violent conflict. See Susan M. McMillan, "Interdependence and Conflict," *Mershon International Studies Review* 41 (1997): 33-58.

room for improving our understanding of the causal mechanism connecting economic interdependence and international conflict and cooperation. Since direct observation of causal mechanism is not feasible in the proposed cases that are under consideration here, this study relies on temporal coincidence of commercialization of outer space and security relations, as they both evolved in the 1990s and early 2000s.

The timeframe of this study encompasses a decade of 1992-2002—a decade after the end of the Cold War. There are quite a few dates one can choose to mark the end of the era of East-West confrontation and the beginning of a new one. For example, the *New York Times* proclaimed the end of the East-West confrontation on April 2, 1989. The *Wall Street Journal* confirmed this conclusion and exclaimed "We Won!" on May 24, 1989.[39] October 3, 1990, the day of the reunification of Germany—a powerful symbol of fallen wall dividing Europe—can also serve to mark the end of East-West confrontation. And so could February 25, 1991 when the Warsaw Pact finally dissolved. But December 25, 1991, ushered in the new era decisively when the last Soviet leader Gorbachev signed a decree making Russian President Yeltsin commander of the Soviet nuclear arsenal and resigned from his post, finalizing the end of the Soviet Union.[40] Thus, this study takes the year 1992 as the beginning of the post-Cold War transition period and the starting point of the analysis.

On December 13, 2001, after the terrorist attacks on the World Trade Center and Pentagon, President Bush announced that the United States had given Russia the six-month notice of its intent to withdraw from the 1972 ABM Treaty—the treaty that

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[39] See Richard N. Lebow, John Mueller, and William C. Wohlforth, "Realism and the End of the Cold War," *International Security* 20 (autumn 1995): 186.

[40] See, for example, SIPRI Database, Chronology of Security Related Events, SIPRI Yearbooks 1990-2002, http://first.sipri.org/index.php?page=step3&compact=true (accessed 03.04.03).

allowed the two Cold War superpowers first to stabilize their strategic relationship and then move to reduce dramatically their offensive nuclear arsenals.[41] On June 13, 2002, the U.S. withdrawal took effect. On the same day, the Foreign Ministry of the Russian Federation issued a statement saying that Russia no longer felt bound by START II Treaty. This date marks the end of the era of the ABM Treaty—the treaty that helped to keep outer space free of weapons for three decades.[42] It also concludes the time period of this analysis.

In the present study, hypotheses are generated in accordance with liberal and realist propositions advanced in the contemporary realist-liberal debate. Based on the assumptions that the international system is comprised of states—unitary, rational actors, striving to survive—and that it is anarchic, realists predict that economic interdependence is likely to lead to a greater conflict between states. They also argue that international cooperation, particularly in the security realm, is problematic because of high concerns with relative gains and high price of a failure. Balancing—either internally by building up its military capabilities or externally by building alliances with those states with whom

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[41] The 1972 ABM Treaty was concluded with the view of "ending an emerging competition in defensive systems which threatened to spur offensive competition to still greater heights." It constrained strategic defenses to a total of 200 launchers and interceptors, 100 at each of two widely separated deployment areas in order to prevent the establishment of a nationwide defense. It codified the principle of "non-interference" by one party with the national technical means of verification of the other, thereby protecting the right of overflight by the reconnaissance satellites. It prohibited development, testing, or deployment of sea-based, air-based or space-based ABM systems. In 1974, the ABM Treaty Protocol reduced the number of ABM deployment areas permitted to each side from two to one, and the number of ABM launchers and interceptors from 200 to 100. See "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," May 26, 1972, http://www.fas.org/nuke/control/abmt/text/abm2.htm (accessed 03.19.04); and "Protocol to the Treaty Between the United States and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," July 3, 1974, http://www.fas.org/nuke/control/abmt/text/abmprot1.htm (accessed 03.19.04).

[42] The role of the ABM Treaty in preventing space weaponization was that it excluded development of space-based components as part of an ABM system "to counter strategic ballistic missiles or their flight trajectories." See Article II.1 of the ABM Treaty. Some experts believe that the role of the ABM Treaty in preventing weaponization of space was rather limited and that it did not help to avert an arms race in outer space. See Wulf von Kries, "The Demise of the ABM Treaty and the Militarization of Outer Space," *Space Policy* 18, (August 2002): 175-178.

they have common security interests or both—should be expected in the anarchic international system. Since economic cooperation affects state capabilities, it is also rather difficult. Realist, thus, argue that it is common security interests that are likely to lead to economic cooperation when security externalities of economic cooperation are positive, and not vice versa.

Liberals, who argue that the relationship between the state and its domestic and transnational societies critically shapes state behavior at the international arena, predict that economic interdependence arising from international trade leads to greater international cooperation and more peaceful relations—so much so, that liberal states, particularly those who also share democratic values and build international institutions to regulate their interactions, form a special community, in which relations between states are characterized as Kantian "perpetual peace." While from a liberal perspective, greater economic interdependence is likely to lead to greater security cooperation directly via the evolution of structure of domestic preferences, from a neo-liberal perspective, international institutions have an important role to play in bringing about more peaceful and cooperative inter-state relations.

Chapter III takes a brief account of space security regime in outer space as it evolved since the beginning of the Space Age and up to the closing years of the Cold War by way of providing a background and a starting point for the present study. The main attention in this chapter is devoted to U.S.-Soviet space security cooperation because the Cold War space security regime, including its legal framework, was largely developed within the context of the U.S-Soviet relations during the Cold War. The purpose of this chapter is to establish that there was unambiguously a space security regime and to analyze its dynamics in order to contrast it with the dynamics of space security cooperation in the post-Cold War era.

The next step of this study is to define commercialization and establish that the commercialization of outer space is not a marginal phenomenon, but a mainstream development significant enough to affect state interests and have an influence on interstate security relations. Chapter IV of the present study serves this purpose. Three major space-faring states—the United States, Russia, and China—are chosen for this analysis. This should not be taken to mean that the role of other space actors is inconsequential. Currently, some forty states are engaged in space activities, and many have designated space programs.[43] Europe, for example, represents one of the major space players, with a number of European states and Canada, cooperating on space research and development and space applications within the framework of the European Space Agency (ESA).[44] Europe has played an important role in the commercialization of outer space. It is only recently, however, that the European states have begun to emerge as a political actor in space, developing—along with scientific and commercial interests and collaboration—their military cooperation in space and redefining a European "security concept" and strategic culture.[45] While ESA remains the principle vehicle for intergovernmental cooperation in Europe, the recent trend has been toward a more visible role for the European Union in intergovernmental relationships: for two of the major

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[43] See A. I. Kiselev, A. A. Medvedev, V. A. Menshikov, *Cosmonautics on the Frontier of Millenniums: Summary and Prospects* (Moscow: Mashinostroenie, 2001), 28.

[44] The European Space Agency was created in 1973. The Convention that established the development of cooperation among its member states in the area of space technology research and application for "exclusively peaceful purposes" of outer space as one of the main objectives of the agency came into force in October 1980. The new organization replaced two European organizations engaged in space activities: the European Launcher Development Organization (ELDO) and the European Space Research Agency (ESRO) created in 1964. See, for example, Madders, *A New Force at a New Frontier*, 1997, 41-42, 180.

[45] Silvestri, 2003.

European space projects, Galileo and GMES,[46] research and development aspects are handled by ESA, while strategic issues are dealt with by the EU. Thus, even though Europe has been a leading commercial actor in space and has begun to pursue its common security interests in space within European security projects, it cannot be said to represent a unified state actor on par with the United States, Russia, and China. European space security cooperation in the post-Cold War era constitutes an important case, which will lie, however, outside the scope of the present analysis. This study will focus on the three states, the United States, Russia and China, who represent not only three major spacepowers but also potential, former, or latent rivals.[47] Thus, it is between these three states that space security relations are of the particular essence.

In Chapter IV, it is shown that the move towards commercialization of outer space was launched nearly simultaneously via various state policies, including the reduction of government budget financing of space activities and the liberalization of space activities in the United States, Russia and China. As a result of these policies, a large global space market emerged. The last section of this chapter analyzes security implications of space commercialization.

Chapters V, VI and VII of this study focus on security issues of the three spacepowers—the United States, Russia, and China—within a common framework. The

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[46] The Galileo program of satellite navigation and positioning is the first genuine European Union-led program. The GMES program, originally envisaged as a civilian program for monitoring the environment, was recently upgraded to the CFSP's security dimension. See Silvestri, 2003.

[47] Diehl and Goertz define rivalry as "a relationship between two states in which both use, with some regularity, military threats and force as well as one in which both sides formulate their foreign policy in military terms." According to these authors, all three pairs of states—under consideration in the present study—belong to a class of "enduring rivalries:" the U.S.- U.S.S.R. rivalry lasted for some 40 years 1946-1986, the U.S.-China rivalry for over 20, 1949-1972, and Russia-China rivalry originated in 1860s and "cannot be judged to have ended by 1992." See Paul F. Diehl and Gary Goertz, *War and Peace in International Rivalry* (Ann Arbor: University of Michigan Press, 2000), 4, 144-145. It can be argued that the Russia-China rivalry ended by the mid-1990s. The U.S.-China rivalry could be also assessed as being in latent state.

task of these chapters is to analyze the evolution of the overall security strategies and security interests in outer space of the United States, Russia, and China in the post-Cold War era. The objective is to assess whether the security interests of these three states have been converging or diverging in the post-Cold War era and to what degree commercial interests influenced the evolution of their security interests. This study is based on the analysis of the official promulgations of security strategies and space security interests of the three states under consideration: in case of the United States, the National Security Strategies of the United States of a number of years are used as the foundation, in case of Russia—the National Security Concepts and Military Doctrines, and in case of China—the White Papers on defense, arms control, and space activities issued by the State Council of the People's Republic of China. Even though these documents may not fully represent the state of security affairs of the three spacepowers under consideration, these documents were produced with the view of communicating information about state interests, objectives, and strategies, including with regard to outer space, to other states in the international system. For this reason, and to the extent that they were used to formulate and communicate state interests to other international actors, these documents are useful for this study. The parallel analysis of national strategies and security interests allows this study to evaluate the role of changing strategic environment and identify changing objectives of the three states. The issue of space weaponization serves in this analysis as a "litmus test" for assessing converging and non-converging security interests of the three states.

Chapter VIII focuses on bilateral security relations with a particular attention on the interplay of U.S.-Russia, U.S.-China, and Russia-China security relations, space security interests, and space commercial cooperation. Chapter IX examines the role of international intergovernmental organization in bridging differences in security interests between the three states and facilitating emergence of consensus on space security issues. This analysis speaks to the neoliberal-neorealist debate on the role of international institutions. The neorealist position in this debate has been that international institutions do not ameliorate the anarchy of the international system. Instead, they are seen as reflections of the distribution of power in the international system and, thus, have only marginal independent effect on state behavior and cannot "cause peace."[48] Neoliberals have posited that international institutions matter because they facilitate cooperation among states when they have mutual interests. International institutions promote cooperation by providing information, including information about the distribution of gains from cooperation; reducing transaction costs; making commitments more credible; creating issue linkages; establishing focal points for coordination; facilitating in general the operation of reciprocity; making cheating less appealing by making punishment more feasible and providing early warnings of cheatings for the victims; and lessening the implications of cheating.[49] Two important functional characteristics of formal international organizations—centralization and the degree of autonomy and independence— set these vehicles of international cooperation apart from other forms of international institutions. Neoliberal institutionalism emphasizes that IGOs provide stable negotiating fora that enhance iteration in interstate relations and reputational effects, make cooperative response to urgent developments easier, help to establish and

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[48] John J. Mearsheimer, "The False Promise of International Institutions," *International Security* 19 (winter 1994/95): 47.

[49] See, for example, Robert O. Keohane and Lisa L. Martin, "The Promise of Institutionalist Theory," *International Security* 20 (summer 1995): 42, 47.

reinforce norms, legitimize or de-legitimize certain activities, shape agenda of interstate discourse, often provide information and expertise on the issues at hand and influence political context in which interstate interactions take place, strengthen issue linkages and stimulate trade-offs, monitor state activities and adherence to their commitments, thereby stimulating compliance with existing agreements. Performing these and other functions, they are said to affect the nature of the international system by enabling states to achieve goals that they would not have achieved otherwise.[50] In doing so intergovernmental organizations are believed to make their important contribution in reducing the occurrence of interstate conflicts, including militarized conflicts.[51]

This study focuses on the Conference on Disarmament in Geneva. This intergovernmental body has been the single multilateral intergovernmental organization charged with consultations and negotiations on military matters, including outer space military matters. The United States, Russia and China have been members of this organization. For the post-Cold War period, the analysis of the interaction of the three spacepowers within this organization is based on the annual reports of the Conference on Disarmament to the General Assembly of the United Nations, meetings' verbatim records and official documents of the Conference. The debates within the Conference show that space security interests between the United States and Russia and the United States and China continued to diverge: no significant compromises were achieved in the respective positions—so much so that the conference was deadlocked for years because negotiations on all other issues were made dependent upon the negotiations on the issue of prevention

[50] Kenneth W. Abbott, Duncan Snidal, "Why States Act through International Organizations," *Journal of Conflict Resolution* 42 (February 1998): 3-32.

[51] Bruce Russett, John R. Oneal, and David R. Davis, "The Third Leg of the Kantian Tripod for Peace: International Organizations and Militarized Disputes," *International Organization* 52 (Summer 1998): 445-449.

of an arms race in outer space. The Sino-Russian relations, on the other hand, despite the fact that these two states were largely competitors on the emerging global space market, developed into a close partnership, with space security interests converging to such a degree that the two states jointly submitted a draft treaty, proposing an international ban on space weapons and on the use of force or a threat of force in outer space and against space objects.

Finally, the last chapter draws conclusions, bringing together all the findings in order to confirm or disconfirm the set of realist, liberal, and neoliberal hypotheses. This analysis shows that realist hypotheses, as they are formulated for the purposes of this inquiry, are better supported by the evidence provided in this study. Commercialization of space has not led to converging security interests between the United States, on the one hand, and Russia and China, on the other, while they commercialized their space activities and have developed extensive commercial cooperation. It also has not made it easier for major space powers to make compromises within the international organization where security interests have remained diverged between the United States, on the one hand, and Russia and China, on the other. It follows from these findings that expanding commercial cooperation is not enough to lead to converging interests on security matters and therefore is unlikely to lead to the emergence of new multilateral security regime, banning the use of force in outer space. Both Russia and China seem to feel increasingly the pressure to make the use of force costly not only via increasing their space commerce with the United States but also via building up their space capabilities in order to protect themselves from possible coercion. A security regime may eventually emerge to supplement balancing mechanism along the lines suggested by realists.

Going back to the theoretical debate on interdependence, conflict and cooperation, it should be noted, that these results do not disprove the liberal propositions altogether. The space arms control issues are among the most challenging of all international cooperation issues, and we cannot exclude the possibility that convergence of security interests between the three major space powers may still emerge later, despite the negative trend that we observe in the post Cold-War transition period. In the meantime, realism that was put on the defensive by the academic advances of the recent liberal studies on the issues of economic interdependence and international conflict and cooperation, still provides a useful framework for explaining interstate relations in the realm of outer space. Based on the realist and liberal perspectives and insights gained from this analysis, Chapter X presents a few possible scenarios of future developments in outer space.

PART I

THE ANARCHY OF THE INTERNATIONAL SYSTEM AND SECURITY COOPERATION

> I have never worked to improve weaponry; this is contrary to my spirit. While working on reaction devices, my objectives were peaceful and lofty: to conquer the Cosmic Space for the good of humanity."
>
> Konstantin E. Tsiolkovskii
> 1905

> In the study of politics, perhaps nothing seems so dismal as writing about international cooperation. Indeed, when I told a friend and former teacher of mine that I was writing a book on this subject, she replied that it would have to be a short book.
>
> Robert O. Keohane
> 1984

Most inquiries on international cooperation begin with the acknowledgement that the international system is anarchic—that is, there is no central authority over states and they must take care of their own security in order to survive.[1] Anarchy represents an analytical starting point for the attempts to explain why international cooperation, particularly in the field of security, is difficult among sovereign states and how it leads to varying outcomes of interstate interactions: to arms races and arms control, to war and peace.

In the anarchic international system, states possess offensive capabilities that allow them not only to protect themselves but also to launch an aggression against each other. Under these conditions, states can never be sure about the intentions of other states. Moreover, states are believed to look for opportunities to take advantage of each other in their strife for power and have no reasons to trust each other. Their prime goal is

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1 See, for example, Kenneth A. Oye ed., *Cooperation Under Anarchy* (Princeton: Princeton University Press, 1986).

survival and, in order to provide for it, states aim to maximize their relative power positions in the international system. Thus, relations between states under anarchy are often seen as highly competitive and allowing for little room for cooperation:[2] states are in a "state of relentless security competition, with the possibility of war always in the background."[3] This gloomy picture of the perpetual strife for power is contrasted by the vision of the progressive evolution of the international system towards greater peace, prosperity and justice achieved via growing economic interdependence, democratic governance, and international institutions.

From the standpoint of international relations, outer space is a unique medium: it was added to the physical reach of human civilization only very recently, no offensive capabilities have been yet deployed in it, and its commercialization has been unfolding before our eyes. Explaining emerging patterns in economic and security relations in outer space represents a particular challenge and, at the same time, a great opportunity to increase our understanding of the universe of international relations at the beginning of the 21st century.

Part I of this dissertation serves the purpose of laying out the theoretical and historical ground for the analysis of the role of the commercialization of outer space in the emerging security relations in this increasingly important medium. It consists of two chapters: Chapter II deals with the theoretical debate on economic interdependence and international conflict and cooperation, and Chapter III outlines the features and evolution of space security regime during the Cold War.

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2 See, for example, Kenneth Waltz, *Theory of International Politics* (Reading: Addison-Wesley Publishing Company, 1979), 106, and Mearsheimer, 1994/95, 9. See also Oye, ed., *Cooperation Under Anarchy*, 1986, 227. See also Robert Jervis, "From Balance to Concert: A Study of International Security Cooperation" in Oye, ed., *Cooperation Under Anarchy*, 1986, 58.

3 Mearsheimer, 1994/95, 9.

The tasks of Chapter II are, first, to place the discussion of outer space issues within one of the main international relations debates by outlining the relevant theoretical framework and trying to identify where the debate has led the study of the international relations so far, and second, to derive testable propositions for the present study. It is argued that the realist-liberal debate on economic interdependence, democracy and international institutions and conflict and cooperation provides an appropriate analytical platform for examining the relationship between space commercialization and interstate security relations in outer space. Given the important recent shift towards closer examination of the mechanism of liberal pacification, the present study tries to make its contribution by directing the focus of attention to the evolution of states' interests as they are being affected by the commercialization of outer space. It argues that, in the realm of outer space security, in order for liberal propositions to hold, economic interdependence must affect either the security interests of the main space powers—the United States, Russia and China—to propel them towards greater convergence so as to reduce incentives for competition or it must lead to international institutions that effectively defuse conflictual interests. Looking at the evolution of security interests, their bilateral relations, and interactions within international institutions in parallel to space commercialization allows us to gain a better understanding of the changing paradigm of outer space in the 21st century.

In order to provide a starting point for the analysis of the post-Cold War relationship between commerce and security in outer space, Chapter III fulfills a twofold task: it defines space security and outlines the necessary conditions for the formation of a security regime, and it analyzes the features and the state of the Cold War security regime in outer space at the end of the Cold War. Chapter III concludes by stating that the space security regime that was established during the Cold War and that restricted the use of force in outer space was significantly eroded by the later part of the Cold War. Despite this erosion, decades of peaceful uses of outer space by the Cold War superpowers for their security needs led to the emergence of a tacit norm of non-use of force in outer space, which endured beyond the historic epoch that gave rise to it.

CHAPTER II

COMMERCE AND SECURITY: INTERNATIONAL RELATIONS THEORY AND OUTER SPACE

> The proposition that gains from commercial transactions would overcome the problem inherent in the security dilemma and make war too expensive was believed in 1914. Hopes that a system of international law and organization could provide collective security to replace the need for self-help inherent in the security dilemma were disappointed by 1939. Nonetheless, the sharp opposition between realist and liberal theories is overstated.
>
> Robert O. Keohane and Joseph S. Nye
> 1977

In the closing decade of the 20th century, outer space has emerged as an increasingly vital medium—important not only strategically but also economically. With respect to the study of international relations, the commercialization of outer space has transformed this realm from being almost exclusively a subject of strategic studies into a realm yielding itself to a broader discussion and analysis. The purpose of this chapter is, firstly, to try to place the discussion of outer space issues within one of the main international relations debates by outlining the relevant theoretical framework and, secondly, to derive testable propositions for the present study. It is maintained that the realist-liberal debate on economic interdependence, democracy and international institutions and conflict and cooperation provides an appropriate analytical platform to the analysis of space commercialization and interstate security relations in outer space. This chapter shows that the progress made by the recent studies within that debate has led to an important shift towards greater attention to the mechanism of liberal pacification. This study argues that, in the realm of outer space security, in order for liberal propositions to hold, economic interdependence must affect either the security interests of the main space powers—the United States, Russia and China—to propel them towards greater convergence so as to reduce incentives for security competition or lead to international institutions that effectively defuse conflictual interests. Looking at the evolution of security interests and interaction of states within international institutions in parallel to space commercialization allows us to gain useful insights into both security relations in outer space and a possible link connecting economic realm and the realm of security relations.

The relationship between economic interdependence, democracy, international institutions and war has been one of the central theoretical and empirical questions in international relations discourse. The realist-liberal debate on this central issue goes back to the times of Adam Smith and Immanuel Kant when the ideas of liberal peace and "perpetual peace" entered the intellectual scene.[1] It has received a renewed impetus in the 1980s, and particularly since the end of the Cold War[2] in the context of the political democratization and economic liberalization in the former Socialist bloc, advancing integration in Western Europe, and deepening globalization around the world.[3] The main

[1] Adam Smith laid the foundation for the liberal concept of free trade and its influence on interstate relations in his *The Wealth of Nations* published in 1776. Immanuel Kant's *Perpetual Peace* was published in 1795.

[2] See, for example, Copeland, "Economic Interdependence and War," 1996, 5.

[3] Liberalization is defined in this study as an introduction of competition into monopolized markets. The term should be distinguished from deregulation, a related term that means a reduction of government-imposed constraints on the behavior of economic actors. Globalization is defined as a process of transformation of human affairs—political, economic as well as social—resulting from the increasing flows of trade, investment, and technologies across national borders. The outcome of this process is increasingly growing links between nations, economies, and societies. "Economic globalization" refers to the increasing integrative processes among national economies that lead to the emergence of a global economic system. See, for example, Robert Gilpin, *The Challenges of Global Capitalism: The World Economy in the 21st Century* (Princeton: Princeton University Press, 2000), 7, 19. In this understanding the term "economic globalization" overlaps with the term "economic interdependence." See Barbieri and Schneider, 1999, 387. The term "globalization" came into popular use in the second half of the 1980s in the context of increasing foreign direct investment (FDI) by multinational enterprises. It emphasizes

question at the heart of this debate in the post-Cold War era has been whether expending international economic exchanges, political democratization, and proliferating intergovernmental institutions bring about more cooperative international relations and a more peaceful world, or a world that is fraught with conflict and war.

Recent international relations research inspired by liberal ideas, and particularly quantitative analyses within the so-called "democratic peace" and "liberal peace" research agenda of the past two decades or so, has put realism—the oldest, most prominent theoretical paradigm in international relations—on the defensive.[4] This chapter argues that even though realism has suffered a great blow in its failure to predict the peaceful end of the Cold War,[5] it still provides a useful analytical framework for analyzing state behavior in the post-Cold War world order and propositions that are particularly relevant to the emerging interstate security relations in the realm of outer space.

Although many international relations schools of thought have made their contribution to the debate, the focus of this study is on liberalism and realism as the two

integrative outcomes and forces at the level of the international system. See Gilpin, *The Challenges of Global Capitalism*, 2000, 22. According to Baldwin's conceptual analysis, the concept of "interdependence" can be traced back to the time of Nicollo Machiavelli's *The Prince*. The term "interdependence" emphasizes the consequences of economic interactions and links that emerge from such interactions for relations between states. See David A. Baldwin, "Interdependence and Power: A Conceptual Analysis," *International Organization* 34 (autumn 1980): 481.

4 Modern realism emerged after World War I and became a dominant school of thought after World War II. See, for example William C. Wohlforth, "Realism and the End of the Cold War," *International Security* 19 (winter 1994/95): 91.

5 Charles W. Kegley, Jr., "The Neoidealist Moment in International Studies? Realist Myths and the New International Relations," *International Studies Quarterly* 37 (June 1993): 131-147; Richard N. Lebow, "The Long Peace, the End of the Cold War, and the Failure of Realism," *International Organization* 48 (Spring 1994): 249-277; Friedrich Kratochwil, "The Embarrassment of Change: Neo-Realism as the Science of *Realpolitik* without Politics," *Review of International Studies* 19 (January 1993): 63-80; John L. Gaddis, "International Relations Theory and the End of the Cold War," *International Security* 17 (winter 1992/93): 5-58. See also responses, for example, William C. Wohlforth, 1994/95, 91-129; Ethan B. Kapstein, "Is Realism Dead? The Domestic Sources of International Politics," *International Organization* 49 (autumn 1995): 751-774: Michael Mastanduno, "Preserving the Unipolar Moment: Realist Theories and U.S. Grand Strategy after the End of the Cold War," *International Security* 21 (spring 1997): 49-88; Robert Jervis, "Realism in the Study of World Politics," *International Organization* 52 (autumn 1998): 971-991.

main protagonists in the debate on economic interdependence and cooperation/conflict. In their foundations, the two schools are based on two different visions of the international relations and have presented two different analytical constructs linking interdependence, democracy, and international institutions with the outcomes of interstate relations in the security realm. Keeping with Waltz's recommendations on theory testing, this chapter first states the main liberal and realist propositions, evaluates the current status of the debate, and then infers the hypotheses for the present analysis.[6]

REALIST AND LIBERAL PERSPECTIVES: ANARCHY, ECONOMIC INTERDEPENDENCE AND INTERNATIONAL COOPERATION

The commercialization of outer space can be understood as an expanding use of outer space by commercial actors for activities that are launched with the view of participation in economic exchanges determined increasingly by forces of supply and demand. The result of the process of commercialization is a space market, an institution of exchange in space services, information obtained from space, space technology and equipment, and products manufactured in outer space that functions increasingly on the basis of the rules of supply and demand. With the end of the Cold War, the commercialization of outer space significantly accelerated due to the dramatically falling government space budgets and the deregulation and liberalization of space activities at the national level. In the absence of bipolar confrontation, deregulation and liberalization contributed to the process of internationalization of commercial space activities and emergence of a global space market.

[6] See Waltz, *Theory of International Politics*, 1979, 13.

The commercialization of outer space can be considered as one of the most important developments of our time: it progressively incorporates this vast global commons into the economic mainstream, turning its treasures into economic benefits on a growing scale across the globe. If it were not for the commercialization of outer space, this medium would still be predominantly a province of the military and would fall mostly under the purview of strategic studies.[7] Instead, the commercialization of outer space has transformed the utilization of this medium and calls for an approach to outer space issues that would allow us to incorporate new developments and analyze the interaction of economic and security aspects of space uses.

The liberal school of thought places a particular emphasis on economic interactions between international actors and puts forth a number of propositions relating to economic and security realms that link expanding international economic exchanges with more cooperative and peaceful interstate relations. In the past two decades or so liberal scholars have made considerable strides in analyzing this relationship and providing evidence supporting their position. Numerous quantitative studies conducted recently lent strong support for the liberal proposition that states who trade more are less likely to be engaged in militarized disputes.

Realists disagree with the liberal propositions and argue that the economic interdependence that arises from economic exchanges leads to greater conflict between states,[8] and greater cooperation between states in economic realm follows from common

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[7] See, for example, Commission to Assess United States National Security Space Management and Organization, *Report*, Chapter 2 "Space: Today and the Future," 2001.

[8] Realism states three key assumptions: (1) that international system is comprised of states, (2) that states are unitary rational actors, and (3) that the system is anarchic—that is, there is no central authority over states and they must take care of their own security in order to survive. Among different strands of Realism, core assumptions vary and may include other propositions besides those identified above that further specify *how* states engage in self-help. For example, Stephen Brooks identifies two competing

security interests rather than vice versa.[9] Security cooperation is rare between states even when they do share common interests because of anarchy of the international system—a system without a supra-state authority that would settle disputes between states and enforce peace.[10] Relations between states under anarchy are seen as highly competitive and allowing for a little room for cooperation:[11] they are seen as a "state of relentless

branches of realism: structural realism or neorealism, and postclassical realism that continues traditions of the classical realism with some modifications. See Stephen G. Brooks, "Dueling Realism," *International Organization* 51 (summer 1997): 446-447. Michael Doyle identifies three distinct groupings within realism—what he calls fundamental realism, constitutional realism, and structural realism—which all were derived from complex, or Thucydidesian, realism. See Michael Doyle, *Ways of War and Peace*, 1997, 45-48. Differences in the assumptions lead to differing outlooks on the prospects for peace and war, cooperation and conflict as well as on how states can best pursue their interests. Structural realism, or neorealism, also adds a fourth assumption that states are functionally similar units which differ in capabilities but not in the ends they pursue. See Waltz, *Theory of International Politics*, 1979, 96-97. Economic interdependence arising from states' participation in the international division of labor, is believed to have negative consequences for their security under the conditions of anarchy and therefore is undesirable. Realists point out to two main reasons: first, economic interdependence undermines the security of states by making them dependent on other states for the economic goods and services; dependence, in its turn, creates vulnerability or lack of power and incentives to expand state control to ameliorate it. It also creates potential sources of conflict between the states borne by competition between commercial actors. Interdependence is believed to create incentives for states to secure supplies on which they depend on other states. This may lead to conquest. Moreover, interdependence creates hostility and fear further contributing to the possibility of a conflict. See Waltz, *Theory of International Politics*, 1979, 174.

[9] According to realism, in the self-help system cooperation is limited for three main reasons. First, the absence of central authority over states means there is no one to enforce agreements, settle disputes, and prevent force from being used. Under these conditions cheating is a formidable problem. Second, states have to worry more about providing the means of protecting themselves against others than about promoting their welfare. It should be noted, however, that although all realists agree that military security is the state's primary responsibility, opinions diverge on the degree to which states prefer immediate military preparedness to economic welfare gains. See Brooks, 1997, 446-447. And third, as argued by neorealists, states, being concerned with their security above anything else, avoid cooperative endeavors that may lead to their dependence on other states, or interdependence. See Waltz, *Theory of International Politics*, 1979, 106.

[10] See Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (January 1978): 167-214.

[11] In the anarchic international system, states possess offensive capabilities that allow them not only to protect themselves but also to launch an aggression against each other. Under these conditions, states can never be sure about the intentions of other states. Moreover, according to realism, states look for opportunities to take advantage of each other in their quest for power and have no reasons to trust each other. Their prime goal is survival and, in order to provide for it, states aim to maximize their relative power positions in the international system. Thus, relations between states under anarchy are seen as highly competitive and allowing for little room for cooperation. See, for example, Waltz, *Theory of International Politics*, 1979, 106, and Mearsheimer, 1994/95, 9. See also Robert Jervis, "From Balance to Concert," and Robert Axelrod and Robert O. Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," in Oye, ed., *Cooperation Under Anarchy*, 1986, 58, 227.

security competition, with the possibility of war always in the background."[12] Realism thus presents a rather pessimistic picture of the world and "it holds little promise of making that world more benign."[13] State behavior is determined by state interests, which in their turn are principally shaped by the distribution of power in the system.

Adherents to the liberal school do not consider the international system to be in a homogenous "state of war," even though they tend to agree with the realists that the international system is anarchic.[14] Moreover, in contrast to realists who believe that the fundamental nature of interstate interactions does not change over time,[15] liberals believe that international relations can gradually evolve, progressively promoting greater human freedom by establishing conditions of peace, prosperity, and justice.[16] This difference in the outlook comes from the assumptions liberals make about states—the important, but not the only, collective actors at the international level[17]—and about relations between the states.[18] According to liberals, states are not all alike: they differ in the way they relate to domestic and transnational societies in which they are embedded. Liberalism draws a distinction between states that are liberal and non-liberal, democratic and

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[12] Mearsheimer, 1994/95, 9.

[13] Ibid., 48.

[14] Zacher and Matthew point out that followers of the liberal school have not been satisfied with the conception of the international system as anarchic, arguing that the network of international institutions has become an integral part of the international system. See Mark W. Zacher and Richard A. Matthew, "Liberal International Theory: Common Threads, Divergent Strands," in Charles W. Kegley, ed., *Controversies in International Relations Theory: Realism and the Neoliberal Challenge* (New York: St. Martin's Press, 1995), 119.

[15] Robert Gilpin, *War and Change in World Politics*, 11th ed, (Cambridge: Cambridge University Press, 1995), 7.

[16] Zacher and Matthew, in Charles W. Kegley, ed., *Controversies in International Relations Theory*, 1995, 109.

[17] It should be noted that in contrast to realism, liberalism considers individuals the primary international actors and states the most important collective actors at the international level. See, for example, Andrew Moravcsik, "Taking Preferences Seriously: A Liberal Theory of International Politics," *International Organization* 51 (autumn 1997): 516.

[18] Within the Liberal school of thought, there are three major branches: ideational liberalism, commercial liberalism, and republican liberalism. Each branch focuses on different aspects of the relationship between the state and domestic structures and formulates its assumptions. See Moravcsik, 1997, 515.

autocratic. According to liberalism, this is an important distinction because the relationship between the state and its domestic and transnational societies critically shapes state behavior on the international arena.[19] Liberals maintain that state preferences and aims are multiple and they may change over time. Liberal states provide beyond the narrowly defined security: they strive to protect and promote individual rights and welfare of their citizens.[20]

Based on these assumptions liberalism does not consider the inter-state relations as a pure zero-sum game where one state's gains are other state's losses. There is much more room for mutual benefits and cooperation between states, than realism portrays it. Moreover, liberalism perceives international cooperation as central to the realization of greater human freedom: it is instrumental in maximizing the benefits and minimizing possible negative outcomes of international interactions—that is, in providing greater peace, welfare, and justice.

Proponents of liberalism believe that international relations evolve and have been undergoing a process of modernization[21] brought about by the scientific revolution and the intellectual revolution of liberalism.[22] From this point of view, the late 17th century represents a historic benchmark when the process of modernization began transforming international relations by laying the ground for significant improvements in human morality and welfare. The growth and spread of liberal democracy or republican government, international economic interdependence, and international law and

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[19] Ibid., 516.

[20] Michael Doyle, *Ways of War and Peace*, 1997, 211.

[21] This concept of modernization is a not the same concept as developed by the Modernization school of International Political Economy in the 1960s. See Zacher and Matthew, in Charles W. Kegley, ed., *Controversies in International Relations Theory*, 1995, 110.

[22] There are suggestions that cognitive progress and international sociological integration could be added to this list. See Zacher and Matthew, in Charles W. Kegley, ed., *Controversies in International Relations Theory,*1995, 110.

institutions are seen as the key elements of this modernization. This process, however, is seen as gradual and uneven. The engine at the heart of this modernization process is believed to be a vital private sector largely free of governmental interventions.[23]

As a result of the process of modernization, according to liberals, a group of liberal states has emerged within which international interactions are more extensive, more cooperative, and peaceful than between non-liberal states or between liberal and non-liberal states.[24] The relations between these liberal states are characterized by what Kant called a "perpetual peace." In order to explain the mechanism of liberal pacification, scholars adhering to liberal paradigm invoke various causal constructs with the emphasis on different factors.[25] Republican liberals stress the importance of republican, or representative government. According to this explanation, democratic states, where citizens have their say in decision making and bear the costs of war, generally tend to avoid war and pursue more accommodating policies, particularly towards other liberal democratic states with whom they share democratic values.[26] Among liberal states international cooperation and peace are seen as a simple function of

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[23] With respect to the role of the government two variants of liberalism are distinguished: "conservative" or laissez-faire liberalism and "liberal" liberalism. The latter expresses considerably less confidence in the progressive potential of the private sector and envisions a larger role for the government. See Michael W. Doyle, "Kant, Liberal Legacies, and Foreign Affairs, Part I," *Philosophy and Public Affairs* 12 (summer 1983): 207-208.

[24] Ibid., 213-215.

[25] McMillan identifies four liberal approaches in explaining liberal pacification: political, economic, sociological, and sophisticated liberalism. See McMillan, 1997, 35. Zacher's and Matthew's typology of liberalism contains five different approaches: republican liberalism; interdependence liberalism with two branches – commercial liberalism and military liberalism; cognitive liberalism; sociological liberalism; and institutional liberalism. See Zacher and Matthew, in Charles W. Kegley, ed., *Controversies in International Relations Theory*, 1995, 121.

[26] This idea lies in the foundation of the "democratic peace" literature. Within "democratic peace" research scholars employ two different explanatory models: the structural model and the normative model. The structural model asserts that complex political mobilization processes within democratic states impose institutional constraints on the leaders, which make violent conflict unfeasible. The normative model states that democracies do not use violence against each other because norms of compromise and cooperation prevent their conflicts of interests from escalation into violence. See for example Zeev Maoz and Bruce Russett, "Normative and Structural Causes of Democratic Peace, 1946-1986," *American Political Science Review* 87 (September 1993): 624-638.

converging state interests.[27] Neoliberals, recognizing mutual interests as a necessary but insufficient condition for successful international cooperation, emphasize the role of international institutions—rules and norms that govern international interactions.[28]

Although all strands of liberalism acknowledge the role of economic interdependence arising from international exchanges in bringing about more peaceful relations between the states,[29] proponents of economic, or commercial liberalism underscore economic factors linking free international trade and investment to more cooperative and peaceful relations between the states. According to liberal economic theory, serving as a foundation of commercial liberalism, international trade makes all participating countries better off because of more efficient allocation of resources and higher productivity achieved by countries due to specialization in sectors where they have comparative advantage. International trade is seen as a positive-sum game: growing international trade leads to the growing mutual benefits of the trading nations. These benefits of trade stimulate further participation in international division of labor. With the growth of international trade and increase of transnational economic interdependence, mutual economic benefits of peaceful commercial relations are believed to grow larger in comparison to the benefits of military competition and war.[30] This is in part due to the transformation of world economy brought about by the advancements of transportation, communication, and internationalization of production and investment and more recently

[27] Andreas Hasenclever, Peter Mayer, Volker Ritterger, *Theories of International Regimes* (Cambridge: Cambridge University Press, 1997), 57.
[28] Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984).
[29] Michael Doyle, "Kant, Part I," 1983, 225.
[30] Richard Rosecrance, *The Rise of the Trading State: Commerce and Conquest in the Modern World* (New York: Basic Books, 1986); and John J. Weltman, "On the Obsolescence of War: An Essay in Policy and Theory," *International Studies Quarterly* 18 (December 1974): 395-416. Commercial liberals put forth the following hypothesis: "the more diversified and complex the existing transnational commercial ties and production structures, the less cost-effective coercion is likely to be." See Moravcsik, 1997, 530.

by information technology revolution;[31] and in part due to the prohibitively high costs of modern warfare, particularly among the developed countries.[32] Thus, commercial liberalism, in order to explain the phenomenon of liberal pacification relies on the logic of cost-benefit calculations. As rational actors, states compare expected costs and benefits of war with the costs and benefits of the current *status quo,* which are determined to a large degree by the benefits from international economic exchange.

Rosecrance presents a liberal argument based on the cost-benefit analysis characteristic of commercial liberalism. He asserts that in the post-1945 period peaceful trading relations enjoy much greater efficiency in comparison to the strategy of military competition. Through industrial-technological development and international trade, states achieve their national goals and transform their positions in the international politics, while all participants benefit from enhanced trade that economic cooperation makes possible. According to Rosecrance, as technological progress and trade propel interdependence, war becomes too costly for states to pursue their national interests relative to the trading strategy. He does not, however, expect the emergence of a security regime between "trading" states within the "political-military world," in which the use of force is one of the legitimate tools of interstate politics. Instead, he believes that the system of international relations will switch into a different mode: it will become a "trading world," in which the use of force is neither cost effective nor legitimate.[33]

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[31] The shift toward knowledge-based economy in the developed countries and increased mobility of wealth creation have been reducing the potential benefits of a war of conquest. See Stephen Van Evera, "Primed for Peace: Europe after the Cold War," *International Security* 15 (winter 1990/91): 14-15.

[32] The emergence of nuclear weapons vastly raised the costs of war and bolstered peace by making states to behave more cautiously. Nuclear weapons have made a war of conquest among the great powers virtually impossible. On the effects of nuclear revolution see, for example, John L. Gaddis, "The Long Peace: Elements of Stability in the Postwar International System," *International Security* 10 (Spring 1986): 120-123; and Van Evera, 1990/91, 12-13.

[33] Rosecrance, *The Rise of the Trading State*, 1985, 60.

Realism largely rejects the idea of the evolution of the international system for its fundamental nature remains anarchic: "International relations continue to be a recurring struggle for wealth and power among independent actors in a state of anarchy."[34] According to realism, economic interdependence is unable to ameliorate anarchy: "Increased interdependence certainly leads to the increased need for the management of collective affairs, but it does not produce a manager capable of doing it."[35] This is so as long as the world remains to be politically fragmented into sovereign units. Conditions of anarchy cannot be transcended except through a "universal imperium."[36] Gilpin goes further: "...[T]he growth of economic interdependence and the prospect of mutual gain have not eliminated competition and mutual distrust among nations. On the contrary, with increasing interdependence, nations have become more apprehensive over the loss of autonomy and such matters as access to foreign markets, security for sources of raw materials, and the associated costs of interdependence."[37] Changes in the international system are determined by the changing distribution of power in the system and war remains as an instrument of change.

Neorealists distinguish between interdependence as a unit-level and system-level characteristic.[38] At the systemic level, the degree of interdependence is measured by the level of interdependence between the great powers in the system. They argue that the smaller the number of great powers in the system, the lower the level of interdependence,

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[34] Gilpin, *War and Change in World Politics*, 1995, 7.
[35] Waltz, *Theory of International Politics*, 1979, 210.
[36] Gilpin, *War and Change in World Politics*, 1995, 226.
[37] Ibid., 219-220.
[38] Interdependence and its consequences at the domestic level are considered to be different from interdependence and its consequences at the international level. The former is more often called "integration." The difference between the two follows from the sharp distinction that realists make between the domestic, or hierarchically organized realm, and international, or anarchical and unorganized realm. See Waltz, *Theory of International Politics*, 1979, 106.

the more stable the system.[39] "With zero interdependence—Waltz maintains—neither conflict nor war is possible."[40]

Until recently, there had been rather few discussions of unipolarity and its implications with respect to economic interdependence and conflict and cooperation. Unipolarity was believed to be a rare and fairly transitory phenomenon in international politics.[41] Filling this gap is currently an important challenge facing international relations scholars, as well as policy makers. This is because in a unipolar system interdependence should be the highest among possible configurations, and therefore it is not only an academic issue whether realists or liberals adequately explain the nature of the relationship between economic interdependence and international conflict and cooperation. If realists are right than unipolarity should bear the greatest potential for conflict, whereas if liberals are right then uniploratiy should be the most peaceful and cooperative of all international systems. In the context of profound changes that accompanied the post-Cold War transformation from bipolarity to unipolarity many scholars have come to conclude that "... world politics are experiencing a seismic shift, and that paradigm other than realism are needed to understand contemporary international relations" even though they concede that anarchy, state power and interests, and positional competition still remain relevant to interstate relations.[42]

Some scholars who adhere to the realist perspective advance an argument that economic interdependence has no systematic effect on war and peace, as these issues are

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[39] Ibid., 145, 172, 176-177, 209.

[40] Kenneth N. Waltz, "Structural Realism After the Cold War," *International Security* 25 (summer 2000): 15.

[41] Ethan B. Kapstein and Michael Mustanduno, eds., *Unipolar Politics: Realism and State Strategies After the Cold War* (New York: Columbia University Press, 1999).

[42] Michael Mastanduno and Ethan B. Kapstein, "Realism and State Strategies After the Cold War", in Kapstein and Mastanduno, *Unipolar Politics*, 1999, 22-23.

determined based on political and military-strategic considerations. Buzan, for example, maintains that the idea of linking economic structure to international security leads to overestimation of the importance of economic factors for the matters of war and peace and that non-economic factors, such as military deterrence and the bipolar structure of the international system in the post-World War II period provide much more persuasive explanations for phenomenon of the absence of superpower war and the decline in the use of force among the secondary states during this period.[43] In his later work, Waltz concurs that among the forces shaping international politics "interdependence is a weak one."[44]

As a rationalist school of thought, realism, similar to commercial liberalism, engages cost-benefit analysis as an analytical concept when it comes to explaining variation in occurrence of war within a particular distribution of power in the international system. According to realist offense-defense theory the occurrence of war varies with the changes in the relative efficacy of offense vis-à-vis defense: when offense is more cost-effective than defense states are more likely to be attacked than when defense is more effective than offense.[45]

The cost-benefit calculations that states are assumed to make in order to make a decision to pursue peace or war is a concept that further helps to explain the difference between realist and liberal approaches in this debate. For both schools of thought, states, being rational actors, must calculate costs and benefits of going to war versus costs and benefits of *status quo*: "...[A] decision to expand, make demands, and fight must clear

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[43] Barry Buzan, "Economic Structure and International Security: The Limits of the Liberal Case," *International Organization* 38 (autumn 1984): 606-607.
[44] Waltz, "Structural Realism," 2000, 14.
[45] Adams recently made a contribution to the offense-defense theory by identifying "deterrence dominance" as a third distinct set of conditions that affects occurrence of war. See Karen R. Adams, "Attack or Conquer? International Anarchy and the Offense-Defense-Deterrence Balance," *International Security* 28 (winter 2003/2004): 45-83.

the threshold of costs and benefits."[46] These cost-benefit calculations involve not just opportunity costs of war but total costs of war, which consist of expected cost of fighting a war and occupation and foregone gains from peaceful international economic exchange. The foregone gains from trade represent opportunity costs of war. Liberals suggest that economic interdependence increases the opportunity costs of going to war and makes the use of force a relatively inefficient means of extracting resources from a territory, shifting the balance in cost-benefit analysis towards a peaceful trading strategy. This assumption would hold only if costs of fighting a war and costs of occupation are either constant or increase over time. The latter, however, are subject to change by technological progress that may increase or decrease these costs, dramatically changing the cost-benefit calculations.[47] Thus, while realists look at the costs of fighting war and the costs of occupation as the main determinant of interstate interactions with respect to war and peace, commercial liberals look at the other component—the opportunity costs of war—as the one of the most influencial factors shaping the outcomes in the international system.

Besides the changing balance in the cost-benefit calculations of war-versus-trade options towards a peaceful trading strategy, sophisticated liberalism suggests that over a long-term period a progressive de-legitimization of the use of force takes place as more countries become liberal and democratic. Talking about the multicausal liberalism, Moravcsik points out that it was Kant who already in his time considered balance of

46 Russett and Oneal, *Triangulating Peace*, 2001, 58.

47 Technological progress affects offense-defense balance and therefore affects prospects for war. See Adams, 2003/04, 45-83. According to Liberman's study, coercive and repressive regimes can make conquest cost-effective. Moreover, modernization increases the profitability of conquest. See Peter Liberman, "The Spoils of Conquest," *International Security* 18 (fall 1993): 125-153. Powell's study rigorously demonstrates that technological changes can revolutionize cost-benefit calculations by making war relatively more or less costly. See Robert Powell, "Absolute and Relative Gains in International Relations Theory," *American Political Science Review* 85 (December 1991): 1313.

power as an "unstable, second-best mechanism" suitable only among non-republican states that was useful to the extent that it served the purpose of limiting rivalry among states and permitting republican government, commerce, and international law to emerge and gradually reduce the relevance of balancing and war as an instruments of international politics.[48]

Doyle argues that freedom from foreign intervention among the liberal democracies is one of the basic postulates of liberal international theory that is derived from the right for political independence of liberal democratic states. Together with international commercial activities, mutual respect for states' rights for political independence form a cooperative foundation among liberal democracies, relying on which a zone of peace, or a pacific union, emerges where "threats of war also have been regarded as illegitimate."[49] Kant's pacific union, as Doyle suggests, could be envisioned as collective security arrangement among the liberal democratic states. This pacific union would rest on economic interdependence, domestic democratic governance, and international law and institutions—what Russett, Oneal, and Davis have labeled the Kantian tripod.[50] Although each element of the mechanism of liberal pacification has its own independent contribution to liberal peace, Doyle, following Kant's lead, argues that it is only in combination of all three factors—democracy, economic interdependence, and international law—working together that lasting peace can be established among liberal states.[51]

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48 Moravcsik, 1997, 546.
49 Michael Doyle, "Kant," 1983, 213.
50 Russett, Oneal, and Davis, 1998, 441.
51 Michael Doyle, "Kant," 1983, 232.

Clarifying further the relationship between economic interdependence and more cooperative interstate relations in security realm, Doyle maintains, as he analyzes Kant's concept of "perpetual peace":

> Liberal economic theory holds that ... cosmopolitan ties derive from a cooperative international division of labor and free trade according the comparative advantage. Each economy is said to be better off than it would have been under autarky; each thus acquires an incentive to avoid policies that would lead the other to break these economic ties. Since keeping open markets rests upon the assumption that the next set of transactions will also be determined by prices rather than coercion, a sense of mutual security is vital to avoid security-motivated searches for economic autarky. Thus avoiding a challenge to another liberal state's security or even enhancing each other's security by means of alliance naturally follows economic interdependence.[52]

Thus, Doyle, while concurring with realist assertions that some security conditions conducive to the conduct of international economic interactions are necessary for these activities to take place, argues that mutually beneficial security arrangements, including alliances, follow "naturally" from economic interdependence. The formation of alliances among liberal democracies, however, cannot be said to cause or explain the phenomenon of liberal pacification.[53] The formation of alliances is a mechanism, in fact, more in line with the realist balance of power. What sets apart liberal understanding of alliances and their role is the causal link whereby alliances are connected to economic interdependence. Realists do not generally recognize the causal logic going from international economic exchanges to security cooperation: for them, "trade follows the flag." For liberals, this casual relationship is essential. An important distinction within the liberal school of thought exists between a liberal and neoliberal positions: while liberal perspective assumes that greater economic interdependence is likely to lead to

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[52] Ibid., 231.

[53] Liberal pacification cannot be also explained exclusively by the presence of a liberal hegemon in the international system, though its role in it is important. Neither can it be explained by the absence of deep conflicts of interests among liberal states. See Ibid., 223-224.

cooperation directly via the converging structure of domestic preferences, from a neo-liberal perspective, international institutions have an important role to play in bringing about more peaceful and cooperative inter-state relations.

Thus, the following three realist propositions regarding the relationship between economic interstate intercourse and outcome of interstate relations in the security realm are most often used for empirical tests in the contemporary realist-liberal debate: first, economic interdependence leads to greater conflict between states;[54] second, economic interdependence either does not matter or has a marginal influence over the issues such as war and peace among the states—these matters are decided on the basis of political and military-strategic calculations; and third, it is common security interests that lead to economic cooperation and interdependence;[55] and two propositions derived from the

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[54] With respect to the impact of trade on conflict, Barbieri's empirical analysis based on a disaggregated interdependence provides evidence for the opposite conclusion: states with high economic interdependence have higher levels of conflict. She measures overall economic interdependence at the dyadic level, as well as two different dimensions of interdependence—salience and symmetry. The results for the period 1870-1938 under the study show that rather than inhibit conflict, extensive economic interdependence increases the likelihood that dyads will engage in militarized interstate disputes, and seems to have little influence on the incidence of war. Mutually dependent trading relations are found to be somewhat more peaceful, but even in those cases the relationship between economic interdependence and conflict appears to be curvilinear, with low to moderate levels of interdependence reducing the likelihood of dyadic dispute and with high levels of interdependence increasing the probability of militarized disputes. Extreme interdependence, whether symmetrical or asymmetrical, is found to have the highest potential for increasing the likelihood of interstate conflict. In this study, Barbieri also finds no evidence from the pre-World War II period that alliance commitment has a statistically significant effect on the probability that dyads engage in conflict with each other. See Barbieri, 1996, 41.

[55] Pollins, for example, argues that, all else being equal, importer will choose to buy goods from a friendly nation. He builds a model of bilateral trade flows using public choice approach and analyzes relevant data for 25 nations representing different worlds of development during 1960-1975. Pollins' statistical results show that the relationship between the indicator of international conflict and cooperation and bilateral trade flows is statistically significant and robust, indicating that trade flows are significantly influenced by broad political relations of amity and enmity between nations. See Brian M. Pollins, "Does Trade Still Follow the Flag?" *American Political Science Review* 83 (June 1989): 465-480. In support of Pollins' case, Gowa and Mansfield argue that it is trade externalities—the uncompensated costs or benefits of trade arising from greater economic efficiency that can be transformed into military advantages or disadvantages for the trading partner—that make economic cooperation more difficult for states. Their quantitative analysis based on a non-cooperative game model and covering an 80-year period from 1905 to 1990 suggests that alliances have a direct, statistically significant, and large impact on bilateral trade flows and this relationship is stronger in bipolar rather than in multipolar systems. See Janne Gowa and Edward D. Mansfield, "Power Politics and International Trade," *American Political Science Review* 87 (June 1993):

liberal perspective: first, economic interdependence leads to more peaceful interstate relations, particularly between liberal democracies; and second, greater economic interdependence leads to greater security cooperation and peace via international institutions.

COMMERCE AND SECURITY: THE CONTEMPORARY REALIST-LIBERAL DEBATE

Over the past two and a half decades, and particularly since the early 1990s, international relations scholars have made considerable efforts to test systematically liberal and realist hypotheses that would shed more light on the relationship between democracy, economic interdependence, and international institutions, on the one hand, and the international conflict and cooperation, war and peace, on the other. These efforts have taken the form of formal studies, quantitative and case studies.

The quantitative studies have made significant contribution. It is these studies that produced a shift in the contemporary realist-liberal debate towards greater attention to the consequences of economic interdependence for interstate conflict and cooperation,[56] and within the latter from the efforts to establish the nature and direction of the relationship between international economic exchanges and interstate conflict or

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408-428. Gowa further investigates the relationship between political-military alliances and international trade and finds again that the influence of alliances on trade is strong and more pronounced in bipolar than in multipolar systems and that the results do not depend on whether the trading partners are democratic, members of preferential trading arrangements, or parties to military disputes. See Joanne Gowa, *Allies, Adversaries, and International Trade* (Princeton: Princeton University Press, 1994). Mansfield and Bronson also find that alliances create political incentives for the members of the same alliances to trade with each other: since trade creates security externalities states are more likely to trade with their allies than with adversaries so that gains from trade accrue to those states that have common security goals. Together with preferential trading agreements, alliances help to explain patterns of bilateral trade in the period between 1960 and 1990. See Edward D. Mansfield and Rachel Bronson, "Alliances, Preferential Trading Arrangements, and International Trade," *American Political Science Review* 91 (March 1997): 103.

[56] Economic interdependence as an independent variable was relatively less appreciated than other variables at the outset of the contemporary debate. See, for example, Russett and Oneal, *Triangulating Peace*, 2001, 129.

cooperation to trying to pinpoint the causal mechanism linking economic interdependence to outcomes of interstate interactions in the security realm.

CONCEPTS, DEFINITIONS, AND VARIABLES

Although many of the studies investigating the role of international interdependence formally adhered to Keohane and Nye's definition of interdependence as mutual dependence—"situations characterized by reciprocal effects among countries or among actors in different countries," resulting from international transactions: flow of money, goods, people, and messages across international borders,[57]—in substance the concept was largely abandoned. The key in Keohane and Nye's concept was the presence of reciprocal costly effects of international transactions—interactions that do not have significant costly effects were defined as interconnectedness. In many recent studies this distinction is not clearly drawn because of the difficulty of determining the level at which interconnectedness becomes interdependence.

Approaches to economic interdependence adopted in the recent inquires differ on a number of important aspects. They vary with respect to components of interdependence that researchers include or choose to leave out of their studies: some scholars analyze interdependence arising exclusively from trade, some add interdependence arising from global capital markets, others believe that political, diplomatic, and institutional relations are also aspects of interdependence of some

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[57] Robert O. Keohane and Joseph S. Nye, *Power and Interdependence*, 2d ed., (Harper Collins Publishers, 1989), 8-9. Other scholars also made valuable contribution to the development of the concept of interdependence. See James A. Caporaso, "Dependence, Dependency, and Power in the Global System: A Structural and Behavioral Analysis," *International Organization* 32 (1978): 13-43; Karl W. Deutsch, *The Analysis of International Relations* (Englewood Cliffs: Prentice-Hall, 1978); Baldwin, 1980, 471-506; James N. Rosenau, "A Pre-Theory Revisited: World Politics in an Era of Cascading Interdependence," *International Studies Quarterly* 28 (September 1984): 245-305; John A. Kroll, "The Complexity of Interdependence," *International Studies Quarterly* 37 (1993): 321-348.

importance to the analysis.[58] Some scholars operationalize interdependence as a structural characteristic, others as a characteristic of a dyadic relationship, and some others as a characteristic of a single country's dependence on international markets.[59] The majority of the studies on economic interdependence and interstate interaction follow a dyadic approach, but the scholars who analyze the effects of interdependence at a dyadic level use different approaches of measuring interdependence: Polachek uses levels of bilateral trade in his earlier studies,[60] Oneal and his colleagues use trade-to-GDP ratio,[61] Polachek and McDonald employ the elasticity of supply and demand for commodities traded,[62] and Barbieri relies on bilateral-trade-to-total-trade ratio.[63] These different approaches to measuring interdependence and its impact on the outcomes of interstate interactions make comparisons of these studies difficult. At the same time they reflect the complex multiformity of the phenomenon under the study.

In the realist-liberal debate, considerable differences exist across the recent studies in the treatment of the dependent variable. The empirical studies usually deal with interstate conflicts and peace, with a number of differing definitions and measurement approaches.[64] In the majority of these studies conflict is taken to mean war or war and lower levels of militarized interstate disputes, and much less frequently other

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[58] Michiel S. de Vries, "Interdependence, Cooperation and Conflict: An Empirical Analysis," *Journal of Peace Research* 27 (November 1990): 432.
[59] McMillan, 1997, 35.
[60] Solomon W. Polachek, "Conflict and Trade," *Journal of Conflict Resolution* 24 (March 1980): 55-78.
[61] Oneal, F. H. Oneal, Maoz, Russett, 1996, 15.
[62] Solomon Polachek and Judy McDonald, "Strategic Trade and the Incentives for Cooperation", in Manas Chatterji and Linda Forcey, eds., *Disarmament, Economic Conversion and Peace Management* (New York: Praeger, 1992), 273-284.
[63] Barbieri, 1996, 36.
[64] There is an implicit debate on what to consider "peaceful" conflict resolution and what to include in the indicators of conflict: some believe that all militarized interstate disputes as defined by the Correlates of War project are relevant, other consider wars alone. See Henry S. Farber and Joanne Gowa, "Common Interests or Common Polities? Reinterpreting the Democratic Peace," *Journal of Politics* 59 (May 1997): 395.

forms of conflict, including verbal forms of conflict.[65] Peace is thus comprised of events that fall short of war or war and lower level of militarized interstate disputes. In the formal studies, however, the international relations scholars deal with cooperation as a dependent variable defined in terms of conscious policy coordination, necessary to the realization of mutual interests.[66] Translated into the language of game theory, cooperation often means the outcomes in which a change in strategy by either actor would not increase both actors' payoffs. All other outcomes are considered to be cases of conflict.[67] This concept is applied within the framework provided by game theory to both economic and security realms. When applied to the economic realm, international trade, as well as coordination of economic policies of states, are considered as cooperation.

Adopting the framework of this debate to the realm of outer space, this study uses commercialization as an independent variable and converging/non-converging security interests as a dependant variable. It defines space commercialization as an increasing use of space for activities launched with the view of participation in economic exchange that is based on transfers of space goods and services according to the prices determined by the forces of demand and supply instead of those defined by non-market relations between suppliers and consumers of these goods and services.[68] The concept of space commercialization includes the whole spectrum of market relations, including emergence

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[65] See de Vries, 1990, 433. It should be pointed out that for de Vries "conflict" and " cooperation" are two opposite points on the spectrum of inter-state relations gradually changing from one into another rather than two mutually exclusive outcomes.

[66] See Kenneth A. Oye, "Explaining Cooperation Under Anarchy: Hypotheses and Strategies," in Oye, ed., *Cooperation Under Anarchy*, 1986, 5.

[67] See footnote 13 in Kroll, 1993, 332.

[68] In other words, commercialization is an introduction of market relations between suppliers and consumers. Market can be defined as a coordinating mechanism where forces of supply and demand determine prices, output, and methods of production of goods and services. See, for example, Robert Boyer and Daniel Drache, eds., *States Against Markets: The Limits of Globalization* (New York: Routledge, 1996), 3.

of global space market and strategic corporate alliances stretching across the borders. It also presupposes economic interdependence arising from international economic exchanges. In this case, economic interdependence is understood as a unit-level characteristic: the dependence of a state on a global space market. Degree of the commercialization of space activities of states defines economic interdependence.

As a dependent variable, the present study proposes to use concepts of "converging security interests" and "non-converging security interests," since "a militarized interstate dispute" is not applicable to outer space in the time period of this study. This substitution is arrived at via the following suppositions: first, it is assumed that militarized conflicts between states take place within a context of interstate rivalries that have a certain temporal continuity and a pattern of development so that they do not generally happen purely accidentally;[69] secondly, militarized interstate conflicts are less likely when states' security interests are converging.[70] Converging security interests can be defined as interests that become more compatible over time, and non-converging security interests as those interests that either diverge—that is, become less compatible—or remain relatively unchanged over time.

The concept of converging security interests has been used in some liberal studies on economic interdependence and interstate conflict and cooperation. For example,

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[69] Diehl and Goertz, *War and Peace in International Rivalry*, 2000, 1.

[70] State security interests cover a spectrum of interests, such as protecting lives of its citizens, maintaining sovereignty and territorial integrity of the state, preserving values and institutions, and promoting economic prosperity and well-being of the nation. U.S. national interests, for example, are divided into three categories: vital interests—those interests that are of overriding importance to the survival, safety and vitality of the nation, such as physical security of the territory and safety of the citizens, economic well-being and protection of the critical infrastructure; important interests—those interests that do not affect national survival but affect national well-being and the character of the world; humanitarian and other interests—those interests dictated by values, such as respect for human rights and support for democratization. See White House, *A National Security Strategy for A New Century*, Washington D. C., October 1998, 5-6.

Abdelal and Kirshner's study is based on a liberal approach involving a concept of converging security interests. Focusing on the domestic political consequences of international trade and drawing upon Hirshman's idea about asymmetrical trade as a source of influence, Abdelal and Kirshner investigate the link between economic interdependence and cooperation. They argue that countries' national interests are significantly shaped by the patterns of international economic relations via domestic politics. They hypothesize that, in asymmetric trading relations, a smaller state's perception of its national interests over time converges with that of the larger state. This expectation is based on the assumption that an act of participation in economic exchanges with the larger state strengthens economically and politically those who benefit from these trading arrangements.[71]

The idea that international trade flows can stimulate a change in domestic composition of interests and redefinition of national interests, and thereby influence foreign policy, making it more cooperative, is a link to *how* trade affects cost-benefit calculations of states. This idea lies at the heart of the recent liberal literature on economic inducements and sanctions.[72] This literature points to the pragmatic side of the debate on economic interdependence and international cooperation and conflict.

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[71] The authors analyze three case studies: the Hawaii-United States relations in the later 19th century, the Austria-Czechoslovakia relations between in the interwar period of the 20th century, and the Ukraine-Russia relations after the dissolution of the Soviet Union. They show that patterns of economic relations influence the balance of political power within smaller trading states and thereby have an effect on their foreign policy. See Abdelal and Kirshner, 1999-2000, 154.

[72] See, for example, Drezner, 1999-2000, 188-218; Blanchard and Ripsman, 1999-2000, 219-253; and Rowe, 1999-2000, 254-287.

COST-BENEFIT ANALYSIS OF WAR-VERSUS-TRADE OPTIONS

Three main types of models used in the formal studies within the trade-conflict debate—the expected utility models, cooperative models, and non-cooperative models—rely on cost-benefit calculations of war-versus-trade options, focusing on gains from trade.[73] Although these formal analyses provided more logical support for the realist

[73] The expected utility models assume that trade raises the costs of conflict and thus promotes peace directly – the higher the levels of trade, the greater the costs of conflict, the lower levels of conflict. See, for example, Polachek, "Conflict and Trade," 1980, 55-78; Solomon W. Polachek, "Why Do Democracies Cooperate More and Fight Less: The Relationship Between International Trade and Cooperation," *Review of International Economics* 5 (1997): 295-309; Copeland, "Economic Interdependence and War," 1996, 5-41, and Copeland, "Trade Expectations and the Outbreak of Peace," 1999-2000, 15-58. The cooperative models have been used mostly by realists in two main variants: a Prisoner's Dilemma (PD) game and a Deadlock game. This tradition originates with the attempts to contest the neo-liberal argument that cooperation is more likely under anarchy than realists assume because of the role of international institutions. Grieco suggests an amended Prisoner's Dilemma model with the modified state utility function, which includes— along the individual payoffs from cooperation—the gap in the payoffs of the cooperating partners. See Joseph M. Grieco, "Realist Theory and the Problem of International Cooperation: Analysis with an Amended Prisoner's Dilemma," *Journal of Politics* 50 (August 1988): 607-608. The logical development of this tradition with respect to security implications of international trade is the claim that the impact of trade on conflict is an epiphenomenon caused by other factors. In this perspective, both trade and conflict are shaped by anarchy and distribution of power in the international system. Propositions derived from this perspective establish the relationship between polarity of the international system, alliances, and trade patterns, with the logical order reversed from going from trade to conflict or cooperation to going from security concerns to trade patterns. See Gowa and Mansfield, 1993, 408-420, and Gowa, *Allies, Adversaries, and International Trade*, 1994. Snidal, using an iterated relative gains PD model with N number of players, where N is greater than two, shows that security concerns, and thus, security-induced relative gains concerns do not provide a sufficient response to the liberal propositions regarding the possibility of cooperation under anarchy. According to this model, an introduction of the third actor to the two-actor relative gains game is equivalent to cutting the concern for relative gains in half. More generally, Snidal shows that the greater the number of actors in the system, the more relative gains concerns are attenuated, the less the relative gains impede cooperation. See Duncan Snidal, "Relative Gains and the Patterns of International Cooperation," *American Political Science Review* 85 (September 1991): 701-726. Werner develops a model in which she modifies states' utility function to incorporate an assumption that a trading partner may play different roles in a possible dispute: it can be an adversary or an ally. Thus, pure security concerns may lead to situations in which a state's utility is a positive function of some states' relative gains. In such cases, security concerns do not impede cooperation: they may actually encourage it, if a state can utilize resources that it gains from an agreement with one state to improve its security vis-à-vis other state or states in the system. See Suzanne Werner, "In Search of Security: Relative Gains and Losses in Dyadic Relations," *Journal of Peace Research* 34 (August 1997): 295-296. Powell develops non-a cooperative model. He argues that cooperation between states collapses even if states are assumed to receive equal absolute gains when a model includes the possibility of the use of force and in which state's relative loss can be turned against it. This model offers a reformulation of the problem of absolute and relative gains by shifting the focus away from states' preferences to constraints and introducing resource allocation, technology, and the cost effectiveness of using force as the intervening variables. This reformulation leads to the inclusion of neoliberal and realist concerns in a single model as special cases. It also brings the study of both international conflict and cooperation within a single analytic framework and demonstrates that cooperation between states is even

propositions, the recent quantitative studies lend more support to liberal propositions: international economic exchanges lead to more cooperative and peaceful relations between the states. For example, Polachek in his analysis, which has influenced most of the later work in the trade-conflict research, draws upon the idea that eradicating hostility and promoting cooperation via international trade is an important step leading to peace. Building upon an expected utility model, he maintains that mutual dependencies arising from bilateral trade make conflict more costly, thereby increasing trading states' incentives towards cooperation, and hence towards peace.[74] The results of the statistical analysis based on the ten-year period between 1958-1967 and involving trade and conflict data for thirty countries supports the liberal hypothesis that countries with the greatest levels of trade engage in the least amounts of conflict.[75] Furthermore, he suggests that the type of traded goods—essential or strategic goods versus other types—should have an impact on the trade-conflict relationship, with trade in strategic goods having greater

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more difficult, than realists previously assumed when the use of force is made cost effective by technological progress. See Powell, "Absolute and Relative Gains," 1991, 1313. Morrow's non-cooperative model demonstrates that relative gains from trade do not impede trade even between potential foes, unless it is trade in military goods or unless the division of gains from trade is so skewed that the state has to devote most of its gains from trade to armaments. See Morrow, "Relative Gains," 1997, 12-37. Dorrussen, using revised balance-of-power game, assesses the link between trade and political conflict by analyzing how trade affects expectations about gains from the use of force. His findings suggest that trade generally reduces the incentives for conflict but its pacifying effects diminish as greater number of countries become involved in trade. See Dorussen, 1999, 453.

[74] In order to measure overall amount of conflict and cooperation Polachek creates an index of net conflict as the difference between the frequencies of conflictual and cooperative events taken from a data bank of daily and yearly events coded on a 15-point scale ranging from states' voluntary unification, formation of military alliances, military and economic assistance on the cooperative end of the scale to extensive wars on the conflictual end of the scale. See Polachek, "Conflict and Trade," 1980, 55-78.

[75] See Ibid. Gasiorowski and Polachek further examine the relationship between economic interdependence and conflict using U.S.-Warsaw Pact trade and conflict data during the détente era of 1967-1978. The authors find a strong inverse relationship between trade and conflict—that is, trade decreases conflict among states. Gasiorowski and Polachek conclude that the expansion of East-West trade in the early 1970s and linkage diplomacy led to Soviet cooperation on arms control SALT I negotiations, on the Vietnam and Middle East negotiations. These findings lead the authors to a policy-related inference that international conflict can be considerably eased by engaging hostile states in a beneficial economic exchange. See Mark Gasiorowski and Solomon W. Polachek, "Conflict and Interdependence: East-West Trade and Linkages in the Era of Détente," *Journal of Conflict Resolution* 26 (December 1982): 713, 717.

deterrent effect than trade in non-strategic goods. Some later studies investigating the direction of causality, however, bring inconclusive results and suggest a more complex relationship.[76] Polachek and his coauthors in later works consistently find a negative relationship between international trade and interstate conflict, with causality running in the direction asserted by liberalism.[77]

In his statistical analysis conducted at the systemic level, rather than the dyadic level, and encompassing data for over a hundred years (1850-1965), Mansfield finds that the level of international trade is inversely related to the frequency of major-power war independent of any other structural influences on war, such as distribution of power in the system. Mansfield uses two systemic level indicators for measuring interdependence: the openness of world trade and the ratio of global exports to total global production. His study controls for other systemic factors, such as hegemony, polarity of the system, the

[76] Reuveny and Kang's statistical study performs a Granger causality test for 16 dyads for the period from 1960 to the early 1990s. The results show that the causal relationship between the outcomes of interstate interaction and trade is dyad dependent and, in most cases, it is found to be reciprocal: in approximately equal number of the dyads in the study, Granger causality is found to run from trade to conflict and cooperation, in the opposite direction, and in both directions. See Reuveny and Kang, "International Trade," 1996, 956. In the follow-up publication, Reuveny and Kang investigate whether the direction of causality in the trade-conflict relationship depends on the types of goods traded. The results of the tests involving 16 dyads in the time period between the early 1960s and early 1990s point to the conclusion that the causal relationship between bilateral trade and political conflict or cooperation is reciprocal in most goods and dyad and goods dependent. It does not depend on whether a dyad consists of rivaling states or friendly states. However, for the U.S.A.-U.S.S.R. and U.S.A.-China dyads, Reuveny and Kang observe a trend for trade in certain types of goods to be correlated with the improvement or deterioration of political relations, with the causality going from conflict to trade for more goods than from trade to conflict. Overall results for 16 dyads and four major rivalries—U.S.A.-U.S.S.R, U.S.A-China, Turkey-Greece, and Israel-Egypt—the evidence suggests that political conflict or cooperation tend to Granger-cause bilateral trade in minerals, iron and steel, fuels, basic manufactures and control and science equipment, and bilateral trade tends to Granger-cause conflict or cooperation in food and live animals, beverages and tobacco, and machines and transport equipment. Thus, this study of disaggregated trade brings overall inconclusive results, which show a rather complex picture. It only confirms that bilateral trade and the character of interstate political interactions are interrelated. See Rafael Reuveny and Heejoon Kang, "Bilateral Trade and Political Conflict/Cooperation: Do Goods Matter," *Journal of Peace Research* 35 (1998): 581-602.

[77] Polachek and McDonald, building upon Polachek's approach, add in their study an additional measure of interdependence, the import demand elasticities. Their results lead to the conclusion that dyads engaged in the most trade have the least conflict and that including import price elasticities makes the relationship between trade and conflict stronger. See Polachek and McDonald, in Chatterji and Forcey, *Disarmament, Economic Conversions, and Management of Peace*, 1992, 279.

concentration of capabilities among the major powers, changes in power concentration,[78] and changes in powers shares among the major powers. The effect of trade on war as measured by the ratio of exports to total production is quantitatively large and statistically significant in his study, while effect of the openness of world trade is not statistically significant. Mansfield concludes that both distribution of capabilities and international trade help to explain the outbreak of war.[79] Mansfield also finds that conflict suppresses levels of trade but after further analysis concludes that trade has a more significant effect on the level of warfare than warfare has on the level of trade.

Domke also reports findings that support liberal propositions concerning pacifying effects of international commerce. In contrast to most research in the field, his analysis is unit-based. Domke measures interdependence in three ways: by the country's exports as a proportion of national income, by the percent change in exports as a proportion of gross national product (GNP), and by exports as a percentage of GNP corrected for economic size.[80] As a dependent variable Domke uses "decision for war." The trade data used in this analysis covers one year prior to the decision to go to war and years in which major power wars occurred between 1877 and 1974. He finds that during this period countries with high levels of total exports relative to the size of their economies were less likely to initiate wars than countries that were relatively self-sufficient. This relationship is particularly strong for the post-1948 period.[81]

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[78] Mansfield defines concentration of power as "the coefficient of variation of the proportion of the aggregate major-power capabilities possessed by each major power divided by the square root of one less than the number of major powers." In other words, it measures the aggregate inequality among all the major powers in the international system. See Edward D. Mansfield, *Power, Trade, and War* (Princeton: Princeton University Press, 1994), 13-14.

[79] Ibid., 126, 233.

[80] William K. Domke, *War and the Changing Global System* (New Haven: Yale University Press, 1988), 119-126, 132.

[81] Ibid., 135.

Oneal, Oneal, Maoz, and Russett, investigating the effect of economic interdependence on the outcomes of interstate interactions within a multi-stage "democratic peace" research project, find that for the politically relevant dyads—those that are comprised of at least one major power or contiguous states—during time period 1950-85 trade was a powerful influence for peace, especially among the war-prone contiguous states. In the earlier democratic peace studies, economic interdependence was largely unappreciated as an explanatory variable.[82]

In their 1997 study, Oneal and Russett provide further evidence of pacific benefits of trade both at total and dyadic levels for the Cold War era. While they argue that peace can be built on the Kantian tripod of complementary influences—representative democracy, international law and organization, and economic interdependence—they clearly emphasize the role of economic interdependence and democracy. According to their explanation, economic interdependence reinforces structural and liberal norms of democracy by creating transnational ties that encourage accommodation—that is, cooperation—rather than conflict. Material incentives, via international exchange, add their force to law and morality, contributing importantly to the creation of a "security community."[83] Democracy is believed to encourage interdependence as economically powerful groups also get a stronger voice within a democratically governed polity. Democracies trade more, particularly with other democracies.[84] Together democracy and interdependence reinforce each other to produce more cooperative and peaceful interstate relations. In support of Oneal and Russett's argument, Mousseau reports that

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[82] Oneal, F. H. Oneal, Maoz, and Russett, 1996, 12.
[83] Oneal and Russett, 1997, 269, 270.
[84] Mansfield, Milner, and Rosendorff, 2002, 477-513.

democracies do not only fight each other rarely, they are more likely to provide each other military help and to align with each other in a military conflict.[85]

In their statistical tests, Oneal and Russett find that higher levels of economically important trade, measured by a bilateral trade-to-GDP ratio, are associated with lower level incidents of militarized interstate disputes and wars, even when controlling for potentially confounding factors, such as geographic contiguity, the balance of power, alliance bonds, and economic growth rates. Adding the influence of the third Kantian variable, intergovernmental organizations (IGOs), Russett and Oneal find further support for the Kantian peace. Their tests show that economic interdependence has a strong, statistically significant influence in reducing interstate dispute. In a test where all three Kantian variables are involved, an increase in the level of economic interdependence by one standard deviation is reported to cut the probability of an interstate conflict by 43 percent, the probability of conflict for a typical dyad with an average level of economic interdependence.[86] Russett and Oneal also report that an increase in democracy reduces the probability of conflict by 33 percent from the baseline and an increase by one standard deviation in the number of joint membership in IGOs shared by a pair of states diminishes the likelihood of a dispute between a typical pair by 24 percent. If all three Kantian variables are increased simultaneously in the model, the likelihood of an interstate dispute is reported to fall by more than 70 percent.[87] Importantly, Russett and

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[85] Michael Mousseau, "Democracy and Militarized Interstate Collaboration," *Journal of Peace Research* 34 (February 1997): 73-87.

[86] See the definition of a "typical dyad" in Russett and Oneal, *Triangulating Peace*, 2001, 107-108. See the summary of the results, 171-172.

[87] Ibid., p. 172. In their earlier publication, Russett, Oneal, and Davis reported for the period 1950-85 that: (1) an increase in the number of joint membership in IGOs by a standard leads to the reduction of militarized disputes by 23 percent from the baseline rate for a typical dyad; (2) if both states in a dyad are fully democratic the conflict is 35 percent less likely; and (3) an increase in the level and the trend of the trade-to-GDP ration by a standard deviation lowers the probability of conflict by 38 percent; and thus

Oneal also find that the three Kantian variables are significantly correlated with each other: democracies tend to be more economically interdependent and members of the same IGOs to regulate their economic and security interactions.[88]

Although Russett and Oneal's analyses provide strong support for the liberal case, their study includes important realist variables as well, such as the power ratio and alliances.[89] In a test that evaluates influences of all three Kantian variables and the realist variables, being allied and having power ratio increased by one standard deviation reduce the probability of conflict between a "typical" pair of states by 40 percent and 36 percent respectively.[90] Thus, Russett and Oneal's study does not refute the realist case as they find support for the liberal hypotheses. Instead of considering the realist perspective as antithetical to the liberal one, they combine the two perspectives in their model and use the realist case as a baseline against which liberal influences are compared. While not

together the three Kantian variables account for 72 percent in reduction of the likelihood of interstate militarized conflict. See Russett, Oneal, and Davis, 1998, 441-467.

[88] The directionality of causation in trade-conflict relationship is also evaluated in this study. Russett and Oneal report that an increase of bilateral trade by one standard deviation reduces the probability of conflict in their democracy-interdependence model by 44 percent and that conflict reduces trade by only 8 percent in their model that identifies influences on trade patterns for the same time period. Thus, they find that causality works both ways and argue that the effect of trade in reducing conflict is at least as strong as the effect of conflict in reducing trade. See Russett and Oneal, *Triangulating Peace*, 2001, 226.

[89] Russett and Oneal find no support for the argument that relatively equally distributed power in the international system leads to more peaceful interstate relations. They instead find that it is preponderance of power that is associated with relatively less conflict among the states. See Russett and Oneal, *Triangulating Peace*, 2001, 109.

[90] See Ibid., 171. Drawing policy relevant conclusions, Russett and Oneal also combine both realist and liberal prescriptions, arguing that the prospects of peace in the 21st century will depend largely upon the success of incorporating Russia and China into the Kantian system. They maintain that inclusion of Russia into the NATO alliance is the most important entry point for Russia because if Russia continues to feel threatened by NATO eastward expansion, it will turn to China in order to balance against the U.S.-dominated coalition. As a policy towards China, Russett and Oneal advocate a greater incorporation of China in the global economy and network of international organizations and greater accommodation, while at the same time preserving a significant preponderance of power over China in order to deter any potential challenge to the U.S.-dominated international system. See Ibid., 287-288.

proving the realist case wrong, they maintain that the realist explanation is simply incomplete.[91]

While quantitative studies within the realist-liberal debate have provided stronger support for the liberal, rather than realist perspective, empirical research based on case-studies has showed inadequacies of liberal explanations of the political outcomes of interstate interactions under the conditions of economic interdependence. Most of these analyses have either suggested modifications of the basic liberal postulates or provided various syntheses of liberal and realist propositions.[92] Liberman, for example, investigating the impact of security concerns on patterns of interdependence using two case-studies—British trade with Germany prior to World War I and U.S. trade with Japan in the decade leading up to World War II—finds that under the conditions of multipolarity security concerns do not significantly shape patterns of economic cooperation among states and economic interdependence, arising from international exchanges, does not lead, in these two important cases, to more peaceful state

[91] Russett and Oneal, *Triangulating Peace*, 2001, 90.

[92] Papayoanou offers an example of a theoretical synthesis of realist and liberal propositions. He elaborates a theory amalgamating economic liberal perspective and realist balance-of-power theory. It is argued that different patterns and levels of economic interdependence in the great power system generate different societal-based economic incentives and constraints on state leaders of *status quo* powers. Firm balancing policies, which are considered in this theory as being associated with peace in the international system, are most likely when there are extensive economic ties among *status quo* powers and few or no economic links between them and arising challenger. When economic interdependence is not significant between *status quo* powers or if *status quo* powers have strong economic links with threatening power, weaker balancing and conciliatory policies by *status quo* powers, and following them aggression by aspiring revisionist powers become more likely. Thus, economic interdependence has a profound effect on interstate relations by affecting the ability of state leaders to mobilize their domestic support for the opposition to arising threat, their ability to play power politics abroad, and the credibility of their international commitments for effective balancing of the threat and, thus, their ability to cooperate on security issues. See Paul A. Papayoanou, "Interdependence, Institutions, and the Balance of Power: Britain, Germany, and World War I," *International Security* 20 (spring 1996): 74. Copeland also provides a liberal-realist synthesis, elaborating a dynamic theory of trade expectations. See Copeland, "Economic Interdependence and War," 1996, 5-41, and also Copeland, "Trade Expectations and Outbreak of Peace," 1999-2000, 15-58.

interactions, as liberalism would predict.[93] Further examining the consequences of economic interdependence under the conditions of defense dominance, Liberman shows that economic interdependence combined with defense dominance may actually encourage military conquest. This is because defense dominance makes conquest more difficult, and at the same time it makes it more desirable as a means of achieving greater self-sufficiency. Economic interdependence makes war more costly and also creates incentives to diminish economic vulnerabilities through expansion. A potential threat of blockade or embargo during a crisis or war may provide states with a strong stimulus to risk a war in order to minimize vulnerability and reach greater economic self-sufficiency. Using process tracing of the perceptions and decision-making in Japan before Second World War and in Germany before the two World Wars of the 20th century, Liberman analyzes the weight of economic and strategic factors as they influenced the perception and calculations in the two states before the war. He finds that interdependence and defense dominance did not become decisive factors in calculations for German and Japanese leaderships before wars. Instead, both German and Japanese expansionist policies were influenced by misperceptions and miscalculations, many of which were due to the political ascendance of pro-militaristic actors.[94] Thus, high levels of trade can be combined with the dominance of pro-military interests at the domestic level.

In their study, Ripsman and Blanchard also weaken the liberal case by showing that during the July crisis of 1914 and the Rhineland crisis of 1936, economic consideration did not contribute significantly to the decision making process. Thus, they conclude that if leaders do not feel constrained by economic interdependence, then

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93 Liberman, "Trading with the Enemy," 1996, 166.
94 Liberman, "The Offense-Defense Balance," 1999-2000, 59- 91.

economic interdependence cannot bring about peace, as predicted by the commercial liberalism. They suggest a modification of the realist perspective to take into consideration the role of domestic political factors that can affect national security decision-making and interfere with strategic considerations.[95]

Gartzke, Li, and Boehemer's research represents another attempt to elaborate on the substantive linkages between conflict and international economics based on quantitative analysis. They call into question the liberal assumption that trade and interdependence affect interstate security relations by changing cost-benefit calculations. Their study argues that if international economic exchange affects only opportunity costs of war, then the liberal case cannot be supported. First, the study points out that cross-border economic relations are much more diverse and extensive than indicators of trade alone lead us to believe: global capital markets surpass the volume of exchange in goods and services manifold. Second, based on the findings of the recent studies on the causes of war. They argue that the mechanism through which economics deters conflict suggested by the liberals is questionable. According to Gartzke, Li, and Boehemer, the danger of disrupting trade ties may deter some conflicts between interdependent states, but opportunity costs are insufficient to prevent interstate militarized disputes. Instead, they argue that interdependence offers non-militarized channels of communicating resolve through costly signaling. The quantitative results obtained by Gartzke, Li, and Boehemer suggest that capital interdependence contributes to peace independent of the

[95] First, Ripsman and Blanchard develop a strategic goods test—a complex multi-stage test which measures country's vulnerability: whether a country is dependent for strategic goods on its potential adversaries at a given time, whether these goods could be substituted by other goods, and whether these goods would be cut off in a time of crisis. Then, they focus on the decision-making in order to determine whether the systemic constraints of interdependence exert any influence on state behavior—that is, whether any cost-benefit calculations are made and acted upon. See Norrin M. Ripsman and Jean-Marc F. Blanchard, "Commercial Liberalism under Fire: Evidence from 1914 and 1936," *Security Studies* 6 (winter 1996/97): 40-41.

effects of trade, democracy, interests, and other relevant variables. Monetary and financial indicators used in the study are significant, while measures of trade and joint democracy are found to be insignificant or marginal in their impact.[96] Thus, while accepting the soundness of the correlation between interdependence and peace, the underlying logic of this study and the scope of indicators used in assessing the relationship between economic interactions and conflict significantly differ from those studies that are based on the expected utility model. The key idea in this explanation is that in order for economic interactions to promote peace, economic interdependence must remove incentives for states to resort to violence. This can be achieved under the conditions of interdependence via costly signaling: capital flows and trade between states serve as venues for costly signaling that reduces uncertainty about states' relative resolve. Economic interdependence can bring hope for a more pacific global order to the extent that costly signaling under the conditions of economic interdependence reduces states' incentives to resort to military violence.

All in all, the recent research on economic interdependence and its influence on the outcomes of interstate interaction in security realm have moved closer towards the challenge of identifying a mechanism underlying the phenomenon of liberal pacification.

COST-BENEFIT CALCULATIONS AND SECURITY INTERESTS IN OUTER SPACE

The cost-benefit calculations that states make deciding on issues such as war and peace involve not just the opportunity costs of war—the foregone gains from trade. They have to include the total costs of war, which consist of expected cost of fighting a war

[96] Gartzke, Li, and Boehmer, 2001, 416-417.

and occupation and foregone gains from peaceful international economic exchange. Commercial liberalism suggests that economic interdependence increases the opportunity costs of going to war and makes the use of force a relatively inefficient means of extracting resources from a territory, shifting the balance in cost-benefit analysis towards favoring a peaceful trading strategy.[97] This assumption would be true as long as costs of fighting a war and costs of occupation are either constant or increase over time.[98] These costs are the subject of attention of realists who argue that technological progress and innovation in military doctrines can change these costs, altering the overall cost-benefit calculations and prospects for war.[99]

Progress in space and information technologies of the past two decades made the commercialization of space economically viable. In contrast to the earlier period when governments ran activities in space, in the era of space commercialization certain space activities, such as satellite communications and others, are being driven by the commercial sector. In parallel, technological progress has also significantly advanced military usefulness and with it the strategic importance of outer space. Over the past two decades more and more military functions migrated into outer space. Since the end of the Cold War, military space functions advanced from enhancing strategic stability to terrestrial force enabling, with space communications, command, control, computers,

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[97] Rosecrance, *The Rise of the Trading State*, 1985, ix, xi.

[98] This is the assumption Rosecrance makes when he writes: "The costs of the military-political world are not likely to decrease, and they may increase further." See Ibid., 161.

[99] Technological progress may change the relative efficiency of offense and defense. War may become more likely if offense is cheaper and more effective than defense. See, for example, Jervis, "Cooperation Under the Security Dilemma," 1978, 188-189. Adams contributes to the offense-defense theory by identifying deterrence dominance as a separate category besides offense dominance and defense dominance and analyzing whether occurrence of war varies across these three categories. She finds that offense-defense-deterrence balance is a better predictor of attacks and conquests than binary offense-defense balance, relative capabilities, and duration of great power status. From 1800 to 1997 the average rates of great power conquest and attack were consistently higher in offense-dominant eras than in defense-dominant and particularly in deterrence-dominant eras. See Adams, 2003/04, 45-83.

intelligence, surveillance, and reconnaissance (C4ISR) systems, stealth platforms, and precision weapons guided by the Global Positioning System (GPS) being important components of the emerging military space system of systems.[100] Increasing military uses of space have started to revolutionize and transform the military itself,[101] prompting a new Revolution in Military Affairs (RMA).

Following Krepinevich, Hays defines an RMA as a major discontinuity in military affairs that are brought about by "changes in military relevant technologies, concepts of operation, methods of organization, and/or resources available, and are often associated with broader political, social, economic, and scientific revolutions. These periods of discontinuous change have historically advantaged the strategic/operational offense, and have provided a powerful impetus for change in the international system."[102] They are said to occur abruptly in a span of two-three decades and make the previous means of conducting warfare obsolete or subordinate. There is yet no agreement as to what features the impending RMA will have or when it will start.[103] Some experts believe that it has already started and argue that the First Gulf War was the beginning of the modern RMA, while others believe that transformation into spacepower[104] is itself going to be the

[100] Hays, "Current and Future Military Uses of Space," 2002. See also Benjamin S. Lambeth, *Mastering the Ultimate High Ground: Next Steps in the Military Uses of Space* (St. Monica: RAND, 2003), 97.
[101] See, for example, Donald H. Rumsfeld, "Transforming the Military," *Foreign Affairs* 81(May/June 2002): 20-32.
[102] Hays, "Current and Future Military Uses of Space," 2002.
[103] The authors of *Battlefield of the Future*, for example, warn: "Although we think that we now stand at the start of a long period in which we may face a RMA, we cannot be certain about when the transition period might start, how long it might last, what new competitors might arise, when they will rise, or what new warfare areas might be developed, not to mention a host of other key questions. In short, we do not have an absolute grasp of the scope, pace, and implications of this possible RMA." See Jeffrey McKitrick, James Blackwell, Fred Littlepage, George Kraus, Richard Blanchfield, Dale Hill, *Battlefield of the Future*, Chapter 3 "The Revolution in Military Affairs," September 1995, http://www.airpower.maxwell.af.mi/ airchronicles/battle/chp3.html, accessed 04.16.04.
[104] In this context, "spacepower" is defined as the "ability in peace, crisis, and war to exert prompt and sustained influence in or from space." See Grey and Sheldon, 1999.

next RMA.[105] The development of the idea and theory of spacepower has been significantly hampered over the past two decades by the debates first over Reagan's Strategic Defense Initiative (SDI) and more recently over the information revolution, and it is only in the second half of the 1990s that the concept of spacepower as such has become a center of attention for military theorists, political experts, and policy makers.[106]

In 1999, the Defense Science Board recommended that the U.S. Department of Defense acquire some of the space-based weapons for implementing the Joint Chiefs of Staff *Joint Vision 2010*.[107] Thus, weaponization of outer space has emerged as a real next step in the advancement of military uses of space.[108] The next space missions to be developed are "space control" and "space force application."[109] The former involves ensuring access to space by U.S. military and allies and denying access to the enemies, and the latter envisions striking terrestrial targets with space-based weapons.[110] Weaponization of space and advancement of combat into ultimate high ground is envisioned as a full emergence of spacepower.[111]

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105 Hays, "Current and Future Military Uses of Space," 2002.

106 Grey and Sheldon, 1999. Many variants of space power theory have been presented but up to date there is no comprehensive spacepower theory. See Hays, "Current and Future Military Uses of Space," 2002. See on theories of spacepower Johnson, Pace, Gabbard, *Space*, 1998; Watts, *The Military Use of Space*, 2001; Steven Lambakis, *On the Edge of Earth: The Future of American Space Power* (Lexington: University Press of Kentucky, 2001); Dolman, *Astropolitik*, 2002; Preston, Johnson, Edwards, Miller, Shipbaugh, *Space Weapons Earth Wars*, 2002.

107 Preston, Johnson, Edwards, Miller, Shipbaugh, *Space Weapons Earth Wars*, 2002, 74.

108 The Missile Defense Agency (MDA) requested $10 million in FY 2005 for space-based interceptor test-bed with the view of holding in-orbit experiments around 2010 and deploying a constellation with interceptors in 2012. This represents a small fraction of $511 million in FY 2005 of MDA's budget devoted to the development of kinetic energy interceptors. The plan with regard to kinetic energy interceptors is to spend $8 billion through FY 2009. See Center for Defense Information, *CDI Missile Defense Update #3.2004*, February 24, 2004, http://www.cdi.org (accessed 04.07.04).

109 See more detailed description of space control in U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, *Joint Doctrine for Space Operations*, Washington D.C., August 9, 2002, IV-5, JP-14, pp. IV-6 – IV-8. See also Grey and Sheldon, 1999, 23-38.

110 Lambeth, *Mastering the Ultimate High Ground*, 2003, 98.

111 Four space missions—space support, space force enhancement, space control and force applications—were formulated by AFSPC in 1983 Space Plan and were formally endorsed by the Department of Defense in 1987. See Lambeth, *Mastering the Ultimate High Ground*, 2003, 98. This typology provides a useful

Strike weapons based on satellites or trans-atmospheric vehicles are expected to enable precision strikes to affect targets in a much higher speed than other options would allow. Orbital operations require speeds of some 17,000 miles per hour—higher than those obtainable in the atmosphere. This quantitative advantage in speed in space operations is expected to transform qualitatively the future warfare.[112] Most importantly, the significance of space weapons[113] is in that they hold the potential of changing the existing deterrence dominance into offense dominance by minimizing the power of offensive nuclear forces.[114] Thus, the current transformation of military is likely to revolutionize not only the way modern wars are fought, which it has already started to do, as evidenced first by the 1991 Gulf War and then by the wars in the Balkans, Afghanistan, and again in Iraq in 2003, but also the cost-benefit calculations on which states decide on the issues of war and peace.

Space weapons can be expected to decrease the costs of war-fighting for a spacepower by providing global operations with decreasing forward bases of infrastructure, by eventually giving the capability to negate or minimize strategic nuclear forces of the enemy, and the capability to destroy hardened underground bunkers, silos, munitions storage depots, underground command posts, naval vessels, and all kinds of heavily defended targets with precision attacks that reduce collateral damage, by

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way of categorizing space military activities and their progress. See Hays, "Current and Future Military Uses of Space," 2002.

112 McKitrick, Blackwell, Littlepage, Kraus, Blanchfield, and Hill, "The Revolution in Military Affairs" in Barry R. Schneider and Lawrence E. Grinter, eds., *Battlefield of the Future: 21st Century Warfare Issues*, Air War Collage, Maxwell Air Force Base, September 1995, http://www.airpower.maxwell.af.mi/airchronicles/battle/chp3.html (accessed 04.16.04).

113 A RAND study defines space weapons as "things intended to cause harm that are based in space or that have an essential element based in space." See Lambeth, *Mastering the Ultimate High Ground*, 2003, 112-113.

114 Hays, "Current and Future Military Uses of Space," 2002. See also Hui Zhang, "FMCT and PAROS: A Chinese Perspective," International Network of Engineers and Scientists Against Proliferation, Prevetion of an Arms Race in Outer Space, Bulletin 20, 2002, http://www.inesap.org/ bulletin20/bul20art06.htm (accessed 07.06.04).

providing the capability to conduct world-wide military operations in a greatly reduced time frame.[115] Space weapons, thus, may provide to a space-capable power a more efficient option for conducting certain operations in comparison to establishing and maintaining modern navy with global reach and military bases around the world.[116] It is not clear, however, whether the costs of conflict in space can be calculated due to a very different geography of this medium and due to the absence of any precedent.[117]

As the ongoing transformation can be perceived as making war less costly,[118] all else being equal, it can make war more likely. Falling costs of militarized conflict can be offset by increasing gains from trade. Uncertainty, thus, exists as to whether increasing gains from trade, as a result of commercialization of outer space, offset perceived reduction of costs of war option. Each state makes its own cost-benefit calculations and however it calculates the costs and benefits of war versus trade options, if the war option is perceived to be less attractive it is reasonable to assume that this state is likely to favor weapons-free space and a security regime banning weapons in space or restricting the use of force in space. If a state finds a war option involving outer space cost-effective it is not likely to pursue a regime banning weapons in space, but it may be interested in pursuing some international regulations on the use of force in outer space. In both cases,

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[115] Lambeth, *Mastering the Ultimate High Ground*, 2003, 113. See also McKitrick, Blackwell, Littlepage, Kraus, Blanchfield, and Hill, Chapter 3 "The Revolution in Military Affairs," 1995.

[116] On advantages and limitations of space weapons see Preston, Johnson, Edwards, Miller, and Shipbaugh, *Space Weapons Earth Wars*, 2002, 96, 101-107. Satellite programs are more expensive at the acquisition phase than other weapons systems. This is because they are RDT&E intensive. They have to go through extensive development testing. However, once launched in space they require a reduced funding to operate them compared to other large production DoD programs. See U.S. General Accounting Office, *Military Space Operations: Common Problems and Their Effects on Satellite and Related Acquisitions*, GAO-03-825R, Satellite Acqusition Programs, June 2, 2003, http://www.telecomweb.com/papers/military.pdf (accessed 03.31.04).

[117] See how space weapons differ from weapons on land, sea, or in the air in Preston, Johnson, Edwards, Miller, and Shipbaugh, *Space Weapons Earth Wars*, 2002, 83. Making any definitive cost-benefit calculation of a potential military conflict in space is beyond the scope of the present study.

[118] Preston, Johnson, Edwards, Miller, and Shipbaugh, *Space Weapons Earth Wars*, 2002, 106.

states' calculations should be reflected in the security interests that they pursue with regard to outer space.

METHODOLOGY AND HYPOTHESES

While advances in space technology may be making space weapons more cost-effective in comparison to other options, the decision to place weapons in space will be made by political leadership of the space-capable powers based on national security interests, which in their turn are shaped by a number of factors, including political, ideological,[119] as well as economic factors. For this reason an analysis of the evolution of security interests with regard to outer space represents a proper subject of study.

To the extent that the commercialization of space has become an important factor, liberal propositions concerning economic interdependence and international cooperation and peace are relevant to the study of space security. They raise hopes for more cooperative and peaceful interstate relations in space. According to the argument of liberal pacification, the commercialization of space should promote convergence in the interests of the major spacepowers with regard to outer space security and is likely to lead to the creation of a security regime regulating proliferating military uses of space so as to make war in space less likely. Realists, whose perspective is also quite relevant for the study of space security in the Commercial Space Age, not least due to the described effects of technological progress on the costs of war, would predict that the

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[119] According to some adherents of liberalism, both threat perception and national interests are shaped by ideology—a broad concept of what is legitimate and what is not. Concepts of legitimacy shape power aspirations and constrain state behavior at the international level. Material factors, including the distribution of power in the international system, are secondary in determining conflict and cooperation, war and peace. See Francis Fukuyama, "Liberal Democracy as a Global Phenomenon," *PS: Political Science and Politics* 24 (December 1991): 662-663. See also John M. Owen, IV, "Transnational Liberalism and U.S. Primacy," *International Security* 26 (winter 2001/2002): 117-152.

commercialization of space leads to greater conflict of security interests and a more competitive security environment. They would also argue that commercial cooperation is most likely between those states that share common security interests.

Thus, the following four hypotheses are formulated for this study:

> Realist hypothesis No. 1: the commercialization of outer space leads to non-converging security interests
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> Realist hypothesis No. 2: converging security interests lead to greater commercialization and greater commercial cooperation
>
> Liberal hypothesis: commercialization and greater commercial cooperation leads to converging security interests
>
> Neo-liberal hypothesis: greater commercialization and commercial cooperation may not lead to converging security interests, but conflicting interests are reconciled via international institutions

In contrast to the majority of the studies produced within the realist-liberal debate, the present analysis draws upon liberal methodology that relies on the postulate of the primacy of state interests over state strategic interaction and calls for two-stage research design: (1) analysis of the state preferences at the domestic level and (2) analysis of strategic interaction of states.[120] For liberals, defining interests of the main actors is theoretically central. The state is not perceived as an actor but a representative institution that aggregates the interests of a group of societal actors.[121] In the present study, the main attention is on state security interests—those interests that are aggregated, in this case, in a form of state security strategies. National security strategies reflect security interests and present broad plans for achieving national objectives supporting those interests.[122] Changes in security strategies represent changes in security interests, based

[120] Moravcsik, 1997, 543-545.
[121] Ibid., 517-518.
[122] See, for example, White House, *National Security Strategy of the United States*, January 1988, 3.

on them security objectives, or security environment. Interests underlie not only strategic calculations of the state but also strategic interaction with other states. Therefore, in order to understand the outcomes of strategic interactions of states, analysis of state interests is fundamentally important.

This study analyzes the evolution of state security interests of three major space powers—the United State, Russia, and China—with respect to outer space since the end of the Cold War. All three spacepowers under study are former, potential or latent rivals who may develop interest in acquiring outer space weapons for strategic purposes, in order to serve their interests

As the issue of weaponization of outer space has emerged as one of the highly prominent issues in interstate relations in the post-Cold War era, this issue is used as a "litmus test" for assessing converging and non-converging security interests of the three spacepowers. The fundamental interest of states with respect to outer space—and the right granted by the Outer Space Treaty—is a free, unimpeded access to outer space. Extension of commerce into outer space creates incentives both for and against weaponization of outer space. Extending the use of force to this medium, including via the weaponization option, threatens the states' fundamental interest in free access to outer space. Weapons put in space will also create new security threats besides the threat of denied access to outer space. Two main options to deal with these threats are available: first, arms control banning the use of force and weaponization of outer space,[123] and

[123] Arms control may be defined as "any agreement among states to regulate some aspects of their military capabilities or potential." This agreement may apply to a location, readiness and types of armaments, facilities. The main objective of arms control is to make war less likely. It is assumed that banning weapons in space would contribute significantly to this end. Other objectives of arms control are to reduce political and economic costs of preparing for war and to minimize the scope and violence of war if it occurs. See Jeffrey A. Larsen, ed., *Arms Control: Cooperative Security in a Changing Environment* (Boulder: Lynne Rienner Publishers, Inc., 2002), 1-2. See also Thomas C. Shelling and Morton H.

second, weaponization of space in order to deter, defend, and deny the use of space to enemies. A third option, a combination of the two, is also possible: a mix of weaponization of space and arms buildups and arms control restricting the use of force to some extent so as to make space security relations more stable. A new security regime for outer space can emerge: firstly, via negotiations and consensus-building; secondly, as a result of imposition on the part of the dominant state; and thirdly, as a result of power balancing and bargaining, if weaker powers manage to build an effective alliance. The former regime would be a collective-security type regime in line with liberal expectations, and the latter would be based on balance of power system in line with realist expectations.

The liberal hypothesis shall be considered as confirmed, if it is demonstrated that under the conditions of progressing space commercialization the three major spacepowers' interests increasingly converged over the time period under the study. Liberal theory also maintains that liberal states who share democratic values should have more cooperative and peaceful relations. Thus, it can be said that a "democratic" liberal hypothesis would predict that security interests of the United States, an economically liberal and democratic state, and those of Russia, an economically liberalizing and politically democratizing state, are more likely to converge than those of the United States and China or Russia and China, as China remains a non-democratic state. The

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Halperin, *Strategy and Arms Control* (Washington D. C.: Pergamon-Brassey's, 1985), 3; and Robert Jervis, "Arms Control, Stability, and Causes of War," *Political Science Quarterly* 108 (summer 1993): 239-253. Outer space arms control is one of the most challenging areas of arms control due to two factors: first, the dual nature of space technology and therefore the difficulty of distinguishing civil and military systems; and second, great strategic advantage that space weapons can potentially provide. Verification is problematic as well. Klotz also point out that the speed with which space technology develops makes it hard for arms control: "Space technology is developing so rapidly that entirely unforeseen threats could emerge within the life of a formal arms control treaty." See Frank G. Klotz, *Space, Commerce, and National Security* (New York: Council on Foreign Relations Press, 1998), 27.

"democratic" liberal hypothesis shall be considered confirmed, if it is shown that space security interests of the United States and Russia increasingly converged in the timeframe of this study, rather than those of the United States-China pair or Russia-China pair. The neo-liberal hypothesis shall be considered as confirmed, if state interactions at the Conference on Disarmament can be shown to have contributed to reaching or moving closer to making compromises and concluding agreements establishing new security regime regulating the military uses of space. The first realist hypothesis shall be confirmed, if it is shown that security interests of the major space powers did not converge as the commercialization of space proceeded. The second realist hypothesis shall be confirmed, if it can be shown that converging security interests between pairs of states led to greater commercial cooperation.

CHAPTER III

THE SECURITY REGIME IN OUTER SPACE DURING THE COLD WAR

> The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefits and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.
>
> The Outer Space Treaty
> 1967

Almost half a century ago human activities expanded from the land, ocean and atmosphere into outer space. It was a remarkable achievement of human civilization that opened new opportunities for improving human conditions on Earth. Space technology, however, proved to be one of the forces that exerted a profound influence on modern civilization not only as a source of human betterment, but also as a source of military power. Under the conditions of the Cold War, this incursion into the fourth medium had significant security implications. The launch of *Sputnik 1* was a dramatic demonstration of Soviet advancement in the ballistic missile technology and the emergence of a new threat: a threat of extending an arms race, including a nuclear arms race, and potentially warfare, into outer space. Military activities in outer space transformed the strategic environment of the Cold War. However, during the Cold War, even though outer space was used for military purposes, it was not weaponized and a regime grew up that gradually restricted the use of force in space.

The task of this chapter is to show: (1) that a security regime in outer space was established during the Cold War that considerably restricted the use of force in outer space, and (2) that the foundation of the regime significantly eroded by the later part of the Cold War. Arguably, despite this erosion, decades of "peaceful uses" of outer space by the Cold War superpowers for their security needs gave birth to the norm of non-use of force in outer space. First, this chapter defines space security and the concept of a security regime, and then outlines the Cold War space security regime and its evolution.

Security in general, including space security, involves military, political, socioeconomic and environmental aspects. Various schools of thought define security differently. Traditional approaches define security in predominantly military terms and tend to consider it as a goal in itself. Other approaches may not consider security as an ultimate goal, treating it instead as a means to achieving such goals as human survival, international order, societal welfare, personal freedom or freedom from environmental degradation. In this study, a narrow definition is used according to which security is understood as a condition, in which states perceive no danger of military attack, political pressure or economic coercion, so that they are able to pursue freely their own development and progress.[1]

Space security has two main components: first, free access to outer space and secure and equitable use of space, including the security of space assets; and second, freedom from a hostile use of space, including space systems, services and information they provide against a state—its territory, population, industrial infrastructure, as well as political, economic, and social systems and culture. In accordance with a narrow definition of space security, this study focuses on military aspects of security, leaving out such aspects as equitable use of space and environmental issues.

[1] Stephen E. Doyle, *Civil Space Systems: Implications for International Security* (Aldershot: Dartmouth, 1994), 12.

THE LEGAL SECURITY REGIME IN OUTER SPACE

A space security regime, similar to international regimes in general, is a set of principles, norms, rules, and decision-making procedures around which states' expectations converge regarding the issues of space security.[2] International relations scholars seem to agree that security regimes are difficult to achieve in comparison to other areas of international relations.[3] This is because security regimes imply a form of international cooperation that requires states to forego their short-term security interests for the sake of long-term security interests, while there is a threat that other states may cheat and take advantage of the situation in a highly competitive realm of security where the ultimate price may be state survival.

In order for a security regime to emerge, certain conditions have to be met. First, states must prefer a regulated issue area and want to establish a security regime. Second, states should perceive that others share their security interests, or that the security interests of the states involved can converge so that a consensus can be built. Third, all states should be satisfied with the *status quo* in the issue area and not to prefer unilateral steps for providing their security. Fourth, war and the individualist pursuit of security must be considered as costly.[4] Conditions when offensive and defensive weapons and policies are distinguishable and the former cheaper and more effective than the latter, or when they cannot be distinguished but it is easier to defend than attack are considered to

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[2] The definition of international regimes is given by Krasner as being "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations." See Stephen D. Krasner, ed., *International Regimes* (Ithaca: Cornell University Press, 1989), 2.

[3] Robert Jervis, "Security Regimes," in Krasner, ed., *International Regimes*, 1989, 174.

[4] Jervis elaborates these four conditions that are necessary for the formation of a security regime. See Ibid., 176-178.

be the most favorable for the emergence of regimes.[5] And finally, states need to be able to overcome the relative gains problems that are inherent in security issues in order to establish a security regime.[6]

The space security regime that emerged during the Cold War was an unambiguous example of a security regime. These were years of extensive disagreements between the Soviet Union and the United States on the governance across the whole spectrum of outer space issues—military and even commercial issues. Nonetheless, under the conditions of the Cold War, the United States and the Soviet Union came to an understanding that security in the outer space issue area had to be established through cooperation rather than unilateral steps early into the Space Age. The first global multilateral treaty regulating military activities of states in outer space was concluded in 1963, just six years after the launch of *Sputnik 1*.

At the outset of the Space Age, the United States and the Soviet Union advocated starkly different approaches to the governance of outer space, particularly in the issue area of military uses of space. The U.S. approach was based on the principles embodied in the Antarctic Treaty of 1959 and the separation of the issue area of outer space from other issue areas. The Soviet approach linked outer space security to other security and disarmament issues. The Soviet Union was not willing to restrict the uses of outer space for peaceful purposes unless the United States would eliminate its foreign bases with short-and medium-range missiles.[7]

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5 Ibid., 178.

6 This condition is particularly emphasized by Grieco. See Joseph Grieco, "Anarchy and the Limits of Cooperation: A Realist Critique of the Newest Liberal Institutionalism," *International Organization* 42 (summer 1988): 485-507.

7 See U.S. State Department's narrative to the Outer Space Treaty at the Department of State website at http://www.state.gov/ (accessed 01.26.01).

In the commercial realm, the Unite States saw great opportunities for commercial activities in outer space from the beginning of the Space Age and wanted to ensure that this opportunity would be available under the emerging regime governing activities in outer space. When President Eisenhower announced his administration's space policy in 1960 he emphasized the importance of satellite communications and the role of commercial sector in realizing this endeavor. The Soviet Union was strongly opposed to commercial activities in outer space. Moreover, the Soviet objection to commercial activities in outer space was fundamental: it was grounded in the Marxist ideology that considered commerce as a source of international conflict and violence. According to the Soviet perspective, in order to preserve the peaceful uses of outer space it should not be perverted by the capitalist practices of commercial actors.[8] In 1962, the Soviet Union submitted to the United Nations Committee on the Peaceful Uses of Outer Space—established in 1958 to promote international cooperation in the exploration and use of outer space—a "Draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space," which specified that "[a]ll activities of any kind pertaining to the exploration of outer space shall be carried out solely and exclusively by States...."[9] The United States responded to this position by pointing out that, according to the already enacted Communication Satellite Act of 1962,

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[8] See H. Peter van Fenema, *The International Trade in Launch Services: The Effect of U.S. Laws, Policies and Practices on its Development* (Leiden: H.P. van Fenema, 1999), 67.

[9] See United Nations, "Draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space," A/AC.105/L.2, 1962; A/5/81, Annex 3, 1962, quated in Kunihiko Tatsuzawa, "The Regulation of Commercial Space Activities by the Non-Governmental Entities in Space Law," *Space Future*, Online publication, http://www.spacefuture.com/archive/ the_regulation_of_commercial_space_activities_by_the_non_governemtnal_entities_in_space_space_law.shtml (accessed 03.14.01). See also Wayne White, "The Legal Regime for Private Activities in Outer Space," *Space Future*, Online publication, http://www.spacefuture.com/pr/archive/ the_legal_regime_for_private_activities_in_outer_space.shtml (accessed 07.10.04).

private firms were granted the right to engage in activities in outer space.[10] Thus, the two superpowers' perspectives on outer space governance were far apart and, under the conditions of intense Cold War confrontation, it took quite dramatic developments to bring about their consensus on space security issues that could then lead to the establishment of an outer space security regime.

The 1962 Cuban missile crisis pushed the world to the brink of a nuclear war. The emergence of the agreement on the 1963 Partial Test Ban Treaty was brought about, in large part, by this dramatic event. The Cuban Missile Crisis took place against the background of nuclear tests in the atmosphere and in outer space conducted by both superpowers.[11] The timing and dynamics of these tests were quite telling of their military as well as political purposes. It is these events that brought about the four conditions emphasized by Jervis as necessary for the emergence of a security regime. These developments also demonstrate what it took to reach a consensus and create the space security regime.

The series of experiments with nuclear explosions began on August 1, 1958 when the United States exploded a thermonuclear device at 76.8 kilometers above the sea level. On August 12, 1958, the United States carried out another thermonuclear explosion at

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[10] The US adopted the Communications Satellite Act in 1962. In this act the US Congress laid the foundation for the world's first global communications satellite system. Congress declared that "it is the policy of the United States to establish, in conjunction and cooperation with other countries, as expeditiously as practicable, a commercial communications network, which will be responsive to the needs and national objectives, which will serve the communications needs of the United States and other countries, and which will contribute to world peace and understanding." Eventually, that global satellite system became the International Telecommunications Satellite Organization (INTELSAT) system. The Act is the first policy statement of the US government to assume that space was am appropriate place for commercial activities: it provides a mechanism for the involvement of both the government and the private sector.

[11] Steven Weber and Sidney Drell, "Attempts to Regulate Military Activities in Space," in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S. Soviet Security Cooperation: Achievements, Failures, Lessons* (New York: Oxford University Press, 1988), 381.

42.98 kilometers above the sea level. Both these explosions were conducted as a part of the U.S. antiballistic missile defense program, a reaction to the 1957 Soviet launches of its first ballistic missiles.[12] August 27, 1958, went down in the historic record as a date when the first nuclear explosion took place in outer space proper. The United States exploded a nuclear device at 161 kilometers above the sea level and a few days later repeated the explosion at 292 kilometers. On September 6, 1958, the United States exploded a nuclear device at the record altitude of 750 kilometers above the sea level.[13]

A moratorium on nuclear explosions during 1958-61 did not allow the Soviet Union to respond immediately with nuclear explosions in kind. However, on October 27, 1961, the Soviet Union conducted two nuclear explosions in outer space. The goal of the experiments was twofold: (1) to study the impact of nuclear radiation on space systems,[14] and (2) to test a system for the interception of ballistic missiles within the Soviet anti-ballistic missile defense program. On June 20, 1962, the United States renewed its

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[12] The United States started planning for the research and development of missile defense shortly after World War II when U.S. defense contractors concluded that anti-ballistic missile technology was beyond their current reach. In 1957, the United States began work on its first major missile defense effort, the Nike-Zeus system. By 1962 the technology flaws in the Nike-Zeus system led the United States to begin work on the Nike X missile defense program, which was based on nuclear-tipped interceptors.

[13] According to some sources, the September explosion took place at the altitude of 467 kilometers above sea level. See A. Zhelesnyakov and L. Rosenblum, "Yadernye Bsryvy v Kosmose" (Nuclear Explosions in Space), *Novosti Kosmonavtiki*, No 9 (236), 2002, 68.

[14] Nuclear explosions in outer space cause radiation belts around Earth to form that damage unshielded satellites in orbit that pass through these belts. The Soviet Union studied this effect in order, firstly, to use these effects in its ballistic missile defense program, secondly, to avoid damage to its satellites in outer space, and, thirdly, to ensure that Soviet cosmonauts sent in space would not be harmed by this radiation. For example, nuclear radiation belts that formed as a result of the nuclear tests in outer space in the early 1960s had to be taken into consideration in planning of Soviet manned missions of *Vostok-3* and *Vostok-4* of August 1962. The United States had to plan for avoiding these radiation belts for its mission *Mercury MA-8* that took place in October 1962. The consequences of the nuclear explosions in outer space were known to endure for a few years after the explosions. The last Soviet nuclear explosion within the atmosphere was conducted on November 1, 1962, when the impact of a nuclear explosion on radio communication was studied. The United States conducted its last atmospheric nuclear explosion on November 4, 1962. In total count, the United States conducted 9 atmospheric and space nuclear explosions, the Soviet Union – 5. The 1963 Partial Test Ban Treaty put an end to Soviet and American nuclear explosion in the atmosphere and other space. China, however, never joined the treaty and on October 27, 1966, China's ballistic missile *Dong Feng-2A* delivered a nuclear warhead that exploded over a military training ground in China. See Zhelesnyakov and Rosenblum, 2002, 68-70.

nuclear tests in outer space.[15] The United States carried out a large nuclear explosion that could be seen from hundreds of miles away on the ground on July 9, 1962. On October 22, 1962, so did the Soviet Union with a smaller nuclear device. This explosion took place amid the Cuban missile crisis—slightly over a week after a U.S. U-2 reconnaissance flight discovered the construction of the Soviet missile bases in Cuba. On October 26, 1962, the United States conducted a large explosion in the atmosphere. The Soviet Union responded with its nuclear explosion on October 28, 1962.[16]

On the one hand, the 1961-62 nuclear tests, particularly those during the crisis itself of October 16-28, 1962, significantly exacerbated the specter of a nuclear war during the Cuban missile crisis, and on the other, prompted caution on the part of the two Cold War rivals in managing their conflictual interests and hastened the emergence of an agreement between the two that some security regime for outer space, and more generally for managing the Cold War nuclear rivalry, was necessary. In June 1963, the United states offered to sign an agreement prohibiting nuclear explosions in three media: in the atmosphere, in outer space, and under water. The Soviet Union agreed almost immediately. Thus, the United States, the Soviet Union and Great Britain signed the "Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water," outlawing nuclear explosions in outer space.[17] It was the first legally binding document containing a specific prohibition of the military use of outer space.[18]

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[15] It was a failed launch and experiment was terminated on the 65th second. See Zhelesnyakov and Rosenblum, 2002, 68.

[16] The Soviet Union conducted its fifth and the last nuclear explosion at the edge of the atmosphere at the altitude of 80 kilometers above the sea level on November 1, 1962. The United States carried its last powerful nuclear explosion at the altitude of 97.5 kilometers above the sea level on the same day. See Zhelesnyakov and Rosenblum, 2002, 69.

[17] "Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water," (Partial Test Ban Treaty), August 5, 1963, Article I, http://www.unog.ch/frames/disarm/distreat/

In the same year, the United Nations General Assembly (UNGA) adopted Resolution 1962 (XVIII), in which the basic rules of the use of outer space were laid out,. establishing that activities of states in the exploration and use of outer space would be carried "for the benefit and in the interests of all mankind" and "of maintaining international peace and security and promoting cooperation and understanding."[19] In 1967, ten years after the opening of outer space to the reach of humanity, the United States and the Soviet Union negotiated and, finally, signed the Outer Space Treaty that became the cornerstone of the legal regime for outer space.[20] The treaty established the fourth medium as global commons and granted free access to outer space and the right of all states to explore and use space on the basis of equality. It prohibited the emplacement

part_ban.htm (accessed 10.13.03). The treaty was signed by the United States, the Soviet Union and Great Britain in Moscow on August 5, 1963, and entered into force on October 10, 1963. Many other countries joint the treaty later.

[18] The United States put forth the first proposal for international verification of the testing of space object before the launch of *Sputnik*, in early 1957. The development of an inspection system for outer space was a part of Western proposal presented in August 1957. The Soviet Union, being in the midst of testing its first ICBM, declined this proposal. See comments to the Outer Space Treaty at the Department of State website at http://www.state.gov/ (accessed 01.26.01).

[19] United Nations, "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space," Paragraphs 1 and 4.

[20] The idea of limiting the military use of space originated in the Western bloc. On September 22, 1960, President Eisenhower in his address to the United Nations General Assembly proposed that principles of the Antarctic Treaty, that had been just signed, should be applied to outer space. In the mid-1960s, the United States pressed for an arms control treaty, regulating the use of outer space and giving the rules bounding power. See comments to the Outer Space Treaty at the Department of State website at http://www.state.gov/wwwglobal/arms/treaties/space1.html (accessed 01.26.01). The "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies" was negotiated within the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) established by the resolution of the UN General Assembly in 1958. The goal of this body was to provide a legal framework for the peaceful uses of outer space and promote international cooperation in space exploration and utilization. Since its inception, the Legal Subcommittee of the UNCOPUOS also prepared four other major treaties governing outer space activities: (1) "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space" (Rescue Agreement, 1968); (2) "Convention on International Liability for Damage Caused by Space Objects" (Liability Convention, 1972); (3) "Convention on Registration of Objects Launched into Outer Space" (Registration Convention, 1974); and (4) "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies" (Moon Agreement, 1979).

of weapons of mass destruction (WMD) in outer space.[21] It also limited the use of the Moon and other celestial bodies exclusively to peaceful purposes and prohibited their use for establishing military bases, installations, or fortifications, testing weapons of any kind and conducting military maneuvers.[22] The treaty put all the national activities in outer space—whether by governmental agencies or non-governmental entities—under the supervision and international responsibility of states.

The 1967 Outer Space Treaty also promulgated a norm of non-interference with the peaceful space activities of other states. In Article IX of the Treaty, it specified:

> If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other State Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.[23]

This article gave the right to the state parties to the treaty to initiate consultations on any space activities they may find threatening to their space activities and established the responsibility of the states conducting activities that may be harmful to other states' space activities to hold the requested consultations.

The 1979 Moon Agreement elaborated many of the provisions of the Outer Space Treaty relating to the peaceful use of the Moon and other celestial bodies. The significance of this treaty, even though it was not supported by the main space-faring

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[21] Earlier, in October 1963, a UNGA resolution welcomed the Soviet and U.S. statements, affirming the intentions of the two superpowers not to place weapons of mass destruction in outer space.
[22] United Nations, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," 1967, Article IV.
[23] Ibid., Article IX.

states, was that it legally established the Moon and its natural resources as the common heritage of mankind[24] and required to form an international regime governing the exploitation of its resources when this becomes available with an intent to prevent any militarized competition for the natural resources of the celestial bodies or the use of it for military bases.[25] Therefore, the Outer Space Treaty and the Moon Agreement established a legal international norm of peaceful uses of outer space.[26]

Three United Nations General Assembly (UNGA) resolutions were adopted related to the space security regime in a broad sense. The 1982 UNGA resolution on "Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting" specified that activities of states in the field of international direct television broadcasting by satellites should be carried out in a "manner compatible with the sovereign rights of States" and "compatible with the development of mutual understanding and the strengthening of friendly relations and cooperation among all States and peoples in the interest of maintaining international

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[24] Common heritage of mankind (CHM) concept was first proposed by the UN Ambassador Arvid Pardo of Malta in 1967 regarding the governance of the ocean. The concept includes five basic principles: (1) the principles of non-appropriation; (2) the principles of shared management, which entails a new form of social relations based on an international regime of cooperation; (3) the principles of "common benefit for mankind as a whole", implying an equitable scheme of distribution and redistribution of wealth; (4) the principle of "use for exclusively peaceful purposes", which presupposes the notion of disarmament in the process of implementing the CHM concept; and (5) the principle of conservation for future generations, which serves as a foundation for sustainable development of the commons. See, for example, Peter B. Payoyo, ed., *Ocean Governance: Sustainable Development of the Seas* (New York: United Nations University Press, 1992), 250-251, and Buck, *The Global Commons*, 1998, 28-29.

[25] United Nations, "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies," United Nations General Assembly Resolution, 34/68, December 18, 1979, http://www.oosa.unvienna.org/SpaceLaw/gares/htm/gares_34_0068.html (accessed 02.04.02). It was signed in 1979 and entered into force in 1984. Only 9 countries ratified the agreement by February 1, 2001.

[26] United Nations, "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," 1967, Article IV, and United Nations, "Agreement Governing the Activities of States on the Moon and Other Celestial Bodies," Article II. It should be pointed out that there are different interpretations of the term "peaceful." Some interpret "peaceful" as non-military, others as "non-aggressive." See, for example, Bin Cheng, *Studies in International Space Law* (Oxford: Clarendon Press, 1997), 528-529.

peace and security."[27] It also called for peaceful resolutions of any disputes that may arise from activities of states in the field of international direct television broadcasting via satellites. The 1986 UNGA resolution on "Principles Relating to Remote Sensing of the Earth from Outer Space" stipulated the principle of "freedom of exploration and use of outer space on the basis of equality" based on "full and permanent sovereignty of all States and peoples over their own wealth and natural resources."[28] It sought to encourage international cooperation and ensure affordable access by developing countries to non-military satellite imaging. In order to promote and intensify international cooperation, it obligated the states that conducted remote sensing via satellites to enter into consultations with sensed states upon their request. The purpose that these resolutions served was to diminish the possibility of conflicts arising from emerging new activities in the fourth medium and thus lessen the incentives for extending militarized confrontation into outer space.

In order to minimize the risk of radioactive exposure from nuclear operated satellites, the UNGA resolution on "Principles Relevant to the Use of Nuclear Power Sources in Outer Space" required states to limit the use of nuclear power sources and, when they were used, to protect individuals, populations, the biosphere, and the environment of outer space against radioactive hazards. It also specified the responsibilities of states operating satellites with nuclear power sources on board and

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[27] United Nations, "Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting," United Nation General Assembly Resolution 37/92, Articles A, paragraphs 1 and 3, December 10, 1982, http://www.oosa.unvienna.org/SpaceLaw/dbstxt.htm (accessed 02.04.02).

[28] United Nations, "Principles Relating to Remote Sensing of the Earth from Space," United Nations General Assembly Resolution 41/65, Principle IV, December 3, 1986, http://www.oosa.unvienna.org/SpaceLawrstxt.htm (accessed 02.04.02).

those that have the capability to assist states affected by exposure to radioactivity from such sources.[29]

The 1977 Geneva "Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques," whose goals were "halting the arms race" and "saving mankind from the danger of using new means of warfare," prohibited the use of environmental modification as a means of destruction, damage or injury to any state party. This convention is also applicable to outer space and represents a significant component of the space security regime. Article II stated:

> As used in article I, the term "environmental modification techniques" refers to any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or outer space.[30]

The 1968 Rescue Agreement required to render all necessary assistance to astronauts if they have "suffered an accident, or experiencing conditions of distress or have made an emergency or unintended landing" in a territory of foreign state.[31] This agreement gave astronauts a diplomatic immunity that was not granted to military pilots, thereby signifying that uses of space for human exploration were not recognized as

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[29] United Nations, "Principles Relevant to the Use of Nuclear Power Sources in Outer Space," United Nations General Assembly Resolution 47/68, Principle 3, Article 1, Paragraphs (a) and (b), Principle 7, Article 1, Paragraphs (a) and (b), and Principles 8 and 9, December 14, 1992, http://www.oosa.unvienna.org?SpaceLaw/spbentxt.htm (accessed 02.04.02). Although this resolution was adopted in 1992, negotiations on the issue took place at the UNCOPUOS during the 1980s, after the crash of the Soviet satellite carrying a nuclear power source (NPS) that scattered radioactive debris over Canadian territory.

[30] United Nations, "Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques" (ENMOD Convention), United Nations General Assembly Resolution 31/72, December 10, 1976, Article II, http://www.unog.ch/frames/disarm/distreat/environ.pdf (accessed 05.22.04). The ENMOD Convention was open for signature at Geneva on 18 May 1977 and entered into force on October 5, 1978. Both the Soviet Union and United States signed the 1977 Geneva Modification Convention on May 18, 1977, while China never became a party to this multilateral agreement. See United Nations, Status of Multilateral Arms Regulations and Disarmament Agreements, http://disarmament.un.org/TreatyStatus.nsf (accessed 05.22.04).

[31] United Nations, "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space" (Rescue Agreement), United Nations General Assembly Resolution 2345 (XXII), 1968, http://www.oosa.unvienna.org/SpaceLaw/gares/html/gares_22_2345.html (accessed 02.04.02).

military activities. The 1972 Liability Convention provided for compensation for damage that was caused by a space object either to people or property of another state or international intergovernmental organization either in space, atmosphere, or on the land.[32] And the 1975 Registration Convention put in place a central registry for mandatory and uniform registration of objects launched in outer space, kept by the United Nations Secretary-General and publicly accessible.[33] This agreement was designed to strengthen the international responsibility of states undertaking space activities and provide for the transparency of space activities so as to make them less threatening and destabilizing.

Furthermore, the international telecommunications regime, governing the use of radio frequencies, including their use in outer space, established the norm of avoiding harmful interference with space radio communications.[34] This norm was extended from the terrestrial telecommunications regime to space telecommunications in 1963 at the Space Communication Conference held by the International Telecommunication Union (ITU),[35] the oldest international organization regulating and coordinating the use of radio spectrum worldwide.[36] In 1971, the World Administrative Radio Conference on Space Telecommunications (WARC-ST) brought geostationary orbit and allocation of radio

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[32] United Nations, "Convention on International Liability for Damage Caused by Space Objects" (Liability Convention), United Nations General Assembly Resolution 2777 (XXVI), 1972, http://www.oosa.unvienna.org/SpaceLaw/gares/html/gares_26_2777.html (accessed 02.04.02).

[33] Nowadays, the UN registrar of objects launched in outer space is accessible online. See United Nations Registrar of Objects Launched in Outer Space, http://www.oosa.unvienna.org/SORegister/regist.html (accessed 03.03.04).

[34] The rights of users of frequencies are defined in terms of the protection from harmful interference once frequency is registered with the International Telecommunication Union. This is specified in the 1992 ITU Constitution. See International Telecommunication Union, *Constitution of the International Telecommunication Union*, Article 1, December 22, 1992, amended October 14, 1994, http://www.austlii.edu.au/other/dfat/treaties/1994/28.html (accessed 10.20.03).

[35] Issues related to radio communications in outer space were first discussed at the World Administrative Radio Conference (WARC) in 1959. This Conference produced the first international agreement applicable to space activities.

[36] The regime governing the use of electromagnetic spectrum for communications evolved over the period of time since 1903 when international arrangements on a coordinated use of radio frequencies was first discussed at the Berlin Conference. See, for example, Vogler, *The Global Commons*, 1995, 114.

frequencies for the use in outer space under the supervision of the International Telecommunications Union for the purpose of preventing harmful interference with space radio communications and providing more equitable access to the use of these outer space resources. The conference adopted the principle that the registration and use of a satellite orbital position could not be interpreted as giving permanent property right and should not create obstacles to the establishment of space systems by other countries. The 1973 ITU Convention, in which ITU responsibilities were expanded to include the allocation of geosynchronous (GSO) positions and frequencies, confirmed the principle of equitable access to the GSO and associated frequencies.[37] The underlying intention of this provision was to put in place a mechanism for avoiding international conflicts over the access and use of the "limited natural resources" of outer space and, thus, to ensure the peaceful use of outer space. Although some authors do not include the space telecommunication regime as a part of the outer space regime,[38] it is an important regime supporting the norm of peaceful uses of outer space.

The 1987 Missile Technology Control Regime (MTCR),[39] a cartel-type regime, was established by a number of leading industrial countries led by the United States to deal with the problem of proliferation of missile technology to other countries and non-state actors. This regime was created to complement the Non-Proliferation Treaty (NPT),

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[37] Ibid., 116.

[38] Buck, for example, draws sharp distinction between the space telecommunication regime and outer space regimes, whereas some other authors consider space telecommunication regime as a sub-regime of outer space regime. See Buck, *The Global Commons*, 1998, 138. Vogler divides outer space into four issue areas each with its own sub-regime: (1) military uses of outer space, including ASATs; (2) space debris and environmental issue area; (3) information flow; and (4) the orbit and radio frequency spectrum resource allocation. See Vogler, *The Global Commons*, 1995, 103.

[39] The agreement on Guidelines for the Transfer of Equipment and Technology Related to Missiles—an exchange of diplomatic notes and statements confirming adherence to the common export controls between the seven original members, including the United States, Canada, the United Kingdom, France, West Germany, Italy and Japan—gave a start to the Missile Technology Control Regime on April 16, 1987. See van Fenema, 1999, 141.

which addressed the threat of proliferation of nuclear technology, and the Coordinating Committee for Multilateral Export Controls, which dealt with the threat of proliferation of all strategically important goods and technologies.[40] Although the MTCR did not regulate outer space *per se*, it was another important regime supporting the space security regime without which the commercialization of outer space activities could have had disastrous consequences. This is because space launch technology for non-military and military purposes is virtually indistinguishable.[41] An unrestricted market for space launch technology or systems would facilitate the selling of missiles to military establishments and possibly terrorist organizations around the world.[42] Thus, the United States and its G-7 partners agreed to tighten their restrictions on the transfer of equipment and technology used in military ballistic missiles, civilian sounding rockets and space launch vehicles to countries suspected of developing or planning to develop nuclear

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[40] If the NPT dealt with the threat of proliferation of nuclear technology, the Coordinating Committee for Multilateral Export Controls (CoCom) tried to prevent the flow of strategically important goods and equipment from going into the Soviet bloc and benefiting the Cold War adversary. To serve this goal, CoCom—a non-treaty organization established by the Western bloc countries led by the United States in 1949—maintained a list of embargoed products and technologies that served as a basis for national export controls of the member countries. Nearly all space-related products and technologies, such as launch vehicles and technology, communications satellites, and computers were included in the CoCom lists. On March 31, 1994, at a high level meeting of the 17 CoCom governments in The Hague, an official end of the CoCom was announced due to the fact that it outlived its strategic rationale and could not be sustained. In December 1995, 28 countries, among which the former CoCom members, Russia and some other countries, agreed on the establishment of the new arrangement. The new agreement, titled the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, was launched with the purpose of preventing destabilizing buildups of armaments and precluding transfer of dual-use technology, including space-related goods and technology, to countries of concern. It was officially created in July 1996. See Arms Control and Disarmament Agency, "Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies," ACDA Fact Sheet, July 1996, http://www.acda.gov/factsheet/conwpn/wassenaa.htm (accessed 06.15.04). See also van Fenema, *The International Trade in Launch Services*, 1999, 128-129, 135.

[41] See, for example, van Fenema, *The International Trade in Launch Services*, 1999, 147.

[42] After the Reagan administration took a course on commercialization of space activities, experts warned that the commercialization of space activities in the United States might accelerate missile technology development in the Third World. See, for example, Aaron Karp, "Space Technology in the Third World: Commercialization and the Spread of Ballistic Missiles," *Space Policy*, May 1986, 157.

weapon launch systems.[43] The Missile Technology Control Regime became a mechanism for the coordination of national export restrictions to limit proliferation of missile technology. It put in place an administrative framework for achieving this goal.[44] The regime relied on adherence to common export guidelines that were applied to a list of controlled items, the "MTCR Equipment and Technology Annex." Decisions with respect to the guidelines and the annex were made by the regime members based on the consensus and it was the responsibility of the individual members to provide control over their exports.[45] The Soviet Union was not a member of the MTCR but experts expected the Soviet Union to be willing to follow the Western states in restricting proliferation of missile technology to the third countries.[46]

The regime governing the use of outer space was, to a very large degree, determined by the security relationship between the two Cold War superpowers that for a time were the only space-faring states.[47] Their role was important both in the negotiations of the multilateral space legal framework and in their actual interaction on the issues of space security. In addition to multilateral agreements, a number of bilateral

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[43] The seven original members of the MTCR included the United States, Canada, France, the United Kingdom, West Germany, Italy and Japan. At first, the regime targeted nuclear-capable missiles and later was expanded to cover unmanned systems capable of delivering weapons of mass destruction. In 1993, the Guidelines were revisited and a new version replaced term "nuclear" weapons by "weapons of mass destruction". See van Fenema, *The International Trade in Launch Services*, 1999, 141.

[44] The MTCR members meet regularly to review the "Equipment and Technology Annex" and exchange views on the national implementation of the regime. See van Fenema, *The International Trade in Launch Services*, 1999, 145.

[45] Membership in the MTCR did not give the right to obtain technology from another member of the regime or an obligation to supply it. It also did not provide sufficient guarantee against the misuse of the technologies bought, as the regime did not provide for inspections or any other measures to ensure that peaceful launch technology is not diverted to military uses. After the end of the Cold War, the MTCR membership was expanded to include the major space-capable states. With the considerable erosion of the missile non-proliferation regime due to the indigenous missile research and development around the world, as well as commercialization of outer space activities, the regime needed strengthening. In November 2002, in order to augment the MTCR regime, 93 countries signed the International Code of Conduct, which calls for more transparency in national missile policies.

[46] See, for example, Karp, 1986, 167.

[47] France became the third space-capable country and joined the exclusive space club when it launched its satellite *Asterix* into orbit on November 26, 1965.

U.S.-Soviet agreements provided important components of space security regime during the Cold War. In 1971, the United States and the Soviet Union signed the "Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War." This agreement legitimized the existence and use of certain satellite systems for military purposes. The Hot Line Modernization Agreement of 1971 provided for the creation of two secure satellite links for direct communications in case of emergency or crisis between the United States and the Soviet Union for the sake of their mutual and global security.[48] This agreement updated the original Hot Line Agreement of 1963, taking advantage of the advances in satellite communication technology offering more reliable communication channels via satellites. This signified the fact that by the early 1970s outer space was considered by the two Cold War superpowers as a safe medium for their direct communications in time of an emergency or international crisis.

The 1972 ABM Treaty limited the deployment of ABM systems and components to agreed levels and regions. Importantly, among other provisions, the ABM Treaty prohibited the testing, development, and deployment of space-based ABM systems or components.[49] The ABM Treaty helped to keep outer space free of weapons since the

[48] The original Hot Line Agreement was signed in 1963. It established a direct communications link between the leader of the United States and the Soviet Union to reduce the chances of a nuclear exchange stemming from an accident or miscalculations. This agreement followed the dramatic events of the Cuban Missile Crisis of 1962 that compellingly underscored the necessity of the prompt, direct communications between the heads of stats of the two nuclear superpowers. The 1963 agreement provided for the creation of a wire telegraph circuit routed Washington-London-Copenhagen-Stockholm-Helsinki-Moscow, and for a radio telegraph circuit routed Washington-Tangier-Moscow as a backup system. It was modified to take advantage of advances in telecommunication technology in 1971. The satellite system became operational in January 1978. See "Memorandum of Understanding between the United States of America and the Union of Socialist Republics Regarding the Establishment of a Direct Communications Link," June 20, 1963, http://www.state.gov/www/global/arms/treaties/hotline1.html (accessed 07.10.04); and "Agreement between the United States of America and the Union of Soviet Socialist Republics on Measures to Improve the U.S.A.-USSR Direct Communications Link," September 30, 1971, http://www.state.gov/t/ac/trt/4787.htm (accessed 07.10.04).

[49] "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of the Anti-Ballistic Missile Systems," Article 5, May 26, 1972. On September 26, 1997, a

time it entered into force and allowed the United States and the Soviet Union come to mutually acceptable arms control agreements and gradually reduce their nuclear offensive arsenals. It became seen as a cornerstone of the Cold War arms control process and global stability.

Furthermore, the ABM Treaty, together with the Interim Agreement on the Limitations of Strategic Offensive Arms, also established the bilateral norm of non-interference with the national technical means of verification that included both ground-based and space-based systems.[50] One of the interpretations of this norm was that any interference with any early warning, imaging, or intelligence satellite, and, by extension, with any ocean surveillance satellite of the United States and the Soviet Union was prohibited.[51]

The 1988 "Agreement between the Soviet Union and the United States on Notification of Launches of Intercontinental Ballistic Missiles and Submarine-Launched Ballistic Missiles" (ICBMs and SLBMs) specified that each party would provide an

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Memorandum of Understanding was signed recognizing Belarus, Kazakhstan, Russia, and Ukraine as the successor states to the Soviet Union and parties to the ABM treaty, thereby making it a multilateral treaty.

[50] See "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of the Anti-Ballistic Missile Systems," Article 12, May 26, 1972, and "Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms," Article 5, May 26, 1972, http://www.fas.org/nuke/control/salt1/text/salt1.htm (accessed 10.15.03). The principle of non-interference with national technical means (NTM) of verification was taken over into the INF Treaty, which is of indefinite duration, and into the START 1 Treaty, which has been extended to 2009.

[51] This norm was made multilateral in the Conventional Force in Europe (CFE) Treaty the treaty, members of which include thirty NATO and East European countries, including former republics of the Soviet Union. See "Conventional Forces in Europe Treaty," November 19, 1990, Article XV, http://www.fas.org/nuke/control/cfe/text/cfe_t.htm#1 (accessed 10.20.03). Originally the CFE Treaty was signed by 22 State Parties, including the Soviet Union. Although, according to the CFE Treaty, only satellites used for verification of specific treaties are protected, in most cases it cannot be reliably determined which satellites are actually used or could be used in future for this purpose and therefore almost all can be thought as being covered by this provision.

advance notification concerning the launches of ICBMs and SLBMs.[52] The agreement was to ensure that the two superpowers would not mistake a satellite launch for a possible nuclear attack.[53] It provided an important measure of transparency of the two space powers' launch activities, ensuring their security in general, and free and safe access to outer space in particular, contributing to the overall space security regime.

All in all, by the twilight of the Cold War, a multifaceted space security regime was in place that significantly restricted the use of force in outer space and, along with supporting regimes that diminished the incentives for the use of force by providing important mechanisms of coordinating activities in space and, if not resolving, then significantly defusing conflictual interests, contributed to peaceful exploration and use of outer space. However, despite considerable success in maintaining security in outer space throughout the Cold War, the multi- and bilateral treaties and agreements, lying in the foundation of the regime, left a considerable gap in the outer space security regime, making further militarization of space possible and leaving the door open for its weaponization and extending war-fighting into this medium.

According to Articles I and II of the Outer Space Treaty that declare outer space and celestial bodies as being free for exploration and use by all states without

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[52] "Agreement Between the United States of America and the Union of Soviet Socialist Republics on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine-Launched Ballistic Missiles," May 31, 1988, http://www.state.gov/t/ac/trt/4714.htm (accessed 10.15.03).

[53] Some previous agreements between the United States and the Soviet Union, such as the 1971 Accidents Measures Agreement and the 1972 Incidents at Sea Agreement, and some provisions of the SALT II Treaty, which was not ratified, however, required the two countries to provide notification of their launch activities in some specified cases. None of the previous agreements, however, covered all strategic ballistic missiles. In 2000, a follow-on Memorandum of Understanding (MOU) between the United States and Russia expanded the agreement to include pre-launch as well as post-launch notification on short-range ballistic missiles, sounding and research rockets and most space launch vehicles. The MOU significantly reinforced the transparency of launch activities. The MOU provided for the voluntary notification of satellites forced from orbit and certain space experiments that could adversely affect the operation of early warning radars. See "Memorandum of Understanding on Notification of Missile Launches" (PLNS MOU), released by the Bureau of Arms Control, Washington D. C., January 19, 2001, http://www.state.gov/www/global/arms/treaties/mou_msllaunch.html#text (accessed 05.22.04).

discrimination and not being a subject to national appropriation, there are no specific restrictions on testing or deployment of non-WMD weapons in space, no prohibition of target practice, dumping of waste in outer space, or generally on military use of outer space as long as freedom of other states to use space is not undermined.[54] The Outer Space Treaty prohibits only placing in orbit around the Earth any objects carrying nuclear or any other weapons of mass destruction. As follows from Article IV, the Treaty does not reserve outer space as a whole for use "exclusively for peaceful purposes." It does not forbid military bases on orbiting artificial satellites around the Earth. There is no ban on air-based or ground- or sea-based anti-satellites or anti-missile weapons. Although the Moon and other celestial bodies are reserved for "exclusively peaceful purposes," the notion of "peaceful" receives fundamentally differing interpretations. According to those who believe that "peaceful" use means "non-military" use, the Moon and other celestial bodies are completely demilitarized. According to those who consider "non-aggressive" use as "peaceful" use, the Moon and other celestial bodies can be used, with the exception where specific prohibitions are mentioned in the treaty, for military purposes as long as these purposes are not aggressive.[55]

The 1963 Partial Test Ban Treaty prohibits the use of nuclear explosions—whether for testing, or against satellites, or missiles or for any other purpose—in outer space for those states that are parties to the treaty.[56] However, the notion of "nuclear explosion" in the treaty, according to some interpretation, pertains only to open

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[54] Cheng, *Studies in International Space Law,* 1997, 525.
[55] Ibid., 650-652.
[56] Although China signed the Comprehensive Test Ban Treaty (CTBT) on September 24, 1996, it was never a party to the 1963 Partial Test Ban Treaty (PTBT). See the UN information on the treaty status by country and treaty in United Nations, Status of Multilateral Arms Regulation and Disarmament Agreements, http://disarmament.un.org/TreatyStatus.nsf (accessed 03.12.02).

explosions, and not to enclosed nuclear explosions, which may be used to supply gamma-ray, X-ray or other type of laser weapons in space without producing a nuclear explosion in outer space or causing radioactive debris to be present in the environment of outer space beyond the interior of the weapon. Furthermore, the 1963 Treaty can be interpreted in such a way as to be relevant only to regulating nuclear tests in outer space in peacetime. It does not regulate the use of nuclear explosions in outer space in time of war.

This is not merely to emphasize that the Cold War legal regime for outer space was deficient in restricting the use of force, but to point out that the fact that outer space was used peacefully and was kept free of weapons despite the existing loopholes in the legal regime and that this was largely based on the consensus of the two superpowers and other states, joining them later in the space club. Furthermore, an argument can be made that by keeping space free of weapons and free of the use of force in space throughout the Cold War[57] and after its end—whether purposefully or not—the main space actors helped to establish a norm of non-use of force in outer space. Those who oppose weaponization of outer space call for upholding and strengthening this international norm in a new emerging world order. The above outline of the legal outer space regime seems to support the claim that this norm is more than their wishful thinking. Moreover, this norm has received overwhelming support, which was reflected in the voting on the annual

[57] During the Cold War, there was a suspicion that in October and November 1975 the Soviet Union intentionally used intense radiation beams to interfere with three American satellites. Later, however, after a Department of Defense investigation, the U.S. government gave an explanation stating that the observed degradation of those satellites was caused by natural phenomenon. See Lambeth, *Mastering the Ultimate High Ground*, 2003, 102-103. Apparently, a large rupture and resultant fire along the trans-Siberian gas pipeline affected the sensors of the U.S. satellites, according to the official U.S. explanation. See Stares, *The Militarization of Space*, 1985, 146.

United Nations General Assembly resolutions for the past two decades, calling for maintaining peaceful uses of space and preventing an arms race in outer space.[58]

The legal framework of the security regime was a foundation of the security regime that governed outer space. The second important component of this regime was the actual interaction of the United States and the Soviet Union in the issue area of outer space—tacit agreements between the two superpowers and actual military uses of outer space. This is the focus of the next section, which will also show that progress in space technology towards the end of the Cold War began to undermine the underlying foundation of the norm of non-use of force in outer space.

EVOLUTION OF THE COLD WAR SPACE SECURITY REGIME: THE MILITARY USES OF OUTER SPACE

The launch of the R-7 rocket, the Soviet ICBM that carried *Sputnik 1* into space, could be considered as the first military use of space.[59] Although the Soviet Union launched *Sputnik I* as their contribution to the International Geophysical Year, the R-7 missile was designed for military purposes by the OKB-1 and its flight on October 4, 1957, was a demonstration of the Soviet Union's newly acquired military capability.[60] In the United States, in response to the launch of *Sputnik 1*, a number of space weapon systems were proposed and their feasibility examined, including anti-satellite weapons,

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[58] Most of these resolutions have been unanimous and without opposition, although the United States and some other states have abstained.

[59] Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 373.

[60] S. P. Korolev, the chief designer of the Experimental Design Bureau No. 1 (OKB-1), who also often called the founder of the Soviet space program, proposed the launch of *Sputnik* as a part of the test program of the ICBM project on May 26, 1954. By that time, the R-7 missile was designed to be capable of propelling an H-bomb warhead of 5 tons over an intercontinental ballistic trajectory. See James J. Harford, "Korolev's Triple Play: *Sputniks* 1, 2 and 3," in Roger D. Launius, John M. Logsdon, and Robert W. Smith eds., *Reconsidering Sputnik: Forty Years since the Soviet Satellite* (Amsterdam: Harwood Academic Publishers, 2000), 76.

orbital bombardment systems, and space-based ballistic missile defenses.[61] Some of them were tested, as discussed in the previous section. Even before *Sputnik 1* the United States began developing reconnaissance satellites in order to gather strategic intelligence and get a better understanding of what was going on in the Soviet Union, as it remained a virtually closed country. The development of reconnaissance satellites became particularly urgent for the United States after the Soviet Union shot down one of the United States' high altitude U-2 reconnaissance aircrafts.[62] Thus, from the beginning of the Space Age, space was an integral part of the superpower military competition.[63]

The military uses of outer space evolved over time from photoreconnaissance to more and more military uses to include uses of highly sophisticated systems, such as integrated tactical warning and attack assessment (ITW&AA), weather and environmental monitoring, satellite communications, surveillance and reconnaissance, navigation and positioning. With the exception of ITW&AA, which is a military function that cannot be provided by nonmilitary resources, these activities are of dual-use nature—they can serve military as well as non-military purposes. Military space systems have been used for detecting missile launches, mapping, aerial refueling and rendezvous, weather forecasting, verification of arms control treaties and monitoring of non-proliferation activities.[64] To the extent that outer space has been used for these military

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[61] See Stares, *The Militarization of Space*, 1985, 19.
[62] The first flight of a U-2 aircraft over the territory of the Soviet Union took place in 1956. On May 1, 1960, the Soviet Union destroyed Gary Power's U-2 plane with anti-aircraft missiles. See Stares, *The Militarization of Space,* 1985, 32, 46.
[63] The competition between the United States and the Soviet Union in the development of military applications of space technology did affect the ongoing arms race taking place between the United States and the Soviet Union. One of the consequences of *Sputnik* was a new round of strategic weapons buildup. See Stares, *The Militarization of Space*, 1985, 13, 236.
[64] Weber and Drell classify military activities in outer space during the Cold War into two categories. The first category is comprised of "benign" military activities, such as use of photoreconnaissance for verification of arms control agreements, early warning of a nuclear attack, reliable communications. The

purposes, this medium is militarized, but not weaponized. Although both superpowers invested in the development of anti-satellite technologies and anti-satellite weapons were tested in outer space,[65] no weapons have yet been deployed in this strategic medium. Military space activities during the Cold War and up to now have been generally compatible with the norms of the peaceful use of outer space and the non-use of force in outer space.[66]

The maintenance of the outer space security regime was influenced by a number of factors, such as the overall political climate in the relations between the United States and the Soviet Union, advances in space technology, developments in military theory, and bureaucratic politics. Weber and Drell divide the Cold War years into four periods of U.S.-U.S.S.R. security cooperation in outer space based on the characteristics of the U.S. policies towards space security: the 1960-1968 period—the period of the formation of legal regime regulating outer space—was characterized by the American strategy of contingent restraint in military space activities and limited coordination of space policies of the two superpowers; during the late 1960s-early 1970s, the United States maintained the strategy of contingent restraint and this period was distinguished by successful cooperation in military uses of space despite a number of serious challenges; the mid-

second category encompasses less "benign" activities that enhance or multiply the effectiveness of military forces on the ground, on the sea or in the air. The third category of military uses of space, the direct application of force in space and from space, never materialized during the Cold War. See Weber and Drell, in Alexander L., George Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 374-375.

65 In 1968, the Soviet Union, for example, tested its anti-satellite capability by launching in a "killer" satellite capable of intercepting and destroying target satellites in a low earth orbit (LEO). See John L. Gaddis, "The Evolution of a Reconnaissance Satellite Regime," in George, Farley, Dallin, *U. S.-Soviet Security Cooperation*, 1988, 363. The United States deployed two ground-based ASAT systems in the Pacific during the 1960s, one of which was operating until mid 1970s. See Stares, *The Militarization of Space*, 1985,19.

66 This is not to say that maintaining a regime restraining military uses of space was unproblematic. See Gaddis, "The Evolution of a Reconnaissance Satellite Regime," and Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 353-354, 373.

1970s-1980 period was characterized by the shift in the U.S. strategy towards a two-track approach—contingent threats of escalation linked to the process of negotiations of formal agreements limiting military activities in space, a period of significant deterioration of space security regime; and finally, the 1980-1986 period was marked by the United States move to unrestrained competition in military space activities and the near collapse of the U.S.-U.S.S.R. security regime governing military uses of space.[67]

Discussing the outer space security regime in the context of superpower coordination of their policies for the military uses of space, Weber and Drell show that technology was an influential factor for change in the space security regime. According to Weber and Drell, military satellites (MILSATs) can be distinguished by the nature of their mission: some may be classified as benign, others as having hostile functions, and a third category are those capable of the direct application of force from space, such as ballistic missile defense and anti-satellite weapons based in space. In the early days of the Space Age, military satellites with benign functions could be distinguished from those with hostile functions but anti-satellite weapons technology was in the early stages of development and the available forms of denial did not allow the two superpowers to discriminate sufficiently between those military satellites that served benign or stability-enhancing functions and those that could carry out hostile functions.[68] Application of force from space was not deemed militarily advantageous by either superpower at that

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[67] Within each of these periods, Weber and Drell analyze influences of the following five clusters of variables on security cooperation between the United States and the Soviet Union: (1) interests and incentives of the superpowers, (2) general political environment, (3) development of military and strategic theory, (4) bureaucratic politics and (5) the importance of "saliencies"—that is, focal points around which the states' expectations converge. See Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 373-433.

[68] Ibid., 375.

time,[69] even though the capability was technologically feasible and was being developed by the two superpowers.[70] The overall situation provided favorable conditions for developing and maintaining a security regime based on the U.S. and Soviet restraint in the military activities in space during the early part of the Space Age.

Later, however, as anti-satellite weapons technology improved and ASAT weapons could be made to eliminate hostile satellite discretely, the line between benign and hostile military satellites began to blur. In the late 1960s, advances in military satellite technology started to erode the distinction between the use of space for activities of mutual benefits and hostile uses of space. These advances were increasing the potential for the use of space assets in the support and enhancement of the military forces on the ground.[71] Advancing technology enabled benign satellite capabilities to expand into hostile applications. In the 1980s, the United States launched the first photoreconnaissance satellite capable of digital imaging and real-time transmission of data to ground stations and started to deploy its NOVSTAR Global Positioning System (GPS) satellite constellation capable of providing support to ground forces and air operations. Advances in technology not only led to the expansion of military uses of space towards greater force support and force enhancement,[72] but also stimulated

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[69] See, for example, Stares, *The Militarization of Space*, 1985, 240-241.

[70] The Soviet Union demonstrated that it was developing a capability to launch weapons from space at other targets in space or on the ground in 1961. See Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 380.

[71] See Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 394-395.

[72] While for the first decade and a half of the Space Age military systems predominantly supported strategic forces with early warning, communication, targeting and navigation information, in the later part of the Cold War satellite services expanded to provide support for the armed forces on the ground with battlefield surveillance, tactical targeting and communication information. See Stares, *The Militarization of Space*, 1985, 242-243.

development of plans for the direct application of force from space.[73] The continuing development of space technology also considerably undermined the distinction between dedicated and residual ASAT capabilities.[74] Weber and Drell point out, that at the point where increasing hostile capabilities of satellites started overshadowing their stability-enhancing functions the interests of the two superpowers in regulating military activities in outer space started to diverge significantly. The saliencies, the focal points around which cooperative measures were possible in the 1960s, eroded by the early 1980s. The consensus that underlay the outer space security regime began falling apart. The possibilities of advancing space technology were seen by the United States as providing it with greater advantages than any cooperative restraint in the military uses of space. The Soviet Union, on the contrary, perceived greater threat in further escalation of military activities in space and became more and more attracted to cooperative approaches to regulating military space activities. Furthermore, rapid advances in space technology also made it difficult for the two states to interpret each other's behavior, when shared definitions of cooperative behavior did not seem to keep up with the pace of technological change.[75] As a result, the underlying technological basis of the space security regime and perceptions changed and led to the significant erosion of the space security regime by the late 1970s and early 1980s.[76]

Development of strategic and military theory during the Cold War was another factor that influenced the evolution of security strategy and the security regime in outer

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[73] Stares maintains that the influence of technological advances, particularly in non-nuclear kill techniques and terminal homing devices developed within the BMD and ASAT research programs was particularly strong on President Reagan's decision on the Strategic Defense Initiative in 1983. See Stares, *The Militarization of Space*, 1985, 243.

[74] Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 419.

[75] Ibid., 406.

[76] Stares, *The Militarization of Space*, 1985, 242-243.

space. Increasingly, in the later part of the Cold War, strategic theorists and U.S. policy-makers started interpreting the requirements of deterrence as conditions in which the U.S. capabilities should match and exceed Soviet capabilities for war-fighting in order to ensure extended deterrence. This trend found its materialization in the Presidential Directive PD/NSC 59.[77] According to the new strategy, the United States would have to actively threaten the Soviet Union in order to achieve viable deterrence, as well as strategic and political stability. This posture was not conducive to cooperative regulation of military uses of space.[78]

Deterioration of political climate after the 1979 Soviet invasion of Afghanistan also contributed to the deterioration of the space security regime, for the military actions of the Soviet Union ushered in the end of the superpowers' détente and cessation of the U.S.-U.S.S.R. negotiations on the issue of ASAT weapons.[79] In the early 1980s, the incoming Reagan Administration made a political commitment to the unilateral pursuit of military capabilities in space in accordance with the U.S. security interests. The famous "Star Wars" speech by President Reagan was an announcement of a new strategy—the

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[77] President Carter signed PD/NSC 59, "Nuclear Weapons Employment Policy," in 1980. PD/NSC 59 represented a major shift in the U.S. nuclear strategy. First, it mandated a shift in targeting priorities from the destruction of economic recovery targets being key task of a U.S. nuclear strike to the destruction of Soviet political and military assets—specifically strategic military targets, leadership bunkers, C^3I facilities and links and other military targets (conventional forces, theater/tactical nuclear forces). Second, the directive required that the United States develop the capability to fight a protracted nuclear conflict, which might last months instead of days. It required strategic weapons and C^3I systems, which would have the characteristics of endurance and flexible response. Such forces would be expected to survive a first strike, be available for use in an immediate retaliatory strike, and be able to operate for months afterwards. See U.S. President, Presidential Directive PD/NSC 59, "Nuclear Weapons Employment Policy," July 25, 1980, http://jimmycarterlibrary.org/documents/pddirectives/pd59.pdf (accessed 10.29.03). See also Digital National Security Archives, "The Presidential Directives on National Security From Truman to Clinton," http://nsarchive.chadwyck.com/pdessayx.htm (accessed 10.29.03).

[78] Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 406.

[79] The U.S.-U.S.S.R. talks on the issue of ASAT weapons began in Helsinki on June 8, 1978. Three rounds of negotiations held during a period of one year made considerable progress. In June 1979, the talks were put on hold following President Carter's decision to give priority in the arms control field to the ratification of the SALT II Treaty.

strategy of unconditional defection from the regime, or non-contingent escalation.[80] After 1983, the U.S. interests in the development of ASAT capabilities was no longer contingent on Soviet activities in this field. The goal of the U.S. ASAT program now was the development and deployment of anti-satellite capability with the purpose to deter threats to space systems of the United States and its allies and to deny any adversary the use of space-based systems that could provide support to hostile military forces. President Reagan's policy of strategic deterrence was also to change from relying on deterrence alone to developing the capabilities to defend against ballistic missiles, including via space-based weapon systems.[81] During Reagan's tenure in the White House the concept of the use and projection of force from space was thoroughly considered for the first time.[82]

In August 1983, in response to these developments in U.S. military space policy, the Soviet Union announced unilateral contingent moratorium on ASAT tests and pursued international venues, trying to outlaw weapons in space. At a meeting between

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[80] See U.S. President, "Address to the Nation on National Security By President Ronald Reagan," March 23, 1983, http://www.fas.org/soo.starwars/offdocs/rrspch.htm (accessed 10.29.03). Although the March 1983 speech was an official announcement of the new strategy, its elements were present already in the earlier statements. In 1982, in a White House policy statement, the Administration expressed its commitment to proceed with the development of ASAT capabilities with "operational deployment as a goal". The purpose of this program was to acquire a capability to deny the adversary, if necessary, access to space assets. See citation in Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 413. However, it was two days after the famous speech that President Reagan singed NSDD 85 "Eliminating the Threat From Ballistic Missiles," which requested "an intensive effort to define a long-term research and development program aimed at an ultimate goal of eliminating the threat posed by nuclear ballistic missiles" and an assessment of "the roles that ballistic missile defense would play in future security strategy of the United States." See U.S. President, National Security Decision NSD 85, March 25, 1983, http://www.fas.org/spp/starwars/offdocs/nsdd085.htm (accessed 11.21.03). BMD research guidance were formally set in *Strategic Defense Initiative* NSDD 119, which was signed by President Reagan almost a year later, in January 1984. See National Security Decision Directive 119, January 6, 1984, http://www.fas.org/spp/starwars/offdocs/nsdd119.htm (accessed 11.21.03).

[81] Stares, *The Militarization of Space*, 1985, 218.

[82] The U.S. Air Force's "Space Master Plan," identifying long-term objectives till the year 2000, for example, envisioned "space combat" systems. See Stares, *The Militarization of Space*, 1985, 219.

the General Secretary Andropov and a group of United States Senators visiting Moscow, Andropov announced:

> The U.S.S.R. assumes the commitment not to be the first to put into outer space any type of antisatellite weapon, that is, imposes a unilateral moratorium on such launchings for the entire period during which other countries, including the USA, will refrain from stationing in outer space antisatellite weapons of any type.[83]

The day after the announcement of the moratorium, the Soviet Union submitted to the United Nations a second draft of a treaty, proposing to outlaw the use of force in space and calling for a prohibition on testing and deployment of space-based weapons capable of striking against targets in space or on the Earth.[84] The Reagan Administration, however, did not take up this opportunity to negotiate a ban on the ASAT weapons. The 1984 Report to the Congress on U.S. Policy on ASAT Arms Control stated:

> ...[N]o arrangements or agreements beyond those already governing military activities in outer space have been found to date that are judged to be in the overall interests of the United States and its Allies. The factors which impede the identification of effective ASAT arms control measures include significant difficulties of verification, diverse sources of threats to U.S. and Allied satellites and threats posed by Soviet targeting and reconnaissance satellites which undermine conventional and nuclear deterrence.[85]

Adropov's successor at the helm of the Soviet Union, General Secretary Chernenko, called again for a ban on ASAT weapons and confirmed the Soviet Union's commitment to the unilateral ASAT moratorium. Despite this new effort by the Soviet

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[83] Dusko Doder, "Andropov Urges Ban on Weapons to Attack Satellites," *Washington Post*, August 19, 1983, 5, quoted in Stares, *The Militarization of Space*, 1985, 231.

[84] The first "Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space" was submitted by the Soviet Union to the United Nations in August 1981. See United Nations, "Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space," submitted by the Soviet Union to the United Nations, U.N. Document A/36/192, August 1981. The second draft titled "Treaty on the Prohibition of the Use of Force in Outer Space and From Space Against the Earth" was submitted in August 1983. See United Nations, "Treaty on the Prohibition of the Use of Force in Outer Space and From Space Against the Earth," submitted by the Soviet Union to the Untied Nations, U.N. Document A/38/194, August 1983.

[85] U.S. Congressional Conference, *Report to the Congress on U.S. Policy on ASAT Arms Control*, March 31, 1984, http://www.security-policy.org/papers/other/ASAT-0384.html (accessed 11.21.03).

Union, the United States tested its ASAT weapons in 1985,[86] thereby emphasizing its commitment to unrestrained competition in space and giving the Soviet Union an opportunity to withdraw from the self-imposed contingent moratorium on the ASAT tests.[87] In the decision to carry on the ASAT testing, it is likely that the political situation in the Soviet Union in the first half of the 1980s—when the CPSU General Secretaries succeeded one anther at the reigns in a matter of months—played an important role. Numerous political changes in the Soviet leadership after the death of long-time Soviet leader General Secretary Brezhnev must have raised significant concerns with respect to security and uncertainty as to what would be the new course of the Soviet leaders.

In the Soviet Union, however, changes in the leadership did not result in a change in the overall stance towards the space security regime. The new General Secretary Gorbachev who came to power in 1985—after a rather short rule of General Secretary Chernenko—followed the suit of both his predecessors Andropov and Chernenko in continuing to insist on the prevention of an arms race in space:

> SDI is the continuation of the arms race into a different, more dangerous sphere... It will only foment mistrust and suspicion, with each side fearing the other is overtaking it. The Soviet Union strongly opposes an arms race in space. But if the Americans remain deaf to common-sense arguments and to our appeal to seek a way out of the arms race and reduce existing nuclear stockpiles, we will have no choice but to accept the challenge. ...'I think you should know that we have already developed a response. It will be effective and far less expensive than your project, and be ready for use in less time.' ... I can assure you that we were not bluffing.[88]

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86 The United States tested its Air-Launched Miniature Vehicles (ALMV) twice in 1984 firing interceptors but not against a target. Its first and the only test against a satellite was performed in October 1985 when an old U.S. satellite was destroyed in orbit. The U.S. Air Force continued testing ASAT system in 1986 but not against real target in space. See Laura Grego, "A History of U.S. and Soviet ASAT Programs," the Union of Concerned Scientists, Online Publication, April 9, 2003, http://www.eusuca.org/global_security/space_weapons/page.cfm?pageID=1151 (accessed 10.29.03).

87 The Soviet Union, nonetheless, continued to observe the unilateral moratorium, while at the same time pursuing the development of missile defense technologies. See Ibid.

88 Mikhail Gorbachev, *Memoirs* (New York: Doubleday, 1996), 407.

Gorbachev did not believe in the purely defensive nature of Reagan's SDI and thought that it was opening the door for the weaponization of space.[89] On his part, Gorbachev was committed to the prevention of an arms race in space perhaps as passionately as President Reagan was committed to the SDI program.[90] To Gorbachev, prevention of an arms race was a matter of principle, as well as strategic calculation.[91] Gorbachev strongly urged a continuing commitment to the ABM treaty. However, he was prepared to agree that the United States would conduct research and tests for the SDI program.[92] He continued to adhere to the unilateral ASAT weapons test moratorium even after the United States conducted its ASAT tests. He was also prepared to go to great lengths in order to address Western concerns with the Soviet development of ASAT weapons. In 1989, the Natural Resources Defense Council and the Soviet Academy of Sciences arranged for a U.S. delegation to visit the Sari Shagon Laser-Ranging Facility in Kazakhstan where the Soviet laser ASAT project was under the development. It was after this visit that the U.S. Congress included bans on using the MIRACL laser against objects in space in the defense appropriations bills for 1991-1995.[93]

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[89] Ibid., 455.

[90] President Reagan's so-called "Star Wars" speech was founded on a conviction that it was a moral obligation of the President of the United States to defend American people against ballistic missile attacks and end the strategy of mutual deterrence based "solely on offensive retaliation." He specifically said: "Over the course of these discussions, I've become more and more deeply convinced that the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence. Feeling this way, I believe we must thoroughly examine every opportunity for reducing tensions and for introducing greater stability into the strategic calculus on both sides. ... If the Soviet Union will join with us in our effort to achieve major arms reduction, we will have succeeded in stabilizing the nuclear balance. Nevertheless, it will still be necessary to rely on the specter of retaliation, on mutual threat. And that's sad commentary on the human condition. Would it not be better to save lives than to avenge them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and ingenuity to achieving a truly lasting stability? I think we are. Indeed, we must." See U.S. President, "Address to the Nation on National Security By President Ronald Reagan," March 23, 1983.

[91] Gorbachev, *Memoirs*, 1996, 446, 455.

[92] Ibid., 418, 445.

[93] In the United States Congress development and testing of the ASAT weapons proved to be a controversial issue at that time. See Grego, 2003.

Analyzing the Cold War space security regime, Stares argues that up until the end of the 1970s the absence of an arms race in outer space was a result of a convergence of national interests of the United States and Soviet Union based on military disincentives and technical constraints.[94] He also maintains that formal arms control played a significant role in buttressing the space security regime during the Cold War. Technological advances, leading to the development of new or more efficient space capabilities, increasing military reliance on space assets, bureaucratic politics, and decline of superpower détente led to the erosion of the space security regime in the late 1970s and early 1980s. Stares concludes that the foundation on which convergence of U.S. and Soviet security interests had been possible was no longer there and it was only a matter of time before outer space would become an arena for a fierce arms race unless measures were taken to prevent it.

Thus, all four prerequisites for a security regime pointed out by Jervis were significantly eroded: (1) the United States no longer preferred to further restrict military uses of outer space; (2) U.S. and Soviet interests regarding security arrangements in outer space began to diverge significantly; (3) the United State did not prefer the *status quo*; and (4) it did not perceive unilateral steps as being more costly than cooperative ones. The wisdom of the conclusion made by the Palm commission in its 1982 study started to lose solid ground under its feet just as it was made public:

> In the modern age, security cannot be obtained unilaterally. Economically, politically, culturally, and—most importantly—militarily, we live in an increasingly interdependent world. The security of one nation cannot be bought at the expanse of others. The danger of nuclear war alone assures the validity of this proposition. ... Peace cannot be obtained through military confrontation. It must be sought through a tireless process of negotiation, rapprochement, and

[94] Stares, *The Militarization of Space*, 1985, 237-238.

> normalization, with the goal of removing mutual suspicion and fear. We face common dangers and thus must also promote our security in common.[95]

The sudden end of the Cold War gave the ailing space security regime some extension of life by presenting the United States with more urgent issues to deal with, such as ensuring a peaceful transition of the Soviet Union's partners in the Warsaw bloc, and the Soviet Union itself, to more liberal forms of governance—a task that for a while largely overshadowed space security issues. The norm of non-use of force in outer space, however, endured beyond the historic time period that gave rise to it, preserving space free of weapons and allowing commercialization of outer space to take off. The significance of the norm of non-use of force in outer space is that unlike the legally established norm of "peaceful" use of outer space that acquired such a loose interpretation over the years so as to permit space-based missile defense systems and non-ABC weapons, this norm underscores unacceptability of introduction and use of weapons in or from space, and against space objects—a taboo on the use of force in space.[96]

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[95] Olof Palme, et al., *Common Security: A Programme for Disarmament* (London: Pan Books for the Independent Commission on Security and Disarmament Issues, 1982), 12.

[96] See, for example, Theresa Hitchens, "Rushing to Weaponize the Final Frontier," *Arms Control Today*, September 2001, http://www.armscontrol.org/act/2001_09/hitchenssept01.asp (accessed 09.28.02).

PART II

COMMERCIALIZATION OF OUTER SPACE AND THE EVOLUTION OF SPACE SECURITY INTERESTS IN THE POST-COLD WAR ERA: THE UNITED STATES, RUSSIA, AND CHINA

> Earth is the cradle of humanity but one cannot remain in the cradle forever...
>
> Konstantin E. Tsiolkovskii
> 1895

> In the long run, the very long run indeed, the security of the human race most likely will depend upon its space power. The dinosaurs faced a grim prospect between emigrating and extinction and were condemned technologically to the latter. Fortunately for us, the random menace from fast-moving alien object in space would appear to pose far more severe a threat to life on Earth than does purposeful menace from an alien civilization that would be unschooled in the niceties of the Geneva Convention. An asteroid may just terminate the human experience and settle religious arguments, but at least in principle it is detectable, trackable, and possibly divertable.
>
> Colin S. Gray and John B. Sheldon
> 1999

Part II of this dissertation consists of two large components: the first component deals with the phenomenon of commercialization of outer space, the independent variable of this study, and the second component contains the examination of the evolution of space security interests of the United States, Russia and China at three different levels: at the domestic and bilateral levels, and at the level of global governance. The tasks of Chapter IV are fourfold. First, it outlines the economic potential of outer space and defines the commercialization of outer space. Second, this chapter maintains that although the economic potential of outer space was recognized even before the dramatic opening of the Space Age by states as well as commercial actors, this medium was used largely for military and foreign policy ends during the Cold War. Third, it shows that although commercialization of space began well before the end of the Cold War, it was after the end of the bipolar confrontation that commercialization of outer space took off and transformed space activities into an economic mainstream. And finally, it argues that commercialization of space activities significantly progressed after the end of the Cold War in all three states under consideration in this study—the United States, Russia and China.

Chapters V through IX analyze the evolution of the overall security strategies and security interests in the issue area of outer space of three spacepowers—the United States, Russia, and China. The objective is to assess whether security interests of these three states have been converging or diverging in the post-Cold War era and to what degree commercial interests influenced the evolution of their security interests as contrasted with their strategic concerns.

The present analysis draws upon liberal methodology that relies on the postulate of the primacy of state interests over state strategic interaction and adopts two-stage research design: (1) analysis of state preferences at the domestic level and (2) analysis of the strategic interaction of states.[1] For the liberal perspective, defining the interests of the main actors is theoretically central. The state is considered as a representative institution that aggregates the interests of a group of societal actors.[2] In this analysis, the main attention is on state security interests—those interests that are aggregated, in this case, in a form of state security strategies. National security strategies reflect security interests and present broad plans for achieving national objectives supporting those interests.[3]

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[1] Moravcsik, 1997, 543-545.
[2] Ibid., 517-518.
[3] See, for example, White House, *National Security Strategy of the United States*, Washington D. C., January 1988, 3.

Interests underlie not only the strategic calculations of the state but also strategic interactions with other states at the bilateral level and at the level of global governance. Therefore, in order to understand the outcomes of strategic interactions of states, analysis of state interests is fundamentally important. In order to explain liberal pacification, it is necessary to analyze how economic interdependence affects security interests. With respect to space, it requires an analysis of whether the commercialization of outer space leads to converging or non-converging security interests in outer space.

In the post-Cold War period, all three states—the United States, Russia, and China—produced documents with official assessments of the security environment, outlining their security interests and strategies to deal with identified threats. In the United States, the Goldwater-Nichols Defense Reorganization Act of 1986 requires the President to submit an annual report on the national security strategy.[4] The purpose of a President's report is to give a comprehensive assessment of the security environment, a clear statement of United States security interests, objectives, and concepts for achieving them, and thereby lend coherence to the budgeting process. In Russia, Concepts of National Security and Military Doctrines are issued by the National Security Council as a measure to provide greater transparency in security matters for both domestic purposes and for foreign relations. The first document of a series of such documents was signed by the President of the Russian Federation in 1993. In the post-Cold War era, China also published documents that broadly serve similar purposes as U.S. National Security Strategy and Russian Concepts of National Security.

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[4] See U.S. Congress, *The Goldwater-Nichols Department of Defense Reorganization Act of 1986 Conference Report*, September 1986, Section 603, http://www.ndu.edu/library/goldnich/99824pt2.pdf (accessed 11.25.03).

Even though these documents may not fully represent the state of security affairs of the three spacepowers under consideration or may not show wholly the true interests of states, these documents were produced with the view of communicating information about state interests, objectives, and strategies, including with regard to outer space, to other states in the international system and domestic audiences. For this reason, and to the extent that they were used to formulate and communicate state interests to other international and domestic actors, these documents are useful for this study. Their consistency is checked against state behavior at the level of interstate interactions at the bilateral level, at the level of global governance, and in the context of changing security environment. The distinction is also made with respect to the nature of security approach between liberal and non-liberal concepts of security.

Chapters V, VI, and VII are devoted to the task of analyzing the three spacepowers' security strategies and interests based on these documents. The analysis of the documents and the broader security context in which these documents were brought into being will focus on the following five questions. First, what were the overall security strategies of the United States, Russia, and China in the post-Cold War era? A particular attention will be devoted to two aspects: (a) the changing vision of the emerging world order: multipolarity versus unipolarity, and (b) to the type of security concepts of the three spacepowers: liberal versus non-liberal. The former is important for the realist argument and the latter for the liberal one. Second, what were their security interests in regard to outer space security? Third, what place did space security occupy in their overall security strategies? Fourth, to what extent did the three states' economic interests in the issue area of outer space affect, if at all, their security interests? And finally, did their security interests with regard to outer space converge or diverge over the period of time under consideration?

As the issue of the weaponization of outer space has emerged as one of the most important, urgent and the same time contested issues in interstate relations in the post-Cold War era, this issue is used as a "litmus test" for assessing the converging and non-converging security interests of the three spacepowers. The fundamental interest of states with respect to outer space—and the right granted by the Outer Space Treaty—is a free, unimpeded access to outer space. Extension of commerce into outer space has created incentives both for and against the weaponization of outer space. Extending the use of force to this medium, including via the weaponization option, threatens the states' fundamental interest in free access to outer space, as well as raises other security concerns. Two main options to deal with these threats are available: first, arms control banning the use of force and weaponization of outer space, and second, weaponization of space in order to deter, defend, and deny the use of space to enemies. A third option is a combination of the two: a mix of weaponization of space and arms buildups and arms control restricting the use of force in an effort to make space security relations more stable. The present study will focus on these issues, as they are important for evaluating converging and non-converging security interests.

Chapters VIII and IX deal with interstate interactions at the bilateral level and between the three states within the framework of the chief international organization charged with negotiations on security issues, including space security—the Conference on Disarmament in Geneva—respectively. At the bilateral level, the study analyzes bilateral documents: treaties, agreements, memoranda, and communiqués. The analysis of the inter-state interaction at the level of global governance is focused on the annual reports, verbatim records and other documents of the Conference on Disarmament.

CHAPTER IV

THE COMMERCIALIZATION OF OUTER SPACE: THE UNITED STATES, RUSSIA, AND CHINA

> [L]ess than ten years ago, it was thought that commercial space communications had leveled off as an activity area. Now, the sky is the limit and the possibilities are deemed confined only by one's imagination.
>
> Roger Handberg
> 2000

The commercialization of outer space is one of the most significant developments of our time. It opens the vast richness of outer space for an improvement of human conditions on Earth on increasingly widening scale. If it were not for the commercialization of outer space, this medium would still be predominantly a province of the military.[1] The purpose of this chapter is to demonstrate that placing the discussion of outer space issues in the context of liberal-realist debate on economic interdependence and international conflict and cooperation is proper and timely. To that end, this chapter fulfills the following tasks: first, it outlines the economic potential of outer space and defines commercialization of outer space; second, it establishes that during the Cold War outer space was used overwhelmingly for military purposes, even though its economic potential was recognized from the beginning not only by the states engaged in space activities but also by commercial actors; third, although commercialization of space began well before the end of the Cold War, it was after the end of the bipolar confrontation that commercialization of outer space took off and transformed space activities into a part of the economic mainstream; fourth, commercialization of space

[1] See, for example, Commission to Assess United States National Security Space Management and Organization, Report, Chapter 2 "Space: Today and the Future," 2001.

activities significantly progressed after the end of the Cold War in all three states under consideration in this study—the United States, Russia and China. In each of the cases, the following questions are addressed: (1) What steps did the governments of the United States, Russia, and China take to promote commercialization of outer space activities in their countries and what were the main features of their commercialization strategies? (2) To what extent was commercialization of space activities allowed to affect overall space activities of these states? (3) Did commercial space activities become an important part of their overall space activities so as to have an influence over their security perceptions and interests?

THE ECONOMIC POTENTIAL OF OUTER SPACE

During the Cold War, outer space was extensively used for military purposes by the two superpowers and "space race" became an integral part of the Cold War. The space competition between the United States and the Soviet Union spawned large space industries and government bureaucracies that guided and supervised the two countries' space endeavors.[2] While researchers, designers and manufacturers commissioned by the

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[2] "Space industry" is a term often used in a broad sense to describe any number of companies that are related to space whether companies manufacture or launch rockets or satellites, operate satellites in space or provide satellite communication services. In a narrow definition, "space industry" includes companies that build or market space launch vehicles, spacecrafts, and ground equipment. The Department of Commerce's Office of Space Commercialization in its 2001 report *Trends in Space Commerce* defines space industry as follows: "It is not only composed of satellites and their launches, but now encompasses many direct-to-consumer applications, Internet services, and entertainment applications." The report identifies four major sectors of space industry: (1) space transportation, (2) satellite communication, (3) remote sensing, (4) navigation and positioning. See U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 1-1. Space industry emerged as a government driven sector and, in the West, was a part of the larger aerospace industry. Space industry started separating from aerospace industry as an independent sector of economy only recently and this is why its definition is still problematic. Another reason is that space industry partly overlaps with already well-established industries, such as electronics, information technology, software, communications, manufacturing, materials, transportation and defense. The *1998 State of the Space Industry* suggests the inclusion into space industry of the following: (1) manufacturing of space launch vehicles, (2) satellite manufacturing; (3) ground equipment manufacturing,

governments of the two superpowers competed fiercely for the marvelous "firsts," the space industries grew under conditions when there was almost no price too high for the two rivals to pay for the victory in the space race: both governments invested great material, financial, and intellectual resources in their space projects.

Despite the flurry of activities in space exploration for the sake of foreign policy and military gains of the superpowers, the economic potential of space was appreciated rather early in the Space Age. Indeed, the possibility of the use of outer space for communication purposes and its economic significance was recognized even before the beginning of the Space Age. In his *Extraterrestrial Relays*, Arthur C. Clark described a global communication system based on satellites placed in geostationary orbit.[3] He foresaw that such satellites linked by radio with one another and the ground would allow anyone to communicate with others almost anywhere on Earth. Such a system would be a solution to the rapidly growing communication needs between the United States and

(4) satellite telecommunications; (5) remote sensing; (6) GPS; (7) microgravity manufacturing; (8) support (legal) services and finance; and (9) government activities. According to the report, space industry defined by industry sectors, consists of: (1) space based infrastructure (satellites, space stations); (2) ground-based infrastructure (equipment, facilities, software); (3) transportation infrastructure (launch vehicles and propulsion systems); (4) applications (utilization of space assets, mircrogravity manufacturing, tourism, robotic exploration; (5) telecommunications (fixed and mobile satellite services, direct-to-home services); (6) support services (legal, licensing, finance, insurance, consulting); (7) research and development. See *1998 State of the Space Industry,* Bethesda: Space Publications LLC, 1998. In the present study the broad definition of space industry is employed. Using the broad definition is more appropriate in this study because it includes an important segment of satellite services. Space industry in a narrow sense and satellite services are two large categories of space industry that can be said to have differing interests relating to space security arrangements. The global distribution of economic power between these two categories is as follows: in 2002, worldwide launch services, satellite manufacturing, and ground equipment manufacturing provided for $37 billion in revenues, while satellite services accounted for $49.8 billion. See, for example, Jeff Foust, "What is the 'Space Industry?'" *Space Review*, July 14, 2003, http://www.thespacereview.com/article/34/1 (accessed 03.12.04). A detailed analysis of the differing security interests will remain outside the scope of this study. Some reports also refer to "space industry" as "satellite industry." See, for example, Haller and Sakazaki, 2001.

[3] Arthur C. Clark—then an officer in the Royal Air Force and later a well-known British science-fiction writer—described an idea for a global communications system based on three orbiting satellites placed at an equidistance from one another at an altitude of 22,300 miles over the equator. See John L. McLucas, *Space Commerce* (Cambridge: Harvard University Press, 1991), 16.

Western Europe, as their economic ties expanded rapidly after the Second World War.[4] A satellite link between the United States and Europe was the first application where the possibility of using satellites was seriously considered for economic purposes—to support growing economic relations.

Sputnik 1 did not only gave a start to the superpower "space race," but also served as a first step towards satellite communications: the first Soviet satellite carried a small transmitter that sent radio signals back to Earth. The first communication satellite launched by the United States in December 1958 was for the military. However, in 1962, NASA launched two satellites: one of them was *Telstar 1*, a privately financed and developed by AT&T's Bell Telephone Laboratories satellite, and the second was *Relay* developed by RCA and underwritten by NASA. In the early 1960s, NASA also pursued *Syncom* communications satellite project that led to the development of the *Early Bird 1* commercial communication spacecraft. It was launched in orbit in April 1965. The emplacement of *Early Bird 1* in a 24-hour orbit ushered in a new era of communications—an era of global commercial satellite communications.

As the prospective satellite system was designed to provide connection between the countries on different continents of the globe the United States needed an international organization to put in place the necessary cooperative framework. A year before the launch of *Early Bird 1*, several countries led by the United States signed an agreement on cooperation in establishing a single, global communication satellite system.

[4] The radio connection established first by Guglielmo Marconi between Europe and America in 1915 was rather unreliable even after improvements made over the years. The first transatlantic underwater cable TAT-1 built between Scotland and the United States went into service in 1956, giving Europe and America a reliable voice connection for the first time. It had, however, a limited capacity: it was designed to handle simultaneously only 36 telephone calls and provided no capacity for television transmission between the continents. Ibid., 18.

This agreement established the International Telecommunication and Satellite Organization (INTELSAT). This organization was set up as a commercial enterprise but its commercial nature was limited. It was a politicized international organization that bore the burden of the Cold War rivalry. Neither the Soviet Union nor the members of the socialist bloc joined the INTELSAT during the Cold War.

This does not mean, however, that the Soviet Union did not appreciate the advantages of satellite communication and its economic significance. The Soviet Union saw a great promise of using outer space for satellite communications in its own country with its huge territory stretched over eight time zones and harsh terrain that is not always amenable to terrestrial communications. The Soviet Union launched its first communication satellite to the Molniya[5] orbit in April 1965—at nearly the same time as the United States launched its *Early Bird 1*—and its first satellites to the geosyncronous orbit nearly a decade later—in 1974.[6]

In 1968, in order to break INTELSAT's monopoly on global satellite communication services, the Soviet Union established an alternative international organization INTERSPUTNIK that provided satellite communication services for the members of the Socialist bloc, Cuba, Nicaragua, Vietnam and some other countries from the Soviet economic orbit.[7] INTERSPUTNIK, however, was unlike INTELSAT in that

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[5] In contrast to the United States who pursued development of communication satellites for the geosynchronous orbit—an orbit in which satellites appeared stationary in the sky over the equator, the Soviet Union chose the Molniya orbit for its communication needs—a highly elliptical orbit with a 12-hour period of rotation out of which 8 hours a satellite lingered over Siberia allowing Soviet northern cities to receive satellite services. Although satellites in such orbit required a more complicated tracking system and heavy shielding because they passed through the Van Allen radiation belt, the Molniya orbit became the basis of the Soviet satellite communication system.

[6] Brian Harvey, *Russia in Space: The Failed Frontier?* (Chichester: Springer, 2001), 159.

[7] McLucas argues that INTERSPUTNIK is a regional organization, whereas INTELSAT is a global international organization. See McLucas, *Space Commerce*, 1991, 63.

its members did not jointly own any satellites: INTERSPUTNIK leased capacity on Soviet communication satellites and it was not a commercial enterprise.

Satellite communications was one of the earliest, most economically significant, and commercially successful utilizations of outer space. It also was established quite early as a cooperative international activity within the limits of the Cold War rivalry. The international organizations created under the leadership of the United States and Soviet Union allowed their members to receive the benefits of the advancements in satellite communications.

Over the years, with the progress of communications and information technologies many new satellite communications applications have emerged, such as mobile satellite communications that allow its users to communicate from a distant location, aboard a ship, in-flight airplane or a land transportation from any point on Earth; satellite high-speed Internet access that provides point-to-point connection anywhere on Earth; live public and private broadcast "videolinking" people and businesses again anywhere on Earth; direct-to-home television and satellite radio, bringing entertainment and news to any location on Earth; telemedicine transferring medical data and offering medical expertise.

The potential of outer space is truly amazing. Other uses of outer space with great economic benefit are satellite remote sensing, positioning and navigation. Earth's remote sensing includes a wide spectrum of methods of study of the earth's surface via images done by radar, infrared, microwave radiometers, still and TV cameras, magnetic sensors, atmospheric sounders, laser distance meters, object plane scanners and others. Remote sensing has been used for monitoring meteorological conditions, ocean currents and ocean temperatures, anthropological and natural changes in the environment and climate in the short and long term, for observing difficult-to-access terrain, for providing synoptic views of large portions of Earth's surface without being hindered by political boundaries or natural barriers, and many others. Information gathered via remote sensing can be used for detailed mapping of the land, for urban planning, agriculture, forest management, water resource assessment, for management of known natural resources and exploration of new ones. Navigation satellites make it possible for users with ground receivers to pinpoint their locations with great precision anywhere on the globe. This space application has been used for navigating and tracking movements of ships, airplanes, ground transportation, and people.

During the Cold War, both the United States and the Soviet Union pursued development of their capabilities in remote sensing and navigation for military purposes but used them to benefit their economies as well.[8] In 1978, the United States introduced its satellite navigation system called NAVSTAR Global Positioning System (GPS) for military use and later extended it to civilian users all over the world.[9] The Soviet Union followed the suit and introduced its navigation satellite system called GLONASS in 1982 and later the Russian government transferred the GLONASS system from the Defense Ministry to the Russian Space Agency as a step towards its "civilianization."

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[8] In 1965, NASA obtained the support of the Department of Agriculture to develop methods for studying Earth's surface and resource from space. Shortly afterwards, the Earth's Resources Technology Satellite program, later known as LANDSAT, was established. The first remote sensing satellite *Landsat 1*, from which current space-based remote sensing applications evolved, was launched by the United States in 1972. In the Soviet Union, the development of remote sensing was done within the Cosmos program and its Zenit spy satellites. It is not precisely known when the first Soviet remote sensing satellite was launched, but between 1975 and 1989, Cosmos satellites carried out 39 various remote sensing missions. See Harvey, *Russia in Space*, 2001, 148-149. According to Joseph Angelo, Cosmos represents a name of a large series of Soviet spacecrafts for both military purposes and scientific research. *Cosmos 1* was launched in March 1962. See Joseph A. Angelo, Jr., *The Dictionary of Space Technology* (New York: Facts on File Inc., 1999), 88.

[9] Developed by the Department of Defense and operated by the U.S. Air Force, this system in, its completed form, consists of 20 orbiting satellites.

Advances in space technology also led to utilization of outer space for material processing in micro-gravity.[10] Some other uses of outer space are only in planning stages, such as space-based solar power systems and space mining for scarce natural resources.[11] Space tourism took off the ground with the flight of the world's first space tourist Denis Tito to the International Space Station on April 28-May 6, 2001, but expectations are that it may grow into one of the largest activities in outer space.[12] In a somewhat distant perspective, space-based manufacturing and settlement are also considered.[13]

All in all, the economic potential of outer space is vast and some of what just recently was the subject of science fiction has materialized. Nearly half a century after the beginning of the Space Age, space activities have ceased to be predominantly a matter of superpowers' competition for prestige and military gain. Outer space has entered the economic mainstream and given global reach to major sectors of the modern world economy. Banks use satellite links to make their transactions around the world. ATM machines and private communication networks that are used to process credit cards rely on satellite systems. Tracking the location of parcels, ground transportation, air traffic and ships rely on satellites. Farmers use satellite imaging for improving crop yields. Management of natural resources relies on data from satellites. Weather forecasting, monitoring of the environment and climate changes, gathering information for news, direct-to-home TV and satellite radio depend on satellites. Education in

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[10] At the end of the 1990s, microgravity manufacturing entered the experimental level of development. See Oliver Ferrandon, "International Market for a Reusable Launch Vehicle," in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 248.

[11] Lou Dobbs, *Space: The Next Business Frontier* (New York: Pocket Books/ ibooks, 2001), 196-205.

[12] Paula Berinstein, *Making Space Happen: Private Space Ventures and the Visionaries Behind Them* (Medford: Plexus Publishing, Inc., 2002), 115.

[13] Dobbs, *Space*, 2001, 203.

"virtual classrooms," "videoconferencing" and business private communication networks are made possible by satellites. Satellites provide mobile telephony and access to the Internet as well as many other services. The developed countries have become dependent on services provided by satellites for every-day life and business, while many developing countries have pinned their hopes for economic development on space technologies that can help them to leapfrog stages of economic development, facilitate better use of their national resources, improve living conditions and promote their nation-building.

Commercialization of outer space has been instrumental in translating great economic potential of outer space and amazing advances of space technology into real economic gains. However, in order to materialize these gains, commercial actors needed to have a reliable and affordable access to outer space. Space launch industry tightly controlled by the military remained one of the bottlenecks of outer space commercialization until the end of the Cold War.[14]

THE COMMERCIALIZATION OF OUTER SPACE

In a general definition, "commercialization" means an introduction of transfers of goods and services based on the prices determined by the forces of demand and supply[15] in place of non-market relations between suppliers and consumers. It needs to be distinguished from "privatization"—a transfer of government-owned and operated

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[14] See Roger Handberg, *The Future of the Space Industry: Private Enterprise and Public Policy* (Westport: Quorum Books, 1995), 17. The average cost-per-pound for placing payloads in geosynchronous orbit even by the late 1990s remained high at about $9,200-11,200, and for LEO $3,600-4,500. See Watts, *The Military Use of Space*, 2001, 6-7.

[15] In other words, commercialization is an introduction of market relations between suppliers and consumers. Market can be defined as a coordinating mechanism where forces of supply and demand determine prices, output, and methods of production of goods and services. See, for example, Boyer and Drache, *States Against Markets*, 1996, 3.

facilities to private ownership and operation.[16] Commercialization is possible without a change in ownership.[17] In a socialist system, for example, introduction of market relations is not necessarily accompanied by privatization. In a capitalist system, privatization is often considered as a goal of successful commercialization of private enterprise of government-owned facilities. Generally, in such a system, a commercial enterprise is a private enterprise, in which responsibility for the costs associated with the conduct of business lie with the owner. However, even in a capitalist system privatization is not always possible, even when commercialization is. In reality ownership of enterprises may be anything from a full government ownership to a mixture of private and government ownership, to a full privatization. What defines a commercial enterprise as such is its participation in a market exchange, where outputs, prices and profits are determined largely by the demand and supply.[18] This is important for this study since it deals with space sectors of Russia and China in which state-owned enterprises are the main participants in market relations and where privatization has not spread to a high degree in the space sector.

While the commercialization of outer space is clearly related to commercialization defined above, there is no single agreed academic definition of outer space commercialization. Jasentuliyana describes the commercialization of outer space

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16 Three levels of privatization can be distinguished: (1) "outsourcing," when governments outsource, for example, their needs for space flight to private industry; (2) "corporatization," when governments create private corporations similar to AMTRACK to provide certain services; and (3) divestiture, when governments transfer the full responsibility and management of their facilities to private entity. See James C. Adamson, "Privatization of Space Flight Operations," in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 138.

17 In this case, it would be more appropriately called "marketization."

18 A different school of thought defines commercialization as occurring when governments transfer ownership, responsibility, liability and control to private industry with the latter then competing for domestic and international market. See Adamson, in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 141.

as a "tendency away from space activities fully financed by national governments to those which either government and private industry finance jointly or those which are fully financed by the private sector."[19] McLucas defines "space commerce," or "commercial space," as activities in which private enterprises provide goods and services that depend on satellites in orbit at their own risk.[20] In this context, commercialization could be understood as an increase of the contribution of private sector in the provision of such goods and services in relation to governments' contribution. Goldman also discusses "space commerce" but shifts the emphasis from the issue of ownership to the emergence of a market of space goods and services provided either through private enterprise or nationalized efforts.[21] Focusing on the space policy issues, Handberg also considers the commercialization of outer space as an increasing participation of private actors in space activities.[22] In all of these conceptualizations, an increasing participation of private actors in space activities, in the context of commercialization of outer space, does imply the emergence of markets where exchange of space goods and services takes place and market incentives for private actors' participation exist. At this stage, commercialization of space does not presuppose the privatization of outer space.[23]

The commercialization of outer space should be understood as an increasing use of outer space by the private, government, and mixed private-government actors for

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[19] N. Jasentuliyana, "Space Issues for the Millennium," *Space Policy* 15 (1999): 188.

[20] McLucas, *Space Commerce*, 1991, 4.

[21] Nathan C. Goldman, *Space Commerce: Free Enterprise on the High Frontier* (Cambridge: Ballinger Publishing Company, 1985), 15.

[22] Handberg, *The Future of Space Industry*, 1995, 1.

[23] The issue of ownership in outer space is one of the issues that has been discussed recently, particularly within the legal space community. Some argue that the Outer Space Treaty, which does not allow states or persons, to claim outer space or celestial bodies as their property induces disincentives for commercial development of space and thereby deprives all of humanity of the long-term benefits of the development of outer space. See, for example, Dolman, *Astropolitik*, 2002, 139. Others maintain that customary law consistent with the Outer Space Treaty has already developed a regime for property use that is compatible with private investment and thus private property in space is not necessary. See, for example, Jonathan F. Galloway, "Game Theory and the Law and Policy of Outer Space," *Space Policy* 20 (May 2004): 87-90.

activities that are launched with the view of participation in economic exchanges determined largely by forces of supply and demand. The commercialization of outer space, thus, have two components: first, the physical expansion of utilization of space for commercial purposes via emplacement of greater numbers of commercial satellites in various orbits around Earth; and second, the increasing degree of retreat of the state from direct participation in space activities and/or increasing autonomy of commercial actors in their activities in outer space.

The commercialization of outer space is a result of the commercialization of space activities of states, which in turn, is a result of the commercialization of the activities of firms and corporations, which increasingly undertake their activities based on their own commercial calculations and at their own risk.[24] The result of the process of commercialization is a space market, an institution of exchange in space services, information obtained from space, space technology and equipment, and products manufactured in outer space that functions increasingly on the basis of the rules of supply and demand, as liberalization and deregulation of space activities takes place. Space market has six segments: satellite telecommunications, the largest and most successful segment of space market; remote sensing; navigation and positioning; space transportation; space tourism; and material processing.

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[24] The U.S. Commercial Space Act of 1998 defines the term "commercial provider" as "any person providing space transportation services or other space-related activities primary control of which is held by persons other than Federal, State, local, and foreign governments." See U.S. Congress, House, *Commercial Space Act of 1998*, H.R.1702, 105th Congress, January 27, 1998, http://www.permanent.com/archimedes/hr1702.htm (accessed 06.18.04). The President signed the Commercial Space Act of 1998 creating Public Law 105-303 on October 28, 1998. Russian Federal Law "On Commercial Space Activity" of 1997 defines "commercial space activity" as "independent space activity performed in line with the existing legislation by legal entities and natural persons at their risk and aimed at gaining systematic profits and other benefits from sales of goods, performing work or rendering services in the field of exploration and use of space." See Russian Federation, Public Law, "On Commercial Space Activity," Chapter 1, Article 1, April 1997, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-1-1-5/4-1-1-51_e.html (accessed 05.11.04).

With the end of the Cold War, the commercialization of outer space significantly accelerated due to dramatically falling government space budgets around the world, and deregulation and liberalization of space activities at the national level.[25] Deregulation and liberalization contributed to the process of internationalization of commercial space activities and emergence of a global space market.

Space activities were seen as an unlikely candidate for widespread commercialization for quite some time since the beginning of the Space Age. Space was perceived as a province of states due to the extremely high levels of investment and other resources required for research and development, expensive access to and operation in space, and the very high risks involved in space activities. Nonetheless, commercialization of outer space was a logical step in the development of space activities, given the huge economic potential of space and the level of the development of space technology.[26]

The development of space activities proceeded along a more or less typical path. Tracing the evolution of technologies and government policies in satellite communications, computers, and space launch industry, Whitney identifies three non-discrete stages along this path, leading up to the formation of a market: (1) a "centralized" stage when development of assets is under a central control of either a government or a corporation often due to the lack of competing technologies or market players, and when there are little or no commercial services; (2) "decentralized" stage

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[25] See, for example, G. Khozin, "Space Activity at the Threshold of the 21st Century: A Geopolitical and Geoeconomic Perspective," in G. Haskell and M. Rycroft, eds., *New Space Markets* , 1998, 109; and V. Zervos, "The Economics of the European Space Industry: The Impact of the European Military Space Market on Structure, Conduct and Performance," in G. Haskell and M. Rycroft, eds., *New Space Markets* , 1998, 117.

[26] Economic potential is not a sufficient condition for market to exist: market potential needs to exist in order for private sector to invest in developing of economic potential. See Adamson, in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 138-139.

when there is more than one main technology provider or when controls and functions are dispersed from central to regional or local control; and (3) "distributed" stage when multiple points of control, multiple operators and multiple technologies coexist, commercial services are provided, and thus a market is formed.[27]

Handberg provides a timeframe of the progress of space activities along this evolutionary path. He divides the Space Age into three periods based on the degree of commercialization of space activities and their separation from the governmental space activities: the first period from 1946 to 1966 is the developmental period characterized by the absence of commercial actors operating in space and absolute dominance of government space activities; the second period from 1966 to 1986 is the quasi-commercial period characterized by the beginning of involvement of private actors in space activities and initial separation of public and private efforts in outer space; and the period from 1986 on is the period of space commercialization characterized by the emergence of independent from government private enterprises in outer space.[28]

The commercialization of outer space did not automatically follow from a particular level of the development of space technology, although that was a significant factor. The commercialization of outer space resulted from state policies. The next three sections focus on commercialization of space activities in the United States, Russia, and China. Despite some differences, the commercialization of space activities in these three states shared a number of similar features: a considerable retreat of the government from

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[27] Pamela L. Whitney, "Tracing the Evolutionary Path for Space Technologies," *Space Policy* 16 (2000), 172.
[28] See Handberg, *The Future of the Space Industry*, 1995, 14-19.

space activities accompanied by budget funding reductions,[29] and policies encouraging commercial actors to step in and take part in space activities via liberalization, deregulation, and technology sharing. Once commercial relations are established market influences begin to affect space players in similar ways across borders.

THE COMMERCIALIZATION OF OUTER SPACE ACTIVITIES IN THE UNITED STATES

In the United States in the years immediately following World War II, the space program emerged as an exclusively military effort that only later opened up to include civil activities.[30] However, even before the formal opening of the Space Age, commercial actors in the United States became interested in using the potential of outer space and pursued the development of space technology on a commercial basis. The development of the civil communication satellites *Telstar I* and *Telstar II*, launched in 1962 and 1964 respectively, was privately financed.[31] The U.S. government gave the monopoly on satellite communications to the Communications Satellite Corporation (COMSAT), formed as a result of the Communications Satellite Act of 1962. This newly created corporation was privately owned: it was a consortium of U.S. common carriers, such as AT&T, RCA, Western Union and others. At the same time, it was closely regulated by the government in the technical, economic, and foreign policy issue areas. Thus, the commercial nature of this enterprise was rather limited. The significance of the

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[29] According to the data provided by the Futron Corporation, the worldwide space commercial revenues had steep growth over the 1990s and surpassed worldwide government spending on space in 1996. See dynamics of worldwide government spending on space and commercial revenues from space activities in Watts, *The Military Use of Space*, 2001, 16.

[30] See, for example, Joan Johnson-Freese and Roger Handberg, *Space, The Dormant Frontier: Changing the Paradigm for the 21st Century* (Westport: Praeger, 1997), 69. Robert H. Goddard was the pioneer of rocketry who successfully launched the world's first liquid-propelled rocket. His work, however, was largely ignored by the U.S. government until near the end of Goddard's life. He died in 1943.

[31] Angelo, *The Dictionary of Space Technology*, 1998, 78.

1962 Act was that it legally established the U.S. government's position towards commercial activities in outer space: it allowed commercial actors to take part in space activities.

INTELSAT, the world's first satellite communication corporation, was also organized as a commercial venture but of a limited nature as well. The international agreement establishing the organization affirmed the INTELSAT as a monopolist in the provision of global satellite communications: its Article 14 precluded competition from any other global satellite system created by members of INTELSAT. COMSAT became an official representative of the United States in this international consortium with an original share of 60 percent. Although the INTELSAT was organized as a commercial space venture, it was an organization that charged its members only for the operational costs and the costs of new facilities and did not make a profit.

Starting up in the space business involved huge investments that could be hardly sustained in the early stages by private actors alone. Goodrich provides estimates, according to which the average start-up cost for a manufacturing plant in non-space industry was approximately $5 million, whereas for a space venture it was $50 million and higher.[32] The space business involved high risk, large sums of borrowed capital with high interests, high salaries for scientists and engineers, large plant and equipment costs, high launch costs, and long payback periods. These were only part of the reason why the involvement of the state in the early stages of space activities was crucial not only for the sake of national security but also simply for the establishment of viable space industry.

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[32] Jonathan N. Goodrich, *The Commercialization of Outer Space: Opportunities and Obstacles for American Business* (New York: Quorum Books, 1989), 21-22.

During this quasi-commercial phase of space activities, private efforts were significantly hampered by the Cold War rivalry between the United States and the Soviet Union. The two superpowers exercised strict control over their space technology for security reasons, which impeded the diffusion of this technology and thus made the entrance of new enterprises difficult.[33] This early period of the Space Age was also marked by ideological struggles over the role of capitalism in outer space. Article VI of the 1967 Outer Space Treaty affirmed that the state parties to the Treaty bore the responsibility for national activities in outer space conducted both by the governments or non-governmental entities. Likewise, the 1968 International Convention on Liability established national governments as entities legally responsible for damages resulted from activities of private enterprises under their jurisdiction operating in outer space. Regulations required governmental approval of all private activities in space. The government also controlled physical access to outer space via the control over space launch infrastructure: private actors needed U.S. government facilities to launch their payloads in outer space.

The first significant effort by the U.S. government to commercialize space activities was made in the early 1980s within the larger framework of "neo-conservative revolution."[34] After a comprehensive space policy review initiated by the White House in 1981 and conducted under the direction of new Science Adviser George Keyworth III, President Reagan issued National Security Decision Directive 42, also known as the National Space Policy, on July 4, 1982. In this document, the President pronounced new guidelines for the development of U.S. space programs and identified the expansion of

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33 Handberg, *The Future of the Space Industry*, 1995, 16-17.
34 Goodrich, *The Commercialization of Outer Space*, 1989, 31.

private investment in space activities as a major objective of the United States.[35] This announcement was followed by legislative and executive directives, providing for the implementation of the guidelines. In July 1984, in order to further promote the commercialization of space activities, President Reagan issued the National Policy on the Commercial Use of Space.[36] Following this initiative, U.S. Congress amended the NASA Space Act of 1958 and directed NASA to seek and encourage "the fullest commercial use of space."[37] In response, NASA adopted its own Commercial Use of Space Policy in October 1984 and created a NASA Commercial Space Office as a locus of commercial space interactions with the aerospace industry.[38]

Initiatives to stimulate private investment in space ventures included measures aimed at reducing financial, technical, and institutional risks for the American private companies willing to venture into outer space. NASA was to provide affordable and reliable access to space for private actors via the Space Shuttle, to assist with the installation of commercial equipment on the Shuttle and provide funding for high-technology commercial research, to share its experience, know-how, and patents and to

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[35] U.S. President, National Security Decision Directive Number 42, "National Space Policy," July 4, 1982, http://www.hq.hasa.gov/office/pao/History/nsdd-42.html (accessed 09.26.03).

[36] This policy envisioned measures to encourage space commercialization in four areas: (1) economic initiatives; (2) legal and regulatory initiatives; (3) research and development initiatives; and (4) initiatives to implement the National Policy on the Commercial Use of Space. See U.S President, "National Policy on the Commercial Use of Space," released July 20, 1984, available at http://www.jaxa.jp/jda/library/space-law.chapter_3/3-1-1-1_e.html (accessed 06.18.04).

[37] See *National Aeronautics and Space Act of 1958*, sec. 102 (c), as amended July 16, 1984 by Public Law 98-361, *National Aeronautics and Space Administration Act of 1985* quoted in Richard M. Obermann and Ray A. Williamson, "Implications of Previous Space Commercialization Experiences for the Reusable Launch Vehicle," *Space Policy* 14 (1998): 17. See also van Fenema, *The International Trade in Launch Services*, 1999, 77.

[38] "Commercial space industry" was recognized for the first time as a separate sector by the U.S. government in the 1988 Presidential Directive on National Space Policy. The policy statement itself was classified and only unclassified summary statement was released. See NASA Historical Reference Collection, "Presidential Directive on National Space Policy Fact Sheet," February 11, 1988. http://www.hq.nasa.gov/office/pao/History/poliicy88.html (accessed 06.18.04).

develop facilities necessary for the commercial use of space.[39] Thus, the Space Shuttle was to become the main transportation system of the U.S. military and civil space program and the workhorse of the nascent commercial sector that would provide easy and affordable access to space.

In 1972, President Nixon approved plans for the development of the Space Transportation System (STS), or Space Shuttle, based on cost projections that demonstrated its economic viability. These projections, however, could be realized only by launching all public and private payloads aboard the Shuttle. In order to achieve this objective later on, when the Shuttle finally arrived, NASA provided subsidies for payloads flown on the Shuttle, thereby considerably impeding the development of alternative commercial launch projects. There was an expectation that the Shuttle would lower the costs of launch by a factor of 4 and even up to 10. Instead of lowering the costs of launches, however, these policies led to increased difficulties in obtaining launch services and to greater expenses over the longer run.[40]

When under the Reagan Administration, the Space Shuttle was declared the "national launch capability"—the primary space launch system for national security and civil government missions and domestic and foreign commercial missions[41]—NASA terminated procurement of *Delta* and *Atlas* vehicles, while Department of Defense decided to stop production of *Titan III* vehicles shortly afterwards and started a new project that became later known as the *Titan IV* program.[42] Simultaneously, in order to

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[39] Johnson-Freeze and Handberg, *Space, The Dormant Frontier*, 1997, 182-183.
[40] Goodrich, *The Commercialization of Outer Space*, 1989, 18.
[41] U.S. President, National Security Decision Directive 42, "National Space Policy," July 4, 1982.
[42] Marcia S. Smith, "Space Launch Vehicles: Government Activities, Commercial Competition, and Satellite Exports," Issue Brief for Congress, Congressional Research Service, Library of Congress, Order Code IB93062, April 17, 2003.

facilitate the development of commercial operation of expendable launch vehicles (ELVs), Congress passed the Commercial Space Launch Act of 1984 with the specific purpose of encouraging, facilitating, and promoting commercial space launches by the private sector, thereby setting the stage for the development of a U.S. commercial launch industry. However, the Reagan Administration's policy to make the Space Shuttle competitive with the European *Ariane* rocket and attract commercial customers to the Shuttle effectively precluded the entrance of U.S. commercial actors in the emerging commercial market of expendable launch vehicles.[43] Thus, the U.S. manufacturers of the expendable space launch vehicles found themselves in a difficult situation when the U.S. government cut its spending on the expendable vehicles and created disincentives for commercial space launch providers.

The tragic demise of the Space Shuttle *Challenger* in January 1986 marked the end of an era when non-military space activities were overwhelmingly dominated by the government and NASA.[44] After the *Challenger* disaster, in accordance with the Reagan Administration's National Space Policy and its Commercial Space Initiative of 1988, NASA was directed to shift commercial payloads that did not require to human participation and many government payloads from the Shuttle to expendable launch vehicles (ELVs).[45] However, it was not until 1989 that the first U.S. commercially operated launch took place on a *Delta* vehicle manufactured by McDonnell Douglas. In the intermediate period, many private companies planning to launch their payloads in

[43] The major U.S. aerospace companies did not take up an opportunity provided by the 1984 Commercial Space Launch Act. See Obermann and Williamson, 1998, 20.
[44] Handberg, *The Future of Space Industry*, 1995, 18. After the *Challenger* accident the Department of Commerce took charge over the space commercialization efforts and established an Office of Commercial Space to encourage private efforts in the development of space technologies and applications.
[45] See NASA Historical Reference Collection, "Presidential Directive on National Space Policy Fact Sheet," February 11, 1988. See also Johnson-Freese and Handberg, *Space, The Dormant Frontier*, 1997, 117.

space started to seek other, non-U.S., launch service providers, just as foreign providers started to aggressively seek U.S. customers, including the Chinese and Soviet launch service providers.[46] Thus, the situation with launch vehicles in the United States in the second half of the 1980s both created greater need for a commercial launch services and opportunities for the entrance of new players from other countries into an emerging space launch market. This international market of commercial launch services finally provided the necessary foundation for the further commercialization of outer space activities.

After 1986 and particularly after the end of the Cold War and the dissolution of the Soviet Union, the commercialization of space activities in general, and the launch industry in particular, in the United States considerably accelerated driven by declining government budgets.[47] Space funding from the Department of Defense peaked in 1989 at $23.7 billion dollars and from that point decreased precipitously with the minimum at $11.7 billion in 1995, while NASA funding started to diminish from $16.0 billion in 1991 to approximately $13 billion throughout the second half of the 1990s and early 2000s.[48] At the same time as government funding diminished, commercial investment in space activities, such as space launch vehicles, infrastructure, and transportation, communication satellite constellations, and high-resolution remote sensing spacecrafts started to pick up.[49]

The reduction of government funding for space activities did not by itself stimulate commercialization. The policies of President Bush reflected in the U.S. Commercial Space Policy Guidelines of 1991, significantly encouraged the process of

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[46] McLucas, *Space Commerce*, 1991, 96.
[47] See, for example, van Fenema, *The International Trade in Launch Services*, 1999, 165.
[48] Figures are given in constant dollars of September 30, 2001. See "Military and Civilian Space Budgets," *Air Force Magazine*, August 2002, 29.
[49] See, for example, *1998 State of the Space Industry* (Bethesda: Space Publications, 1998), 8-12.

commercialization. These incentives included the U.S. government's commitment to procuring commercially available goods and services, maintaining restraint in competing with commercial suppliers, transferring publicly developed technology to the private sector, allowing private access to public facilities on a reimbursable basis, and encouraging free and fair trade internationally in commercial space activities.[50]

The end of the Cold War and relaxation of security concerns also made it possible to open up formerly classified technologies. The lessening of tensions at the international arena also allowed the United States to relax export controls with respect to certain dual-use goods and technologies, which considerably spurred commercialization of space activities and accelerated the establishment of global space market.[51] Along with these political, economic and technological incentives, there were revolutionary developments in computer technology that opened up new possibilities for space applications.

Space-based communications attracted the interest and participation of commercial actors from the early stages of the development in the United States. By the late 1970s, satellite communications were already a major commercial success.[52] Between 1970 and 1972, the Federal Communications Commission authorized the first domestic communications satellites and shortly later these enterprises became the first space industry existing independently of the government funding: telephony and then TV broadcasting started to earn revenues for the industry.[53] The first privately owned

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[50] Congressional Budget Office, *Encouraging Private Investment in Space Activities,* February 1991, xi.
[51] The relaxation of the East-West tensions and the developments in the Soviet Union led to a considerable reduction in the list of the CoCom controlled dual-use goods in June 1990 and September 1991. In 1994, the demise of CoCom regime freed access of the countries from the former Communist bloc to dual use goods and technologies, opening up more opportunities for space related trade. See, for example, van Fenema, *The International Trade in Launch Services*, 1999, 165-169.
[52] Goldman argues that communication satellites became profitable by the later 1960s. See Goldman, *Space Commerce*, 1985, 75.
[53] Goldman, *Space Commerce*, 1985, 63.

international satellite system, PanAmSat, was found in 1984. It was conceived from the beginning as an alternative to INTELSAT's services in Latin America. PanAmSat's first satellite was launched in 1988 and its first customer for Latin American transmission became CNN. Shortly later, PanAmSat moved to serve communication markets all around the world. Since 1996 when it was bought by Hughes Electronics, PanAmSat grew into a $1 billion company operating a network of 20 satellites. PanAmSat became the largest commercial geosynchronous communication system in the world.[54]

In the 1990s, satellite communication entered a new era of revolutionary change driven by innovation in information and communication technologies and a growing demand for communication services around the globe. The satellite communication industry became one of the main beneficiaries of the rapid growth in computing power and miniaturization technology: satellites, receivers, and switching technologies benefited from progress in these two areas. Throughout the 1990s, the number of communication satellites grew dramatically. Their applications expanded and numerous new commercial players entered the business offering services that were inconceivable just a short while ago. The Iridium company with a LEO satellite constellation was envisaged by its founders led by Motorola as an embodiment of the best promises of satellite communications. Its 66 satellites began providing global phone services anywhere on Earth.[55] Globalstar Communication led by Loral Space & Communications also started to provide mobile communication services to customers around the world in March 2000.

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[54] Dobbs, *Space*, 2001, 69-70.

[55] After it filed for bankruptcy in 2000, Iridium was rescued in April 2001 by a group of investors from Brazil, Australia, and Saudi Arabia. Boeing began managing Iridium satellite network. The Pentagon became one of the largest customers of new Iridium LLC.

The New ICO began offering satellite based Internet access via Very Small Aperture Terminals (VSATs).

The U.S. Office of Space Commercialization reports in its 2001 *Trends in Space Commerce* that satellite communications worldwide were the largest and fasters growing segment of the space industry in the second half of the 1990s.[56] Some of the most significant factors that shaped this segment of commercial space activity were the global deregulation of telecommunications markets, the introduction of large non-geostationary orbit (non-GSO) satellite constellations for mobile communications, and the emergence of the Internet. American satellite manufacturers, who had the leading position in the communication satellite market, particularly benefited from these developments. Signing of the 1997 World Trade Organization (WTO) Fourth Protocol to the General Agreement on Trade in Services by sixty-nine WTO member states, committing themselves to opening up their markets and to providing impartial regulatory treatment and nondiscriminatory allocation and use of resources was a milestone, marking the formation of a global competitive satellite communications market, with the U.S. satellite manufacturing business and satellite operators gaining large new markets all around the world.[57]

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56 U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 1-3. According to this report, space industry encompasses such directly involved segments of industry as satellite manufacturing, satellite operation, space launch vehicle manufacturing, and many other, as well as many direct-to-consumers applications, Internet services and entertainment applications. See Ibid., p. 1-1.

57 An exception was made for measures necessary for providing national security. In the Annex 1B "General Agreement on Trade in Services," Article XIV, the exception specifies: "Nothing in this Agreement shall be construed: (a) to require any Member to furnish any information, the disclosure of which it considers contrary to its essential security interests; or (b) to prevent any Member from taking any action which it considers necessary for the protection of its essential security interests: (i) relating to the supply of services as carried out directly or indirectly for the purposes of provisioning a military establishment; (ii) relating to fissionable or fusionable materials or the materials from which they are derived; (iii) taking in time of war or other emergency in international relations; or (c) to prevent any Member from taking any action in pursuance of its obligations under the United Nations Charter for the maintenance of international peace and security." See World Trade Organization, *The Uruguay Round*

By the beginning of the new millennium 425 operational communication satellites offering commercial services orbited the Earth. Satellite systems also expanded from the GEO orbit into the Medium Earth Orbit (MEO) and Low Earth Orbit (LEO). Out of 425 commercial communication satellites only 54% orbited Earth in GEO. U.S. firms operated 26% of the GEO commercial communication satellites.

The U.S. communication satellite manufacturers and operators also benefited from domestic deregulation. For example, the Satellite Home Viewer Improvement Act that went into effect in 1999 removed legal barriers that limited transmission over satellites of local television signals. This contributed to the expansion of the Direct-To-Home (DTH) satellite services in the United States. Retail and subscription satellite services as well as commercial firms and operators of satellites that lease or sell access to their satellite transponders to communication service providers, such as telecommunications and data relay firms, represent a segment of the space market that also expanded throughout the second half of the 1990s.

Following this wave of space commercialization revolution, the oldest satellite communication organization established under the U.S. leadership, INTELSAT, also underwent a fundamental restructuring in order to adapt to new conditions characterized by increasing competition. The Assembly of Parties, the highest decision-making body of INTELSAT, consisting of all the member states, took the decision to restructure the organization in October 1999 and a year later the new legal instruments and framework were finalized. On July 18, 2001, the intergovernmental organization transferred some of its assets, including satellites, to Intelsat Ltd., a new Bermuda-registered private

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Agreement: the WTO Legal Texts, Annex 1B "General Agreement on Trade in Services," 1994, http://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm#services (accessed 06.05.04).

commercial company that would provide international communication services, while the International Telecommunications Satellite Organization (ITSO) as an intergovernmental organization was charged with monitoring and supervision of the public service and lifeline connectivity obligations of the new private telecommunication company.[58]

The Land Remote Sensing Commercialization Act of 1984 was the first attempt to privatize and commercialize remote sensing activities in the Unuted States.[59] Landsat was a remote-sensing satellite system developed by NASA as an R&D project in the 1960s. In 1979, it was transferred to the National Oceanic and Atmospheric Administration (NOAA). The 1984 Act led to the selection of EOSAT as a private company that was to operate the Landsat satellite system and distribute imagery. This experience of privatization, however, was only partially successful. During the Cold War, remote sensing of Earth was considered to be a matter of high national security concern and for this reason was heavily regulated. As Landsat demonstrated, this regulation considerably impeded commercialization of remote sensing activities.[60] With the end of the Cold War the reduction of security concerns finally made it possible to create a remote sensing market with minimal restrictions.[61] Remote sensing technologies developed in the military domain now were made available for commercial use. The Remote Sensing Act that came into effect in 1992 further encouraged the development of

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[58] After the restructuring, INTELSAT ceased to exist in its old form. It was divided into two separate entities. As an intergovernmental organization it now is called ITSO, while the new commercial communication organization is called Intelsat Ltd. See International Telecommunications Satellite Organization (ITSO), Official website at http://www.itso.int/php_docs/tp11_itso.php?dc=aboutus (accessed 03.011.04).

[59] The planning for a phased out transition to private operation and ownership of NASA's Landsat system began under the Carter Administration. The Reagan Administration switched to a plan of an accelerated privatization of Landsat envisioned in the Land Remote Sensing Commercialization Act of 1984. See Obermann and Williamson, 1998, 19. See also Handberg, *The Future of the Space Industry*, 1995, 58-59.

[60] Johnson-Freese and Handberg, *Space The Dormant Frontier*, 1997, 192. See also Obermann and Williamson, 1998, 19-20. The Land Remote Sensing Policy Act of 1992 brought the development and operation of Landsat 7 back within the government.

[61] Certain restrictions on remote sensing activities still exist due to national security concerns.

private remote sensing systems.[62] The Bush Administration granted a license to the first commercial remote sensing satellite system in January 1993. Following President Clinton's approval of the relaxation of restrictions on the sale of high-resolution satellite imagery, four U.S. companies were granted licenses to operate commercial remote sensing satellites with 1-meter resolution. One of the most significant factors contributing to the significant expansion of the remote-sensing market in the 1990s was the development of an information infrastructure that allowed users easier and cheaper access and storage of the data obtained via remote-sensing satellites. Between 1996 and 2002, the worldwide sales of commercial imagery grew 14% annually, with the U.S. share in global revenues from pre-value-added imagery from remote-sensing satellites increasing from 27% to 36%.[63] By the year 2000, there were five U.S. and one U.S.-Canada remote-sensing satellites from which commercial satellite imagery was available with some new commercial satellites coming shortly.[64]

Commercialization of the Global Positioning System (GPS) is an example of commercialization without privatization of the relevant space assets:[65] the GPS continues to be controlled and operated by the U.S. Air Force while offering services to a commercial market. The GPS constellation was completed in 1994. In 1996, the Clinton Administration issued an official policy on GPS in which it preserved its governmental status but allowed it to provide commercial services and encouraged private investment

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[62] On April 25, 2003, President Bush signed a new commercial remote sensing policy that tries to strike a new balance between economic and national security goals. See White House, *U.S. Commercial Remote Sensing Space Policy Fact Sheet*, released May 13, 2003, http://www.whitehouse.gov/news/releases/2003/05/20030513-8.html (accessed 05.05.04).

[63] U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 4-5.

[64] Ibid., p. 4-8, 4-11.

[65] Privatization of the GPS has been proposed but rejected. See, for example, Handberg, *The Future of Space Industry*, 1995, 55; and Johnson-Freese and Handbeg, *Space, The Dormant Frontier*, 1997, 199.

in the use of U.S. GPS technologies and services.[66] GPS commercial uses are in aviation for air-traffic management, marine surveying, recreation, timing, and in-vehicle navigation. The variety of services expanded as manufacturers of the GPS user equipment diversified their product lines and incorporated them into high value-added products, such as cell phones, car navigation, and flight management systems. The revenue of the U.S. manufacturers of GPS user equipment grew at an annual rate of 14% between 1996 and 1999.[67]

In 1994, the Clinton Administration issued a new *National Transportation Policy* that was to carry the United States space launch industry into the next century. The document envisioned the development of new generation of space transportation in close partnership between the government and private industry in order to dramatically reduce the cost of access to outer space and thereby further encourage commercial space activities.[68] The new policy committed the United States government "to encouraging a

[66] On March 28, 1996, President Clinton approved a comprehensive policy on the management of the U.S. Global Positioning System, PDD/NSTC-6. This document transferred the responsibility of GPS management oversight from Department of Defense to an Interagency GPS Executive Board (IGEB) co-chaired by senior officials of the Departments of Transportation and Defense in order to ensure that GPS meets civil, commercial, and military requirements. See U.S. President, Presidential Decision Directive NSTC 6, "U.S. Global Positioning System Policy," March 28, 1996, Office of Science and Technology Policy and National Security Council Fact Sheet, March 29, 1996, http://www.ostp.gov/NSTC/html/pdd6.html, accessed 07.11.04.

[67] U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 5-3.

[68] President Clinton approved "National Space Transportation Policy" on August 5, 1994. It commits the United States to a two track strategy: (1) maintaining and improving the current fleet of expendable launch vehicles a necessary to meet civil, commercial and national security requirements; and (2) investing R&D resources in developing the next generation reusable space transportation systems. The new policy envisions a close partnership between the U.S. government and private sector in the development of the next generation reusable space transportation systems for the 21st century. See U.S. President, Presidential Decision Directive NSTC 4, "National Space Transportation Policy," August 5, 1994, Office of Science and Technology Policy Fact Sheet, August 5, 1994, http://www/ostp.gov/NSTC/html/pdd4.html (accessed 07.11.04). Partnerships between government and private industry within countries and among the private industries of different countries became a widespread phenomenon in the 1990s. In general term, "partnership" can be defined as a long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each other's resources. Partnerships are created by forming strategic alliances or consortia. Sea Launch is an example of multinational partnership. See P. R. Harris and D. J. O'Donnell, "Facilitating a New Space Market

viable commercial U.S. space transportation industry" via promoting innovative types of arrangements between the U.S. government and the private sector, via timely transfer of unclassified government-developed space transportation technologies to the private sector and facilitating commercial space operations, via involving the private sector in the design and development of space transportation capabilities, and via government procurement strategies that use commercial U.S. space transportation products and services.[69]

The main U.S. launch vehicle manufacturers, Boeing and Lockheed Martin, started to develop redesigned launch systems with *Delta 4* and *Atlas 5* family of vehicles. Partial support for this effort came from the Air Force within the framework of the Evolved Expendable Launch Vehicle (EELV) program. There were also significant activities in the second half of the 1990s on commercial reusable launch vehicles (RLVs) with a number of companies developing new vehicles with innovative RLV designs such as *Astroliner* (Kelly Space and Technology), *K-1* (Kistler Aerospace Corporation), *Pathfinder* (Pioneer Rocketplane), *Roton c-9* (Rotary Rocket Company), *Space Cruiser System* (Vela Technology Development), and *VentureStar* (Lockheed Martin). The Federal Aviation Administration (FAA) finally granted licenses to four commercial spaceports: the Virginia Space Flight Center, Kodiak Launch Complex, Spaceport in Florida, and the California Spaceport. Operations of the Space Shuttle were also commercialized, when in 1996 United Space Alliance, a Limited Liability Company

Through a Lunar Economic Development Authority," in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 224.

[69] U.S. President, Presidential Decision Directive NSTC 4, "National Space Transportation Policy," 1994, Section IV "Commercial Space Transportation Guidelines."

(LLC) equally owned by the Boeing Company and Lockheed Martin Corporation, took over managing, conducting operations, and maintaining the Space Shuttle.[70]

In the latter half of the 1990s, the growth of private investment in the space launch industry started to materialize in commercial launch rates greater than those of governmental and quasi-commercial launches combined. According to the Office of Space Commerce, the number of commercial launches started to exceed the number of governmental and quasi-commercial launches in 1997, except for the year 2000.[71] The increase in the commercial launches was driven by the launch requirements of the arriving new constellations of LEO and other non-GEO communication satellites such as Iridium, Globalstar, ICO Global, and Sirius direct radio satellites.

In response to the rapid commercialization of outer space activities, globalization of the space market, and ever-increasing competition, the U.S. space industry went through a wave of mergers and acquisitions. In 1995, for example, as a result of a merger between Lockheed Corporation and Martin Marietta Corporation, Lockheed Martin was formed that became the largest space company in the world with the space related revenues of $ 7.3 billion in 1996 and capable to build and launch almost any type of unmanned spacecraft.[72] In 1997 this new corporation expanded its operations from satellite manufacturing and space launch industry into operating satellites when it formed

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[70] As the prime contractor for NASA's Space Shuttle Program, United Space Alliance is responsible for the operation and management of the U.S. Space Shuttle fleet, including for mission design and planning, flight operations, software development and integration payload integration, integrated logistics, astronaut and flight controller training, vehicle processing, launch and recovery. See United Space Alliance (USA) company, Official website, http://www.unitedspacealliance.com/about/ (accessed 03.14.04). See also Marcia Smith, "Space Launch Vehicles," 2003.

[71] The Office of Space Commercialization's report *Trends in Space Commerce* defines commercial launches as "those launches procured on the international launch services marketplace" and civil government and quasi-commercial launches as "launches procured by governments through commercial launch service providers, which the purchaser typically restricts to the launch providers of a single country." See U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 2-2.

[72] See, for example, Mark Williamson, "Corporate Mergers—Lifeline for the Space Industry," *Space Policy* 13 (November 1997): 286-287.

a joint venture with INTERSPUTNIK to create one of the largest commercial communications satellite operators in the world called Lockheed Martin Intersputnik (LMI).[73] In August 2000, Lockheed Martin was allowed to buy COMSAT.[74] Other American companies followed the suit, competing rather fiercely among each other for businesses to merge with or to acquire. In 1996, Boeing bought Rockwell, and Northrop Grumman acquired Westinghouse Defense Electronics, and in that configuration, in 1997, they were purchased by Lockheed Martin. In 1997, Boeing added McDonnell Douglass. This consolidation process of the 1990s resulted in the creation of space industrial giants with "the big three" leading the U.S. space industry: Lockheed Martin, Boeing and Raytheon earning annually billions in space revenues.[75]

Over the past two decades, since the commercialization of outer space began, commercial space activities have become a sizable business: in 2001, overall space business has grown to about $100 billion in revenues, with the share of the United States estimated at approximately 40 percent.[76] The same year, the space budget of the Department of Defense was $14.3 billion, and the NASA budget – $13.3 billion.[77] Thus, the revenues of the U.S. commercial space sector surpassed combined budgets of NASA and DoD in 2001.

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[73] Ibid., 288.

[74] Dobbs, *Space*, 2001, 68.

[75] G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 33. See also National Science Foundation, Science and Engineering Indicators, http://www.nsf.gov/sbe/srs/seind98/c4/fig04-10.htm (accessed 03.12.04).

[76] Different sources give somewhat different estimates. See, for example, U.S. Department of Commerce, *Trends in Space Commerce*, 2001, 1-3; Dobbs, *Space*, 2001, 2; and Edward L. Hudgins ed., *Space: The Free-Market Frontier* (Washington D.C.: CATO Institute, 2002), xiv. In the aftermath of September 11, 2001, overall revenues from the space industry fell to $82.8 billion in 2001, according to the *2002 State of the Space Industry*, released in February 2002. The Report announced the end of the late 1990s boom market for commercial satellites and launches. See "Space Revenues Down; M&As Up In Volume and Value," *Space Daily*, March 6, 2002, http://www.spacedaily.com/news/industry-02a.html (accessed 03.12.04).

[77] See "Military and Civil Space Budgets," *Air Force Magazine*, August 2002, 29.

These numbers, however, may not fully reflect the significance of the commercial space activities. In the United States, space applications have expanded into nearly every component of society, economy and government. Over the post-Cold War years, commercial satellites have become a part of the U.S. critical infrastructure, on which both the U.S. government and U.S. economy depend.[78] The U.S. government has become a large consumer of the commercial space services, including for its defense and intelligence needs, and its dependency increases.[79] Furthermore, the U.S. government and economy have become dependant not only on commercial space services but also on the commercial sector to provide innovative technology to assure military superiority and the competitiveness of the United States economy.[80] The strength of the commercial space sector is largely based on the technological edge that the United States' space industry maintains over other market competitors. The commercial success of the U.S. space industry is increasingly seen as the foundation of the U.S. military power. A report prepared for the Commission assessing United States National Security Space Management and Organization concurs with a conclusion that if weakened U.S. satellite makers cede the satellite market to foreigners, it will jeopardize America's global

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[78] "Critical infrastructure" is defined as "those physical and cyber-based systems essential to the minimum operations of the economy and government." These governmental and private systems include: telecommunications, energy, banking and finance, transportation, water systems, and emergency services. These systems rely on satellites. See U.S. President, Presidential Decision Directive 63, "White Paper on Critical Infrastructure Protection," May 22, 1998, http://www.fas.org/irp/offdocs/paper598.htm (accessed 03.14.04).

[79] See, for example, Commission to Assess United States National Security Space Management and Organization, Report, Executive Summary, 2001. As of 2000, the Department of Defense satisfies about 60% of its satellite communication requirements with commercial satellite services. See Haller and Sakazaki, "Commercial Space and United States National Security," Chapter VIII "U.S. Government Use of Commercial Satellites for National Security," 2001.

[80] Commission to Assess United States National Security Space Management and Organization, Report, Executive Summary, 2001. See also U.S. President, Presidential Policy Directive 49, "National Space Policy," Fact Sheet, September 19, 1996.

surveillance, reconnaissance and communications network, "the linchpin of the Pentagon's 21st century battle plan."[81]

The introduction of market forces does not only mean commercial competition and what it entails—mergers and acquisitions—but also cyclical fluctuations. While during the satellite communication boom of the 1990s, the U.S. space industry could lessen its ties to the military, pursuing commercial projects, the economic situation in the world space industry in the early 2000s made those ties important again. For example, if during the 1990s the average number of satellite launches per year was 90, in 2001 this number was 60, of which only 15 were purely commercial launches.[82] In 2000, mobile satellite communication provider Iridium with the constellation of 66 LEO satellites declared bankruptcy. Some other companies experienced financial difficulties as well.[83] As a result of the difficult economic situation, commercial space industry became more dependent again on the military for military plans for the use of space.[84]

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[81] Haller and Sakazaki, 2001, Chapter VIII "U.S. Government Use of Commercial Satellites for National Security."

[82] Loring Wirbel, "The Space Industry: Supporting U.S. Supremacy," *Foreign Policy in Focus*, Vol. 7, No. 13, 2002, http://www.foreignpolicy-infocus.org/pdf/vol7/13ifspace.pdf (accessed 03.14.04).

[83] ICO and Globalstar, two mobile telephone companies, also declared bankruptcy. See Marcia Smith, "Space Launch Vehicles," 2003.

[84] The NIMA's relationship with the commercial sector provides an example of the emerging symbiotic relationship between the military and the commercial space sector. During the war in Afghanistan in 2001, the NIMA contracted Space Imaging, the leader in commercial remote sensing, for satellite imaging in order to satisfy its growing demand for satellite remote sensing information for the use with its Coordinated Seeking Weapons (CSW). In 2002, the NIMA increased its purchases of commercial images and spent in total $96 million on those products. Space Imaging took part in a bid for a contract from NIMA in order to satisfy its need for financing of the development of new generation of remote sensing satellites. Starting in 2003, Space Imaging and DigitalGlobe, another commercial player in remote sensing segment of the space market, began selling their products to NIMA in a framework of a multi-year program called *ClearView*. NIMA's *ClearView* program has been the most expensive so far. In November 2003, NIMA granted a contract for the development of a new generation of commercial remote sensing satellites to *DigitalGlobe*, working in collaboration with Gall Aerospace, Boeing Launch Services, BAe Systems, and some other space companies. The contract is a part of another large NIMA's program called NextView established to help develop a new generation of remote sensing satellites by Boeing, the main supplier of military remote sensing satellites. As a result of the military-commercial partnership in remote sensing the next generation of remote sensing satellites will be a generation of pure dual-use remote sensing satellites. The commercial-military partnership is a growing trend in the United States and in Europe. Such partnerships

THE COMMERCIALIZATION OF OUTER SPACE ACTIVITIES IN RUSSIA

The commercialization of outer space activities began in the United States as a matter of U.S. government policy in the first half of the 1980s in order to reduce budget expenditures. At the same time, the Soviet Union was increasing government spending on its space program. It continued to do so until the end of the Soviet period. In 1989, the Soviet government spending on outer space activities reached its peak of approximately R6.9 billion, which was estimated to be about 1.5 percent of the gross national product.[85] A larger half of this money, or R3.9 billion, was spent on the Soviet military space program, R1.3 billion went into the *Buran* project, the Soviet analog of the Space Shuttle, and R1.7 billion went into civilian space projects.

The Soviet space program was considered to be a high national security priority and from its early days was put under the tight control of the Communist party and Soviet government.[86] Government spending was the only source of the Soviet space program.

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were materialized in China and Russia as well. See A. Kucheiko, "Novoe Partnerstvo Voennykh I Kommercheskikh Struktur SshA o Oblasti Kosmisheskikh Snimkov" (New Partnership between the military and Commercial Structures of the USA in Space Imaging), *Novosti Kosmonavtiki*, Vol. 14, No. 1 (252), January 2004, 40-42. The new relationship between the military and commercial remote sensing sector was laid out in the new U.S. remote sensing policy signed into effect on April 25, 2003. According to this new policy, the U.S. government, including the military, is required to satisfy its need in space imaging via purchases of commercial remote sensing products where possible. See White House, "U.S. Commercial Remote Sensing Policy Fact Sheet," released by Office of the Press Secretary, April 25, 2003, http://www.whitehouse.gov/news/releases/2003/05/20030513-8.html (accessed 05.05.04). A similar situation developed in the U.S. space launch industry. The U.S. companies who participated in the development of DoD's new EELVs—*Atlas 5* and *Delta 4*—are, as reported, seeking additional DoD funding to defray their costs under the conditions of diminished commercial demand. See Marcia Smith, "Space Launch Vehicles," 2003.

[85] At the end of the Soviet period the ruble was set at parity with the British sterling. See Harvey, *Russia in Space*, 2001, 281.

[86] The Soviet government established the first laboratory charged with the development of rockets shortly after World War I, in 1921. In 1933 this laboratory conducted military tests of its weapons. Thus, the Soviet government was aware of the military utility of rockets in particular, and development of space technology in general, from the early stages of evolution of space technology. On May 13, 1946, the Soviet government issued the Directive No.1017-419ss, establishing the governmental structures responsible for the Soviet space efforts, scientific institutes, design bureaus and rocket manufacturing plants. See, for example, Russian Space Agency, *50 Years Ahead of Its Time*, International Educational Program, Moscow, 1998, 5, 244. After World War II, the Soviet space program was directed by the

However, the Soviet government started to look for opportunities to make money on its space activities at approximately the same time as the United States government began commercialization of its outer space activities. In 1982, the Soviet Union conducted its first "commercial" launch contract, putting India's indigenously developed remote-sensing satellite *IRS-1* in orbit.[87] In 1985, when *Perestroika* was just initiated by the then new Secretary General of the Communist Party of the Soviet Union Michael Gorbachev, the *Glavkosmos* agency was created to carry out coordination of Soviet efforts in putting space technology to the service of the Soviet economy. The very next year, *Glavkosmos* started its "commercial" activities, sending a group of marketing specialists abroad in order to look for commercial contracts for the Soviet *Proton* rocket.

The end of the Cold War and the dissolution of the Soviet Union were the two most important factors that shaped the space program of the former Soviet Union in the last decade of the 20th century. On December 30, 1991, the prime ministers of the republics of the former Soviet Union, except the three Baltic states, Moldova and Ukraine, signed an agreement according to which their civilian space activities would be governed by a new interstate council, their joint strategic forces would be run by the military program, and the Baikonur cosmodrome would be used as their common spaceport.[88] In the Russian Federation, on February 25, 1992, President Yeltsin created

Ministry of General Machine Building (MOM) and the Commission on Military Industrial Issues (VPK), while key decisions on the space issues were made at the highest level jointly by the Communist party leadership and government. See also Chapter 2 "Economic of Space Activity in Russia" in Federation of American Scientists, Space Policy Project, *Russian Space Industry*, http://www.fas.org/spp/civil/russia/chap_2.htm (accessed 01.31.01).

[87] See van Fenema, *The International Trade in Launch Services*, 1999, note 140, 241.

[88] See "Minsk Agreement," December 30, 1991, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-2-2-2_e.html, (accessed 05.22.04). The utilization of space infrastructure were further specified in the "Tashkent Agreement Concerning Arrangements for Maintaining and Using Space Infrastructure Facilities in Pursuance of Space Programs," May 15, 1992, http://www.jaxa.jp/jda/library/space-law/achapter_4/4-2-

the Russian Space Agency (RKA) to replace the old Soviet bureaucratic structures—the Ministry of General Machine Building[89] (MOM) and *Glavkosmos*—as the main coordinating body of Russia's space activities. It was charged with the development and oversight of the Russian space program as well as with the coordination of commercial space projects and assistance with their realization.[90] The Agency with nine main divisions—government programs, manned projects, launch facilities, science, commercial, international, ground, external and legal, and resources and business divisions—was to steer the Russian space program through the times of dramatic contraction of government spending and political uncertainties of the 1990s.[91]

The reduction of government spending on space activities took place in three phases. The first budget cut was made in 1990, with the *Buran* project bearing the heaviest loss. When the first manned flight of *Buran* was being prepared, the project was cut by R80 million: from R300 million in 1989 it was reduced to R220 million in 1990.

As a way of earning money to support space program, a seat on board of the manned *Soyuz* spacecraft to the station *Mir* was offered for customers who would pay in

2-3_e.html (accessed 05.11.04). According to this agreement, space infrastructure facilities located in the territories of the state parties were pronounced to be the property of those states.

89 The Soviet General Machine Building Ministry was dissolved in November 1991, even before the dissolution of the Soviet Union.

90 See President of the Russian Federation, "On Structure of Management of Space Activity in the Russian Federation," Edict of the President of the Russian Federation No. 185, February 25, 1992, http://www.fas.org/spp/civil/Russia/annex_14.htm (accessed 08.16.02). In 1997, the Russian space industry was brought into the Ministry for Space and Telecommunications.

91 The Russian Space Agency (RKA) was established by the Presidential Decree No.185. The Agency was put in charge of four space organizations: TsNIImash, which became the main institute of the RKA, NII TP named after M. V. Keldysh, NIIChimmash, and "Agat." In 1998, the RKA was reorganized in accordance of the Government Decree No. 440. Thirty-eight state-owned space enterprises were transferred from the Ministry of Economics to the RKA. In 1999, the RKA was reorganized again in accordance with the Presidential Decree No. 651 and Government Decree No. 735. It was enlarged and put in charge of the aviation industry as well as space industry. The RKA became Russia's ministry of aviation and space industry in all but the name. In 2004, was reorganized into the Federal Space Agency (FKA) with the aviation industry transferred to the newly created Federal Aviation Industry Agency. See S. Shamsutdinov, "Rosaviokosmos Preobrasovan v Federal'noe Kosmicheskoe Agenstvo" (Rosaviokosmos is Reorganized into the Federal Space Agency), *Novosti Kosmonavtiki.* 14 (May 2004): 52.

hard currency within the framework of intergovernmental cooperation. In December 1990, the first Japanese astronaut flew on board of Soyuz to the Mir station. In May 1991, the first British astronaut flew on board of Soyuz to the Mir station, followed by the first Austrian astronaut in October 1991. The financial package to fly Helen Sharman, the British visitor, to the Mir station collapsed just before the flight, but she was flown to Mir anyway in May 1991.[92]

In 1992, the reduction of the government funding started to have serious impact on the space program: only half of the planned civilian launchings were carried out and less than a third of military launchings.[93] In 1992, the second phase of space budget retrenchment began: the first reports on outer space activities suggested serious shortages, delays, postponements, and cancellations. In February 1992, for example, the tracking fleet was permanently recalled from the oceans. Then, in 1993, the *Buran-Energiya* project was cancelled. By this time the space sector had lost approximately 30 percent of its personnel. In the same year, the director of the Russian Space Agency, Yurii Koptev, held a press conference where he articulated his grave concern with the situation. He expressed his fear that the space program was about to collapse. Despite his warning, however, government allocations to the space program were dramatically reduced in 1994 and the situation deteriorated even further, with a radical reduction in military and unmanned space activities. By 1996, there were hardly any satellites manufactured and available for launch and almost no rockets to put them in orbit.[94] The space budget contracted yet further with the financial crisis of autumn 1998. In this third phase of space budget reduction, many space activities that were still going slowed down or

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[92] Russian Space Agency, *50 Years Ahead of Its Time*, 1998, 245-246.
[93] Harvey, *Russia in Space*, 2001, 282.
[94] Ibid., 283.

stopped altogether, with the employment being at one quarter of what it was at the peak of Soviet space program just a decade prior. The launch rate—one of the main indicators of measuring and comparing space activities[95]—fell by almost a half between 1991 and 2000: from 59 in 1991 to 35 in 2000.[96] Over this decade, government investment in the space program in Russia fell by 80 percent.[97] By 2000, Russia's government space budget had shrunk to be the smallest space budget in the world among the major spacepowers.[98]

The commercialization and internationalization of outer space activities was seen as the key, if not the only way to provide for the survival of the Russian space program. In 1992, as the situation in the post-Soviet economy deteriorated dramatically, the design bureaus in Russia launched a desperate effort to attract foreign investment. Their first steps on the road toward commercialization included offering cosmonaut training courses to tourists, selling some of the historically significant items at auctions in the West, filming advertisements for Western companies in outer space and the like. In 1992-1993, a significant number of small enterprises, cooperatives, joint ventures[99] and other commercial structures around Russia's big enterprises of the space complex emerged.

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95 With the expansion of the lifespan of spacecrafts this may be no longer the case recently. See, for example, John E. Pike, "The Military Uses of Outer Space," in *SIPRI Yearbook 2002: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, SIPRI, 2002), 627.

96 See "Foreign Space Activities," *Air Force Magazine,* August 2002, 44.

97 Harvey, *Russia in Space*, 2001, 284.

98 Harvey compares the Russian space budget with the budgets of NASA in the United States and the European Space Agency, and also with government spending on space in France, Italy, Germany, Japan, China, and India. See Ibid., p. 285.

99 A joint venture can be defined as an enterprise established for the purposes of cooperation between any number of market actors in design, production, marketing and funding of projects. An important advantage of joint ventures in comparison with other forms of commercial cooperation is that they permit companies to expand markets while maintaining selective control of their technological assets. See Vicki L. Golich, "From Competition to Collaboration: the Challenge of Commercial-Class Aircraft Manufacturing," *International Organization* 46 (autumn 1992): 924.

These companies provided up to 10 percent of a parent company's turnover.[100] These efforts, however, were rather futile, since they could not provide for the survival of the Russian space program. More viable forms of commercialization emerged when Russia's large space companies started to create closed joint-stock companies, cooperating in a framework of some sectors of space program and focusing on commercial operations on international and domestic markets, such as, for example, Sovinformsputnik or Informkosmos.

Cutting the space budget was an unavoidable measure: the Russian government had to reduce spending on the space program due to the seriously deteriorated economic situation in the country. The Russian space program probably would not have survived the drastic cuts in funding had it not gotten a chance to earn money via commercial activities. For that, however, the Russian space complex needed an adequate legal, political and economic foundation, which was largely absent in the immediate aftermath of Soviet rule. Shaping an environment conducive to the survival and successful transition of the Russian space program became Russian government's main role in the 1990s with respect to space activities.

In the former Soviet Union, there was no legislation regulating space activities. The space sector was regulated by decrees issued by the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the U.S.S.R., and decrees and directives issued by the U.S.S.R. Council of Ministers. These documents were issued on an *ad hoc* basis depending on the current political, economic or military situation. In order to provide a legal foundation for space activities, the Supreme Soviet of

[100] See Chapter 2 "Economics of Space Activity in Russia," in Federation of American Scientists Space, Policy Project, *Russian Space Industry*, http://www.fas.org/spp/civil/russia/chap_2.htm (accessed 01.31.01).

the Russian Federation adopted the Law of the Russian Federation "On Space Activity," which came into effect in 1993.[101] This law represented an important step towards the creation of the necessary foundation for the commercialization and internationalization of space activities,[102] for it committed the state to promote international cooperation in the field of space activities, to protect technologies and commercial secrets of foreign organizations and citizens undertaking space activities under the jurisdiction of the Russian Federation, and provided for equal rights to all participants in space activities—both domestic and foreign.[103] Furthermore, the document also provided guarantees for foreign investments into space activities in Russia.[104]

In 1993, as the conditions in the space sector deteriorated considerably, the Supreme Soviet of the Russian Federation made an effort to stabilize the situation and issued a resolution "On Measures to Stabilize the Situation in Space, Science and Industry." This document, issued prior to the Federal Law "On Space Activity," outlined administrative measures aimed at improving the delivery of government funding and materials for the space program and commercial space projects and formulated a goal of

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[101] This document stated: "In the Russian Federation the exploration and use of outer space, including the Moon and other celestial bodies, is one of the most important directions of activities in the interests of the citizens, society and state." See Russian Federation, Public Law, "On Space Activity," August 20, 1993, Preamble, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-1-2-7/index_e.html (accessed 05.011.04).

[102] Article 4 "The principles of Space Activities" of the Federal Law "On Space Activity" promulgated that the development of entrepreneurial activities in space and promotion of international cooperation were among the main principles. See Russian Federation, Public Law, "On Space Activity," 1993, Article 4.

[103] Articles 26 and 27 of the Russian Federation, Public Law, "On Space Activity," 1993. An exception was made for contractors included in the Federal Space Program, where foreign participation was limited to no more than 49 percent of shares. See Maxim Tarasenko, "Russia's Place in Space: A Home View," *Space Policy* 10 (May 1994): 118.

[104] Article 12, Par. 4 of the Law of the Russian Federation "On Space Activity," 1993. In 1997, further legislative support for commercial space activities was provided in the Federal Law "On Commercial Space Activity." This document legally defined aims of commercial space activities and key concepts, including "commercial space activity" and "commercialization of space activity," and further specified state support for commercial space activities. See Russian Federation, Public Law, "On Commercial Space Activity," April 1997, http://www.jaxa.jp/library/space-law/chapter_4/4-1-1-5/index_e.html (accessed 05.11.04).

developing a transformation program for Russia's space program.[105] This resolution also called for the creation of a Russian space fund as an independent organization to accumulate funding from domestic as well as foreign sources with a view to stimulate space activities, introduce space technology into the national economy, and support measures to utilize the achievements of space science for public education and cultural purposes.[106] Simultaneously, the resolution of the Supreme Soviet "On the Priority of Russian Federation Space Policy" announced the goal of structural transformation of space activities.[107] In December 1993, the Russian government issued the Decree on "State Support and Backing for Space Activity in the Russian Federation" that contained concrete steps necessary for preservation and development of the Russian space program "in the interests of the economy, science, and technology, and for support of the country's defense and security."[108] Appended to this decree there was "Space Program for the Period 1994-2000."[109] This document focused on the conversion of defense production for the benefit of Russian economy and commercialization of the Russia's space industry.[110]

Privatization of Russia's space production facilities was a part of the envisioned plan.[111] For example, Energiya, the largest design bureau in the Russian space sector,

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[105] Russian Federation, Supreme Soviet, "On Measures to Stabilize the Situation in Space Science and Industry," Russian Federation Supreme Soviet Decree No. 4378-1, April 27, 1993, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-1-2-82_e.html (accessed 05.11.04).
[106] Ibid.
[107] Russian Federation, Supreme Soviet, "On the Priorities of Russian Federation Space Policy," Resolution of the Russian Federation Supreme Soviet No. 4878-1, April 27, 1993, http://www.jaxa.jp/jda/libarary/space-law/chapter_4/4-1-2-81_e.html (accessed 05.11.04).
[108] Russian Federation, Council of Ministers, "On State Support and Backing for Space Activity in the Russian Federation," Decree 1282 of the Council of Ministers of the Russian Federation, December 11, 1993, http://www.fas.org/spp/civil/Russia/pp931282.htm (accessed 08.16.02).
[109] Ibid.
[110] See Harvey, *Russia in Space*, 2001, 288.
[111] It was first mentioned in the resolution of the Supreme Soviet of the Russian Federation "On the Priority of Space Policy of Russian Federation," 1993.

was partially privatized by a presidential decree: 49 percent of its shares were offered to its management, employees, citizens, domestic institutional investors and foreign investors, while the rest remained in the government's ownership until 1998.[112] Between 1994 and 1995, a number of other enterprises of Russia's space industry were partially privatized, such as Arsenal Production Association, Perm' Motors and others. In order to facilitate commercialization, a number of space enterprises under the supervision of the State Committee of the Russian Federation on Defense Branches of Industry (Goskomoboronprom) were transferred to the Russian Space Agency in 1994.[113]

The other key component of commercialization of Russia's space activities, the creation of joint commercial ventures with foreign firms, was also encouraged and promoted by the Russian government. However, in order to pave the way to commercial cooperation with the foreign firms, certain political steps were needed.

Russia did not have independent access to the emerging global space market. The United States effectively controlled Russia's access to the international space market because most of the communications satellites that Russia could offer to launch on its rockets on a commercial basis were either manufactured in the United States or included American components and technology that were subject to the U.S. export controls.[114] Under U.S. law, a U.S. export license was necessary to ship satellites to Russia's

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[112] Later, in 1998, another 13 percent of Energiya was privatized in order to fulfill Russia's commitments to the International Space Station and delivery of the *Zvezda* service module. With this the government's share fell to 25 percent.

[113] In May 1996, the State Committee of the Russian Federation on Defense Branches of Industry was transformed into the Ministry of Defense Industry. In 1997, this ministry was abandoned, while its responsibilities were transferred to the Ministry of Economy. See Chapter 1 "Structure and Methods of State Management of Space Activity," in Federation of American Scientists, Space Policy Project, *Space Industrial Complex of Russia.*

[114] See van Fenema, *The International Trade in Launch Services*, 1999, 140.

spaceports.[115] In 1992-1993, Russia and the United States signed a number of agreements on expanded cooperation in outer space activities, including a new U.S.-Russian Space Cooperation Agreement that envisaged cooperation in "commercial applications of space technologies for the general benefit."[116] This document was to provide the foundation for the U.S.-Russian space cooperation and encourage private companies to expand their search for new commercial space business. It opened the door for commercial cooperation between U.S. firms and Russian space industrial organizations and plants.[117] In return for the introduction of Russia's space firms into the commercial space market the United States insisted on Russia's adherence to the MTCR.[118] On July 15, 1993, Russia finally agreed to abide by the Missile Technology Control Regime (MTCR) rules.[119] This agreement eliminated the obstacle that prevented Russia from entering the commercial space market. After Russia agreed to adhere to the MTCR rules, the United States and Russia signed an agreement on space launch services

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[115] The 1976 Arms Export Control Act authorized the U.S. President to control the export and import of defense goods and services "in furtherance of world peace and security and foreign policy of the United States." See Ibid., 110.

[116] See "Agreement Between the United States of America and the Russian Federation Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes," Washington D. C., June 17, 1992, http://www.jaxa.jp/jda/library/space-law/chapter 4/4-2-2-6e.html (accessed 05.11.04).

[117] In July 1992, following the June summit, under the sponsorship of the U.S. Department of Commerce, representatives of 17 U.S. aerospace firms visited 40 Russian space-related organizations with the view of identifying possible joint commercial projects.

[118] See van Fenema, *The International Trade in Launch Services*, 1999, 149-150.

[119] Russia canceled its contract with India signed in November 1990 in accordance with which Russian Glavkosmos was supposed to sell rocket engines and technology of their production to the Indian Space Research Organization (ISRO). The United States considered this Russian-Indian deal as an act of proliferation of missile technology and, in 1992, imposed trade sanctions on Russian companies participating in the deal. These sanctions precluded Russian companies from establishing joint ventures with American companies. On July 15, 1993, Russia adhered to the MTCR. On September 1-2, 1993, Russia's Prime Minister Chernomyrdin and U.S. Vice President Gore signed a Joint Memorandum of Understanding on missile related exports. Russia sold the engines to India but did not transfer its technology to the ISRO as a result of the reached agreement between the U.S. and Russia. Russia formally became a member of the MTCR only in 1995.

on September 2, 1993.[120] In this agreement, the U.S. set quotas allowing Russian space vehicles to launch a limited number of U.S.-built satellites or satellites containing the U.S. components or technology subject to U.S. export controls.[121]

Another, seemingly unrelated to the commercial space activities, but nonetheless important step on the road towards commercialization of Russian space activities was the 1993 United States' invitation to Russia to join as a full member along with other U.S. partners—Japan, Canada, and nine European countries—in the design, development and operation of an international space station.[122] Russia's manned space flight program, regarded as one of the greatest achievements in cosmonautics by the Russians, presented the greatest concern and difficulties during the 1990s.[123] For Russia, it was an opportunity to provide for the survival of its manned flight program. It also had a

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120 See "Agreement Between the United States of America and the Russian Federation Regarding International Trade in Commercial Space Launch Services," September 2, 1993, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-2-2-7_e.html (accessed 05.11.04).

121 Ibid., Article IV "Quantitative Limits." On January 30, 1996, the United States and Russia signed an agreement amending the September 2, 1993 agreement regarding international trade in Commercial launch services. See "Agreement Between the United States of America and Russian Federation Amending the Agreement of September 2, 1993, Regarding International Trade in Commercial Launch Services," Washington D. C., January 30, 1996, http://www.jaxa.jp/jda/library/space-law/chapter_4/4-2-2-14/index_e.html (accessed 05.11.04). See also van Fenema, *The International Trade in Launch Services*, 1999, 244-248, and Marcia Smith, "Space Launch Vehicles," 2003. The U.S. removed quotas only in 2000. Cancellation of quotas for Russian space launches was made dependent upon the record of Russia's efforts in non-proliferation. Between 1992 and 2002, the United States sanctioned Russian entities more than 6 times for export of missile and nuclear technology, and chemical and biological dual-use equipment. At the same time in the 1990s, Russia did make efforts in to stem proliferation, becoming a member of the Wassenaar Arrangement, the Nuclear Supplier Group, the MTCR, and the Zangger Committee. In 1999, Russia enacted its basic export control law. See U.S. Congress, Senate, Committee on Governmental Affairs. *Russia and China: Nonproliferation Concerns and Export Controls: Hearing before the International Security, Proliferation and Federal Services Subcommittee of the Committee on Governmental Affairs*, 107th Cong., 2nd sess., June 6, 2002, Washington D.C., U.S. Government Printing Office, 2003.

122 Russia formally joined the International Space Station project in 1998 when the Memorandum of Understanding between NASA and the Russian Space Agency was finally signed. See "Memorandum of Understanding between the National Aeronautics and Space Administration of the United States of America and the Russian Space Agency Concerning Cooperation on the Civil International Space Station," January 29, 1998, ftp://ftp.hq.nasa.gov/pub/pao/reports1998/nasa_russian.html (accessed 07.26.04).

123 See, for example, David Bernstein ed., *Cooperative Business Ventures between the U.S. Companies and Russian Defense Enterprises*, Center for International Security and Arms Control, Stanford University, 1997, http://iis-db.stanford.edu/pubs/10236/cooperative.pdf (accessed 03.11.04).

symbolic meaning: it stood for the recognition of Russia and welcoming her into the international space community as an equal member. This symbolism was useful not only, and probably not so much, for the sake of Russia's prestige but much more as a signal for the commercial sector that the minimal political cooperation necessary for commercial enterprises to get engaged in Russia had been achieved.

The manned exploration of space was the one area of space activities where the two states had some experience of cooperation during the Cold War—the Soyuz-Apollo program of the 1970s.[124] This area of space activities was used again as a foundation for the further development of cooperation,[125] including commercial cooperation, in outer space.[126] Participation in the ISS project provided for the first steps in establishing

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[124] In May 1972, as a part of the détente policy, President Nixon signed an agreement with the Chairman of the Soviet Council of Ministers Alexei Kosygin on a cooperative project in manned space flight. This cooperative project included a rendezvous and docking of a U.S. Apollo spacecraft and a Soviet Soyuz vehicle. The project was successfully executed and it culminated with the famous "handshake in space" in July 1975. The Nixon and Ford Administrations planned to have more cooperative space project with the Soviet Union. In May 1977, the leaders of NASA and the Soviet Academy of Science reached an agreement on the "Study of the Objectives, Feasibility and Means of Accomplishing Joint Experimental Flight of a Long-Duration Station of the Salyut-type and Reusable 'Shuttle' Spacecraft" (the so-called Salyut-Shuttle Program). This agreement also envisaged a study of the feasibility of developing an international space platform, the so-called International Space Platform Program. These plans were not implemented, however, due to the deteriorated U.S.-Soviet relations, particularly after the Soviet invasion of Afghanistan in 1979. A new agreement for U.S.-Soviet cooperation was negotiated in 1987. See John M. Logsdon, "The Evolution of U.S.-Russian Cooperation in Human Space Flight," Appendix B, in John M. Logsdon and James R. Miller eds., *U.S.-Russian Cooperation in Human Space Flight: Assessing the Impact*, Space Policy Institute and Institute for European, Russian and Eurasian Studies, Elliott School of International Affairs, the George Washington University, Washington D.C., February 2001, http://www.gwu.edu/~spi/usrusappb.html (accessed 09.06.01).

[125] Space cooperation was high on the political agenda of the Soviet leader Michael Gorbachev, while he was trying to improve East-West relations. During his visit to Washington D.C. for a summit meeting with President Bush in June 1990, Gorbachev discussed various directions of U.S.-Soviet space cooperation, including the possibility of a flight of a U.S. astronaut to the Soviet space station *Mir*, with U.S. Vice President Dan Quayle, the chair of the Bush Administration's National Space Council. The agreement on the exchange of astronauts and cosmonauts was signed by Presidents George Bush and Michael Gorbachev at the summit meeting in Moscow in July 1991. At this meeting, Gorbachev expressed the desire of the Soviet Union to enter the commercial space launch market. See John M. Logsdon and James R. Miller eds., *U.S.-Russian Cooperation in Human Space Flight*, 2001.

[126] Technical, foreign, security, economic and political factors influenced the U.S. decision on cooperation with Russia in human flight. At least in part, the U.S. decision to invite Russia to participate in ISS project was dictated by the interest of the United States to have a way to encourage Russia to follow policies of non-proliferation of missile technology. Another security-related reason was to help Russia to maintain and modernize the basic military space assets in order to prevent an accident or erroneous launch of

Russia's commercial partnerships with the U.S. and other Western aerospace companies: it helped Russia to develop the necessary infrastructure, business practices, as well as the degree of political cooperation between the two countries that encouraged the U.S. companies to collaborate with Russian space industry on a commercial basis.

The first Russian-American commercial enterprise was created between the American aerospace giant Lockheed and the Khrunichev factory, the supplier of the *Proton* rocket, to provide space launch services on the Russian *Proton* vehicle and American *Atlas* and *Titan* rockets.[127] This new company called International Launch Services (ILS) won its first contract for the *Proton* rocket to launch an International Maritime Satellite Organization's (INMARSAT) navigation satellite in 1992. More orders followed and by 1995 *Proton* attracted 15 percent of the world market in its category. The joint enterprise became Russia's big success story of commercialization of its space activities. It brought Russian space industry in general, and the Khrunichev factory in particular, access to the world space launch market and much needed investments in its space infrastructure. In 1995, ILS announced plans to invest $23 million in order to make improvements in the Baikonur cosmodrome, transforming an old and run down infrastructure for *Proton* rockets into one of the world's best assembly and integration areas.[128]

The deal between Lockheed and Khrunichev was followed by more joint ventures. Boeing entered into a joint venture with NPO Yuzhnoe for the marketing of the

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strategic nuclear weapons. As a broader, foreign policy goal, the United States pursued this cooperative project in order to ally Russia with the West via close space cooperation. See, for example, Logsdon and Miller, eds., *U.S.-Russian Cooperation in Human Space Flight*, 2001.

127 Later Lockheed merged with Martin Marietta and Energiya was invited to take part in the joint venture that was renamed Lockheed Khrunichev Energiya Intenraitonal (LKEI). In 1995, the joint enterprise was renamed International Launch Services (ILS).

128 Harvey, *Russia in Space*, 2001, 289.

Zenit booster, which then grew into a multination joint enterprise Sea Launch to provide space launch services from a platform floating in the High Seas. Rockwell formed a joint venture for marketing *Tsyklon*, and Assured Access followed the example by creating a joint venture with NPO Polyot for the *Cosmos 3M.* By 2000, 87 Scientific and Production Organizations (NPOs) in Russia's space sector had established commercial partnerships with the foreign, mostly Western, companies.[129]

Besides creating joint ventures for marketing its launch vehicles, the Russian space industry started to trade its space technology and hardware. Energomash signed a deal worth over $1 billion with Pratt & Whitney for delivery of its RD-180 rocket engines that would be used in the new *Atlas III* and *V* rockets.[130] The Kuznetsov plant sold its engines NK-31 and NK-43 to Aerojet. The U.S. Strategic Defense Initiative Organization (SDIO), which later was reorganized, purchased a *Topaz*, a Soviet nuclear reactor that was designed to provide reliable and long-lasting power source for spacecraft.[131]

American companies were not Russia's only partners in joint space ventures. In 1995, Khrunichev and German Daimler-Benz Aerospace created a joint venture called Eurokot to market a Cold-War missile *Rockot* for civilian launches of small satellites. In

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[129] Some differences exist in the reported numbers of partnerships between Russian and foreign enterprises. The Russian Space Agency reports that, jointly with Russian space enterprises, it negotiated and signed over 100 commercial contracts with foreign firms from 1996 to 2000. See Russian Space Agency, *Russian Space Industry: Catalog of Enterprises and Organizations, 2001-2002*, (Moscow: OmV-Luch, 2001), 14.

[130] Pratt & Whitney and Energomash (NPOE) worked together since 1992. They formalized their relations in a joint venture in 1997. This is a case where technology transfer was done in a sensitive area with further use of this technology by the American company and then by the U.S. Air Force. This represents a new, more advance stage of collaboration between Russian and American companies. See U.S. Department of Commerce, *Commercialization of Russian Technology in Cooperation with American Companies*, Report to the Office of Space Commercialization, 1999, http://cisac.standford.edu/ docs/bernstein99.pdf, 63, 64-65 (accessed 10.06.03). The first Russian made RD-180 engine was delivered in late 1999.

[131] Judyth L. Twiggs, "The Russian Space Program: What Lies Ahead?" *Space Policy* 10 (February 1994): 26.

1996, TsSKB Progress in Samara and the French Arianespace created a joint company called Starsem to develop and market the Russian *Soyuz* rocket for commercial launches. Starsem proved to be successful in attracting commercial consumers and signed contracts for launching American *Globalstar* communication satellites and later European scientific satellites series *Cluster*. In 2000, the new *Soyuz MT* rocket won its first contract for launching *SkyBridge* communication satellites. Similarly to ILS, Starsem provided necessary funds for improvement of the production facilities in Samara, at the Energiya assembly building, and at Baikonur cosmodrome.

All in all, between 1996 and 2000, the most difficult period for the Russian space program transformation, Russian space launch vehicles served on average 24 percent of the world launches. The overall results of these commercialization efforts were the survival and transformation of Russia's space activities, their growing integration with the U.S. and European space activities, particularly in the launch industry sector. It also strengthened the position of Russia's pro-Western space industry elite. Yurii Koptev, the RKA's chief, became known as an industrial leader promoting pro-Western values and business culture, and joint projects with Western firms.[132]

The commercialization of Russian space activities was not confined to Russia's launch industry, in which Russia had a certain edge inherited from the Soviet Union. Russia inherited an advanced photoreconnaissance program from the Soviet Union as

[132] See, for example, Logsdon and Miller, *U.S.-Russian Cooperation in Human Space Flight*, 2001. On March 11, 2004, in the course of reorganization of the Russian Space Agency (RKA) into the Federal Space Agency, Yurii Koptev was released from his post as a head of the Russian Space Agency. The Decree No. 335-r of the Russian Government put in charge of the newly formed Federal Space Agency General Colonel Anatolii N. Perminov who until then was the Commander of the Space Forces of the Russian Federation formed in 2001. See Biographical Note on Anatolii N. Perminov, *Novosti Kosmonavtiki* 14 (May 2004): 53.

well. Beginning in 1992, when economic conditions became difficult,[133] Russia declassified two of its camera systems with 10 and 2-meter resolutions and started selling pictures from its remote-sensing satellites *Resurs* and *Kometa* to Western customers on a commercial basis through Soyuzkarta, a Russian state company supplying cartography.[134] Between 1992-1993, the U.S. Air Force purchased considerable quantity of Russian remote-satellite images. Soyuzkarta also reached a deal with Aerial Images, a company in North Carolina, for marketing pictures from its *Kometa* satellites in cooperation with Kodak and Microsoft. The first successful mission, called SPIN-2, of this commercial project flew in February-April 1998. Using images of high resolution from SPIN-2, Aeriel Images sold maps of U.S. territory on the Internet. It also placed them on the web for a free viewing by anyone. The commercialization of Russian remote-sensing activities influenced U.S. policies in this area. President Clinton decided to relax restrictions on the remote sensing activities of the U.S. companies and allow them to sell high-resolution images following Russia's example. Similarly to the launch activities, Russia's efforts to commercialize its remote-sensing activities led it again to establish cooperative commercial partnerships with foreign companies, particularly in the West.

Russia's commercialization efforts in satellite communications are even less known than in remote-sensing and launch services. The International Organization of Space Communications (INTERSPUTNIK), established in 1971 as a satellite communication system serving the socialist bloc and other countries in the Soviet

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[133] In January 1992, a package of economic liberalization measures was adopted by the Russian government. These measures, known as "shock therapy," had a negative impact on many budget dependent industries.

[134] The initiative actually originated during the Soviet period. See Harvey, *Russia in Space*, 2001, 113.

economic sphere, began commercial operations in 1992.[135] The organization has its headquarters in Moscow and the Russian Satellite Communications Company (RSCC) operates the satellites for INTERSPUTNIK. After the end of the Cold War, the RSCC started to provide communication services meeting high world standards.[136] It was able to benefit from the utilization of cutting-edge domestic technology originating from the military as well as from the incorporation of foreign hardware. Leasing Russia's *Gorizont* and *Express* series communication satellites and *Gals* DBS, INTERSPUTNIK began to provide a wide range of satellite communication services—television, voice traffic, data, video conferencing, VSATs and others. It is one of Russia's space commercialization success stories. Over the past decade, it increased its membership and customer base. Its system capacity now is used by more than 100 states and private companies in various regions of the world. South and Southeast Asia, the Commonwealth of Independent States (CIS), Central and Eastern Europe are major markets for INTERSPUTNIK. Between 1992 and 1996, INTERSPUTNIK's profitability increased 4.3 times.[137] Dealing with an increasingly tougher competition at the global telecommunications services market, the organization decided to procure INTERSPUTNIK's own new generation satellites and to form a strategic partnership with Lockheed Martin in 1994. A joint venture between INTERSPUTNIK and Lockheed Martin was established in 1997, called the Lockheed Martin Intersputnik (LMI). Its scope encompassed the whole technological cycle of satellite services: from satellite

[135] First, INTERSPUTNIK began its operations in 1972. It used Soviet communication satellites in the Molniya orbit and started using geostationary communication satellites in 1979. See historic overview at INTERSPUTNIK, Official Website, http://www.intersputnik.com/history.shtml (accessed 01.29.01).

[136] The Russian Satellite Communication Company (RSCC) is a State Unitary Enterprise. See the RSCC official website at http://www.rscc.ru/eng/history.html (accessed 03.17.04).

[137] See United Nations, Office of Outer Space Affairs, *Space Activities of the United Nations and International Organizations, A Review of the Activities and Resources of the United Nations, its Specialized Agencies and Other International Bodies* (New York: United Nations, 1999), 114.

manufacturing and launching to long-term in-orbit satellite operation. In the autumn of 1999, the first LMI-series satellite *LMI-1* was successfully launched and put into operation. In July 2002, INTERSPUTNIK signed a distribution agreement with EUTELSAT, a European satellite organization. The agreement enables INTERSPUTNIK to sell EUTELSAT's satellite capacity and satellite telecommunication services. Recently INTERSPUTNIK launched a new project called Intersputnik-100M. Within the framework of this project, INTERSPUTNIK plans to manufacture, launch and operate a series of small satellites that will carry payload modules tailored according to clients' unique requirements and communication needs. The idea of this innovative approach is to provide cheap, fast, reliable connections to global communication networks for news, video, telephony, and Internet access for wider possible number of customers around the world, and particularly those whose needs are not well served by large satellite communication companies. Thus, within the past decade or so, INTERSPUTNIK has undergone a major metamorphosis: from a political organization serving the socialist camp into a successful commercial player in the global market for telecommunications services. Again, as in the launch industry and remote-sensing sectors, it developed an extensive cooperation with the West.

Other satellite communication projects include an Italian-Russian company that developed a system that routes international telephone calls from Moscow first to a Russian communication satellite and then on to their destination via an Italian ground station, and Sokol America Inc., that concluded a deal with the Russian Space Agency to help convert Russian military space satellites to civilian use and to provide a fiber-optic network on the ground to meet growing communication requirements.[138]

Building partnerships with the Western space companies in satellite communications was crucial for Russia's success in commercializing its activities in this segment of space activities. Not only did it give Russia access to the global satellite communications market where the United States has dominated technologically and commercially, but it also stimulated Russian space industry to make significant improvements in the satellite manufacturing sector, a space sector where Russia had significant difficulties. Due to the absence of any commercial imperatives during the Soviet era and lags in the development of electronics, the satellites' life in orbit was much shorter than that of American communication satellites.[139] By mid 1990s, Russian satellite manufacturers were able to make considerable improvements in characteristics of their communications satellites, in part, thanks to cooperation with Western companies.[140] Furthermore, since Russia entered the global market of satellite communications via INTERSPUTNIK, strong stimuli emerged to develop more competitive communication satellites that would meet the high expectations of the consumers around the world. The Intersputnik-100M project—project that involves such important Russian space players as Khrunichev State Space Research and Production Center, Reshetnev NPO PM, NPO Mashinostroyeniye, and Korolev RSC Energiya—represents one of the attempts to build and offer to international consumers around the

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[138] Twiggs, 1994, 24-25.

[139] If American satellites operated in orbit on average 7-10 years since the 1980s, Russian communications satellites of the early 1990s operated in orbit 5-6 years on average. See Harvey, *Russia in Space*, 2001, 163.

[140] Kiselev, Medvedev, Menshikov, *Cosmonautics on the Frontier of Millenniums*, 2001, 210. Some of the problems were resolved by importing components from the West. See U.S. Department of Commerce, *Commercialization of Russian Technology in Cooperation with American Companies*, 1999.

world communication satellites that could provide Russian satellite manufacturers with a place in the future satellite communications market.

While Russia made its entrance into the global telecommunication market as a provider of satellite communication services, it also opened its own domestic market for the introduction of foreign satellite communication services. In 1999, a decree of the Russian government allowed the use of global mobile personal satellite communications systems in Russia.[141]

Russia's global satellite navigation system GLONASS, begun in 1982, despite being a military space system, managed to attract some commercial interests from foreign companies. Honeywell signed a deal with the RSA to develop a dual GPS/GLONASS ground receiver for satellite navigation. Honeywell also assisted Russian manufacturers in establishing commercial production lines that would meet Western standards.[142] In order to further attract commercial interests to GLONASS, the Russian government transferred the GLONASS system from the Defense Ministry to the Russian Space Agency in 1998. In February 1999, the Presidential Directive No. 38 authorized the use of foreign investments for maintenance and upgrading of the GLONASS system. It also changed its status from a military system to a "dual use" system, and permitted it to be offered as a basis for international GNSS.[143]

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141 Russian Federation, Council of Ministers, "On Order of Regulation of Access and Use on Telecommunication Market of Russia of Global Systems of Mobile Personal Satellite Communications," Decree No. 180 of the Government of the Russian Federation, March 16, 1999, http://www.fas.org/spp/civil/Russia/pol_docs.htm (accessed 08.16.02).

142 Twiggs, 1994, 25. More joint projects followed, such as, for example, a partnership between Russia's State Scientific Institute of Aviation System (GosNIIAS) and a French company Sextant Avionique to develop an integrated GPS/GLONASS receiver for aviation application. See U.S. Department of Commerce, *Commercialization of Russian Technology in Cooperation with American Companies*, 1999.

143 See Federation of American Scientists, Space Policy Project, *Russian Space Policy Documents*, http://fas.org/soo/civil/russia/pol_docs.htm (accessed 08.16.02).

Being the first country to launch a man in outer space, Russia also launched in outer space the world's first space tourist, an American businessman Dennis Tito, 40 years after Gagarin's historic flight, giving a start to space tourism—a sector where Russia plans to compete strongly when other space-capable states join in this commercial market.

Similarly to the space industry in the United States, the Russian space industry underwent a process of restructuring. In 1994, the design bureau Salyut merged with Khrunichev plant to become the State Space Scientific-Manufacturing Center named after M. V. Khrunichev. Other scientific and engineering institutes as well as designing bureaus were added to this center, transforming it into a complex capable of designing and building space systems, space launch vehicles and launch ground equipment, and ground stations. In 1997, the TsSKB was merged with manufacturing plant Progress to establish State Scientific-Manufacturing Space-Rocket Center TsSKB-Progress, designing and producing space systems.[144] As a result of these mergers, large space industry complexes emerged in Russia. Thus, the wave of industry consolidation affected Russian space industry, as it was taking place around the world.[145]

All in all, by 2000, Russia has developed a commercial space program in main areas of its space activities due to severely retrenched governmental financing. It has achieved it under the conditions of political and economic instability of the 1990s. Its commercial space program proved to be the major undertaking, rather than a marginal

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[144] Kiselev, Medvedev, Menshikov, *Cosmonautics on the Frontier of Millenniums*, 2001, 179-180.

[145] In 2001, governmental policy of industry consolidation started to bear the results, according to Illya Klebanov, the deputy premier for the aerospace industry. See Robert Wall, David A. Fulghum and Alexey Komarov, "Russian Defense Industry Struggles with Reform," *Aviation Week & Space Technology*, August 20, 2001, http://www.aviationnow.com/content/publication/awat/20010820/avi_news.htm (accessed 03.12.04).

activity, that allowed Russia not only to keep, but also revitalize and further develop its space activities. The commercialization of Russia's space activities considerably differed from the commercialization of space activities in the United States, where the market economy was well established and the aerospace industry was already a major market player. In Russia, socialist economy had to make a transition to a market economy and space industry had to reinvent itself as a market player relying largely on civil, rather than military, customers.[146] Certain sectors of space industry had to be built from scratch, such as space insurance, without which there could be no space commerce.[147] Thus, for Russia, the commercialization of its outer space activities was a part of much larger and much more fundamental endeavor— gradual integration into the world economy. Russia has created its commercial space program relying on the strategy of building strategic alliances—be it joint ventures or other partnerships—with foreign, mostly Western, companies.[148] In the span of a decade or so, the space program was transformed from being a part of the Soviet military industrial complex—militarized, closed, secretive, and fully government financed—into one of the most competitive and global in the world. Through the process of commercial cooperation Russia's space activities were transformed into more open, internationally focused and oriented towards civilian needs.[149]

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[146] U.S. Department of Commerce, *Commercialization of Russian Technology in Cooperation with American Companies*, 1999.
[147] Kiselev, Medvedev, Menshikov, *Cosmonautics on the Frontier of Millenniums*, 2001, 227-231.
[148] Russian space enterprises have contracted with companies in Japan, as well as India, Brazil, Argentina. See Ibid., 35. See also, Federation of American Scientists, Space Policy Project, *Russian Space Industry*, 12.
[149] See, for example, Logsdon and Miller, *U.S.-Russian Cooperation in Human Space Flight*, 2001.

THE COMMERCIALIZATION OF OUTER SPACE ACTIVITIES IN CHINA

Although the world's first rockets were invented in China in 970,[150] China launched its first satellite on April 24, 1970, becoming the fifth country to be able to put its satellites in space independently.[151] On October 15, 2003, China put its first man in orbit and finally joined an exclusive club of Russia and the Untied States—two other spacepwers capable of putting men in orbit.

Both American and Soviet influences were quite significant in the process of China's formation as a spacepower. Tsien Hsue-shen, the person who contributed the most to China's first steps in modern space exploration and therefore often called one of the founding fathers of Chinese space program, received his training as an aeronautics engineer in the United States. Working on the developments of rockets with a group of amateur rocketeers in California, he made his contribution in the development of early plans for a missile program in the United States. He became a professor of Aeronautics in 1943 and later took part in the study of the Nazi missile program in Germany at the end of World War II. After being victimized during the McCarthy era in the United States, Tsien returned to China in 1955, where a year later, in October 1956, the Chinese missile program was officially established.[152] A number of scientists of Chinese origin educated in the United States also went back to China and made valuable contribution to the development of China's space program.[153]

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[150] Harvey explains that rockets were not only invented in China but also used as weapons as early as 1083. See Brian Harvey, *The Chinese Space Program: From Conception to Future Capabilities* (Chichester: John Wiley & Sons, 1998), 1.

[151] China became the fifth space power with independent launch capabilities after the Soviet Union, the United States, France, and Japan. Japan launched its first satellite *Ohsumi* on February 11, 1970—just a few month before China launched its first satellite.

[152] Harvey, *The Chinese Space Program*, 1998, 3-5.

[153] Tu Shoue, for example, also returned from the United States and became one of the leaders in the development of Chinese missiles in the later 1950s. See Harvey, *The Chinese Space Program*, 1998, 9.

Simultaneously, Chinese leadership started negotiations for cooperation on a missile program with the Soviet Union. In September 1956, during the visit of Chinese delegation to Moscow, the Soviet Union agreed to sell two *R-1* missiles to China, which arrived in China a month later. Further cooperation followed after another visit of the Chinese delegation to Moscow in summer of 1957 and signing of a Sino-Soviet agreement "The New Defense Technical Accord 1957-58." According to this accord, the Soviet Union agreed to supply to China *R-2* missile models, technical documentation, designs and a number of Soviet specialists who arrived in China with some 10,000 volumes of blueprints.[154] Dozens of Chinese graduate students went to study in Moscow.

The cooperation on missile programs continued until the Sino-Soviet split in 1960, just before China was about to test its first replication of the Soviet *R-2* rocket.[155] In August 1960, approximately 1,400 Soviet specialists working in China left with their blueprints and more than 200 joint Sino-Soviet space projects were terminated.[156] However, the Soviet impact on China's space program was more than this massive initial technology transfer. The Chinese space program adopted the overall organizational structure similar to that of the Soviet Union.[157] The Chinese space program, like that of

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[154] Joan Johnson-Freese, *The Chinese Space Program: A Mystery Within a Maze* (Malabar: Krieger Publishing Company, 1998), 45.

[155] Soviet R-1 rockets were copies of German V-2 rockets. The R-2 rockets represented significantly improved missile technology at that time. See Harvey, *The Chinese Space Program*, 1998, 5-6.

[156] The primary cause of the Sino-Soviet split was Soviet Union's refusal to supply nuclear technology specifically requested by the Chinese. Krushchev grew very concerned that China, if provided with nuclear technology, would use nuclear weapons without serious consideration and restraint. See Harvey, *The Chinese Space Program*, 1998, 11. A doctrinal split also occurred between the two communist powers. See Johnson-Freese, *The Chinese Space Program*, 1998, 16. Johnson-Freese points out that concern for the use of nuclear weapons in a war by China was of greatest concern to Krushchev. See Ibid., 46.

[157] Harvey, *The Chinese Space Program*, 1998, 100.

the Soviet Union, was state-financed, militarized, secretive, and tightly controlled by the Chinese leadership.[158]

After the Sino-Soviet split and cessation of Soviet technology transfer, China converted its production base to produce its first indigenous missile, the CSS-1, an early ancestor of the *Long March* rockets. During the years of China's isolation and particularly later, after President Nixon's opening of China, Chinese scientists relied on openly published information. Those publications focused mostly on the U.S. space technology, research and achievements. In the first half of 1980s, the Chinese built a new launching site near Xichang, in a location similar by its latitudinal coordinate to that of Kennedy Space Center in the United States, arguably, in order to emulate more easily the launch procedures described in the open literature and possibly with the view to compete later with the United States in the market for space launch services.[159] In January 1984, the Chinese attempted their first launch of a satellite into a geosynchronous orbit from the new launch site at Xichang, paving the way for the entrance of China into the emerging space launch market, and for the commercialization of China's space launch activities.

The emergence of China's commercial space program took its beginning in Deng Xiaoping' economic reforms of the late 1970s. In March 1978, before the main economic reforms began, Deng Xiaoping had called for the Chinese defense industry, which also included the space industry, to focus on economic growth. In October 1978, Deng Xiaoping announced the "Four Modernizations" plan that encompassed the development of science and military technology, agriculture, education, and industry.[160]

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[158] Johnson-Freese, *The Chinese Space Program*, 1998, 5.
[159] Ibid., 55.
[160] The "Four Modernizations" plan was approved by the 3rd plenary session of the 11th party Central Committee in December 1978. This marked the official launch of Deng's reforms.

Deng's reforms envisioned an opening of Chinese economy and science research to the world. Foreign investments were encouraged, many sectors of the economy privatized, special economic zones established, and international technological cooperation promoted. These reforms of the Chinese economy provided a necessary foundation for the commercialization of China's space activities.

The Chinese government also took important political measures to prepare China for its entrance into the international commercial space scene. In 1980, China joined the International Aeronautical Federation (IAF) and the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS).[161] Thus, China's 20-year isolation from the world's space community was ended. In 1983 and 1988, China acceded to the "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," "Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space," "Convention on Liability for Damage Caused by Space Objects," and "Convention on Registration of Objects Launched into Outer Space."[162]

China adopted a proactive position in the space issue area: in the mid-1980s, China not only started participating in, but also hosting regional and international space

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[161] See information at United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS) website, http://www.oosa.unvienna.org/COPUOS/members.html (accessed 10.10.03), and International Aeronautical Federation website, http://www.iafastro.com (accessed 10.10.03). The Committee on Peaceful Uses of Outer Space became the main international forum for the discussion of the space legal and technical issues with its two subcommittees—the Legal Subcommittee and Technical Subcommittee—preparing important international instruments for dealing with the whole spectrum of peaceful uses of outer space.

[162] See, for example, State Council of the People's Republic of China, "China's Space Activities," White Paper, released by the Information Office of the State Council, November 22, 2000, http://www.fas.org/spp/guide/china/wp112200.html (accessed 08.19.03).

conferences and exhibitions,[163] providing other developing countries with scholarships for long-term technology training. Finally, China began opening up its space program to her own people and to the world in order to establish its reputation as a serious, responsible space player and provide some level of transparency for building commercial partnerships.[164]

The defense industry reform, initiated in early 1983, significantly reduced government funding and started to transform many defense-oriented enterprises into civilian-oriented enterprises. Unlike the abrupt state funding reduction in Russia after the Cold War, however, Chinese government retrenchment took place gradually, allowing the space enterprises to adapt to market relations. Nonetheless, space budget reduction was quite dramatic: in 1987, China's space budget funding reached 0.035 percent of China's Gross National Product (GNP), compared with 0.52 percent in the United States, 1.5 percent in the Soviet Union, and 0.04 percent in Japan.[165] While cutting its funding, Chinese government encouraged state-owned enterprises (SOEs) to go into business on their own. Even the People's Liberation Army was allowed then to have business enterprises domestically as well as foreign ventures.[166]

Thus, the conversion and commercialization policy stimulated the Chinese space industry to supplement the decreasing state funding with earnings from entrepreneurial activities domestically as well as in the emerging international space market. China's

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163 In 1994, for example, China hosted the first Asian-Pacific regional Ministerial Conference on Space Applications for Sustainable Development in Asia and the Pacific in Beijing. In 1999, in collaboration with the UN and ESA, China held the Symposium on Promoting Sustainable Agricultural Development with Space Applications. From July to August 2000, in cooperation with the OOSA and ESCAP, the Chinese government opened the Short-Term Training Course for Asia-Pacific Multilateral Cooperation in Space Technology and Applications.

164 Harvey, *The Chinese Space Programme*, 1998, 37-38.

165 J. Barry Patterson, "China's Space Program and Its Implications for the United States," Research Paper, Air War College (Maxwell Air Force Base, April 19, 1995), 4.

166 See Johnson-Freese, *The Chinese Space Program*, 1998, 34.

astronautics minister Li Xue made a formal announcement of the official line allowing China's space enterprises to conduct foreign activities in order to generate income in October 1985. And between 1987 and 1989, Chinese space industry provided its first commercial services to the Western customers, flying microgravity experiments.[167]

It was realized that the commercialization of China's space activities in general, and its launch industry in particular, required concerted efforts not only from space industry but from government as well. Shortly after the first successful attempt at launching a satellite into a geosynchronous orbit,[168] Chinese officials began to develop a plan for commercialization of their launch industry. In 1985, the China Great Wall Industry Company (CGWIC), established in 1980 to represent China's Ministry of Space Industry (MASI) abroad, was put in charge of marketing commercial launches of the *Long March* rocket. In the summer of 1985, China for the first time made its *Long March* rocket available for commercial use in the international space launch market but the first marketing trip did not bring positive results.

The situation with China's entrance into the international space launch market changed significantly after the *Challenger* tragedy of 1986, when the Space Shuttle was grounded for many months. In the same year, two U.S rockets, an *Atlas* and a *Titan*, exploded. To make the situation on the nascent space launch market even worse, Europe's *Ariane* rocket went down, leaving the European consortium Arianespace with

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[167] China's first commercial contract was with the French company Matra for putting a scientific payload, some microgravity experiments utilizing a converted capsule from China's reconnaissance satellite FSW as a platform, in orbit. See Lawrence Cooper and Corinne Contant, "The People's Republic of China—Consolidating its Space Power, Enhancing its Military Might," in Rebecca Jimerson and Ray A. Williamson eds., *Space and Military Power in East Asia: The Challenge and Opportunity of Dual-Purpose Space Technology*, Washington D.C., George Washington University, Space Policy Institute, 2000, http://www.gwu.edu/~spi/spacemilch1.html (accessed 04.03.03).

[168] The first attempt to launch a satellite to a geosyncronous orbit failed because of the technical malfunction of Long March-3 rocket on January 29, 1984.

no extra capacity. The political situation in the world as well as the situation on the space launch market was conducive to the introduction of China's launch services. The Reagan Administration was keen to help China enter into the market and use this opportunity to balance the Soviet influence in Asia.[169]

China's first customers started to arrive but they encountered considerable complications related to export controls on the high technology put in place by the Western allies in order to prevent the Communist bloc from gaining access to advanced technology. Aussat and the AsiaSat consortium decided to use Chinese launch services for launching their satellites that were manufactured in the United States and thus subject to export controls. The desire to introduce China to the space launch market and concerns for the possible transfer of sensitive technology to the Chinese as a result of the launch activities led the United States into negotiations with the Chinese government in order to conclude an agreement that would preclude unauthorized transfer of U.S. technology to China. In 1988, the "Memorandum of Agreement on Satellite Technology Safeguards Between the Governments of the United States and the People's Republic of China" was signed. The second Memorandum of Agreement, signed later the same year, addressed the issue of pricing of Chinese launch services. This agreement imposed limits on prices and number of launches that China could perform. The conclusion of these agreements marked the formal introduction of China into the world space launch market.[170] With the successful launch of *AsiaSat-1* in 1990 on a *Long March-3* rocket,

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[169] Cooper and Contant, in Jimerson and Williamson, *Space and Military Power in East Asia*, 2000.
[170] See detailed explanation of the three agreements' provisions in van Fenema, *The International Trade in Launch Services*, 1999, 199-209.

China finally joined the space launch market. Throughout the 1990s China's participation in this market, however, was confined to just a few launches a year.[171]

In order to facilitate the commercialization of its space activities, the Chinese government reformed the organizational structure of its space industry. In 1982, the Ministry of Space Industry (MASI) was established in place of the Seventh Ministry of Machine Building responsible for space industry. The new government body supervised numerous academies—the First Academy also known as China Academy of Launch Vehicle Technology, the Fifth Academy or China Academy of Space Technology,[172] and others—that developed products for export. Companies were established as marketing outlets. Until the mid-1980s, these companies and organizations were militarized and classified. Some necessary administrative changes were made, as China undertook "civilianization" and commercialization of its space program. In 1991, a Space Leading Group at the State Council with the responsibility of coordinating relations with foreign governments and attracting foreign contracts was established. In 1993, the Chinese National Space Administration (CNSA), the analog of NASA, was created as China's main space policy-making body. In the same year, the China Great Wall Industry Corporation (CGWIC) was reformed: the China Aerospace Great Wall Group was created in order to improve operation of the business, including such issue areas as import and export. At that time the CGWIC ranked 51 in the selection of 100 most

[171] Since the 1970s, when the first Chinese satellite was put in orbit, China conducted a total of 79 launches as of October 21, 2003. In 1990, China captured 4% of world's launch market and by 1997 it had 9.5%. Between 1997 and 2000, China made on average 5 launches a year—both commercial and non-commercial, in 2001 it made only 1. See "Foreign Space Activities," *Air Force Magazine*, August 2002, 44. See also Marcia S. Smith, "China's Space Program: An Overview," CRS Report for Congress, October 21, 2003; *The 1998 State of Space Industry*, 1998, 39; and Yanpin Chen, "China's Space Commercialization Effort," *Space Policy*. 9 (February 1993): 45.

[172] Federation of American Scientists, Space Policy Project, *Chinese Space Companies*, http://www.fas.org/spp/guide/china/corp/index.html (accessed 07.11.04).

famous enterprises by the China Enterprise Association. By 1995, the corporation made considerable progress and started to occupy a more important position in China's economy: the CGWIC was selected by the State Administration Bureau of State Property to be listed in the official publication called "The Backbone of China – the Best 500 State Owned Enterprises." The CGWIC was the only company selected from the space industry. At that time, the CGWIC was the 6th biggest enterprise in China with its volume of exports of mechanical and electrical products, and the 9th largest with its import volume of technology and equipment. Being the main foreign trade and economic cooperation channel for China's space industry, the CGWIC recently reached the level of annual gross value of imports and exports of estimated $400 millions.[173] Its exports went to about 60 countries and regions. The geography of its trading relations encompassed Asia, Africa, Europe, North America, South America, Australia, and Pacific islands. The United States and Russia became some of the most frequent destinations of its space related exports and imports.

In the 1990s, the Chinese Aerospace Corporation (CASC) and Chinese National Space Administration (CNSA) took over the responsibilities of the MASI. CASC, established in 1993, was charged with research, design, test, manufacture, and commercialization of technological products and civilian application. Its scope of responsibilities also included launch vehicles, satellites, and other space products. CASC made significant contribution in application of space technology via spin-offs in various sectors of China's economy, such as electronics, computers, communications, automatic control systems, medical equipment, automobiles, and others. It was also successful in

[173] See China Great Wall Industry Corporation (CGWIC), Official Website, http://www.cgwic.com/trade/index.html (accessed 10.08.03).

creating joint ventures with foreign partners. As China had a limited capability to produce reliable communications satellites, CASC particularly sought cooperation with Western communications satellite manufacturers in order to gain access to communications satellite technology and components. In 1994, CASC established a joint venture with Daimler-Benz Aerospace of Germany, called EuraSpace GmbH, for the production of the Sinosat series of communications satellites for China's domestic use. In 1995, CASC and Loral signed a Memorandum of Agreement for joint development of an advanced high capacity communication satellite, with Loral providing the design and technical support, and Germany and China making final integration of the communication satellite. In 1997, China and France began to explore some commercial cooperative projects in remote sensing. At the same time, the Chinese and French governments agreed to a broad cooperation on space research and satellite construction. Later, Alcatel Space won a bid to develop and produce a payload module to be integrated into next-generation Chinese telecommunications DFH-4 satellite.[174] By 1998, CASC established some 100 joint ventures for space technology applications in China and abroad.[175]

In the 1990s, China worked out a project called "Torch" that was aimed at promoting commercialization of high-technology outcomes, industrialization of high-technology commodities and the development of high-technology industries. The focus of this program was on the training of specialists who would be better equipped to adapt to fast changes in the field of high technology. The idea was to involve teaching methods

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[174] See more on China's third generation of communication satellites and their capabilities "China Launches Dongfanghong-IV Satellite Project," *People's Daily*, Online publication, December 28, 2001, http://english.peopledaily.com.cn/200112/27/eng20011227_87589.shtml (accessed 03.17.04).

[175] Johnson-Freese, *The Chinese Space Program*, 1998, 66.

and materials from the advanced industrial countries and to send Chinese specialists to study abroad.

While actively pursuing commercial ventures in satellite manufacturing with the Western companies in order to improve its own technology and facilities for communications satellite manufacturing, China also undertook commercialization of the satellite communications providers in order to facilitate the development of telecommunication services and to satisfy the rapidly growing demand for telecommunications services in its booming economy. It commercialized the China Telecommunications Broadcast Satellite (ChinaSat),[176] subsidiary of China's Ministry of Post and Telecommunications. Furthermore, to break ChinaSat's domination of the Chinese satellite communications market and encourage commercial competition, the Sino Satellite Communications (SinoSat) was formed in 1994, with China Aerospace Corp (CASC), Commission of Defense Science & Technology (COSTIND), People's Bank of China and the Government of Shanghai as participants.[177] In April 1995, the China Orient Telecommunications Satellite Company (COTS) was established by China's Ministry of Post and Telecommunications (MPT) and the State Planning Commission as an autonomous satellite body operating ChinaStar satellites built by

[176] In late 1992, China bought a 9-year-old *Spacenet 1* satellite from GTE, renamed it *ChinaSat 5* and transferred to ChinaSat, China Telecommunications Broadcast Satellite. In 1993, ChinaSat became China's first commercial satellite operator. See Federation of American Scientists, Space Policy Project, *Zhongxing/ChinaSat*, http://www.fas.org/ssp/guide/china/comm/chinasat.htm (accessed 03.17.04).

[177] In 1993-1994, DASA and SinoSat formed a joint venture EuraSpace to develop a new communication spacecraft. Financed primarily by the German banks and the European partners, the new system *SinoSat-1* was to be assembled and tested in China. See Federation of American Scientists, Space Policy Project, *SinoSat*, http://www.fas.org/ssp/guide/china/comm/sinosat.htm (accessed 03.17.04).

Lockheed Martin and providing commercial satellite communications services in South Asia and the Middle East.[178]

Thus, in the 1990s, China set up a satellite communications market by commercializing the activities of existing satellite communication providers and establishing new ones. China also sought participation in international commercial space telecommunications consortia to satisfy its rapidly growing communication needs. China's International Trust and Investment Corporation became a member of a Hong Kong-based consortium, Asia Satellite Telecommunications Company (Asiasat) that entered the commercial telecommunications market in 1990 with the launch of *Asiasat 1*. Asiasat offered telecommunications services in China, Japan, Malaysia, Burma, Thailand, Afghanistan and Pakistan. In 1992, APT Satellite Company, a consortium of four regional companies, in which three out of four founding members were Chinese state-owned enterprises, was created as a commercial rival to Asiasat to provide telecommunications services in the East Asian region via the HS-601 spacecraft built by Hughes.[179] In 1995, the Asia Pacific Mobile Telecommunications Satellite (APMT) consortium was created with two-thirds of the equity originally belonging to various Chinese enterprises and organizations. APMT was to provide a regional mobile satellite communications services through National Service Providers in countries of the Asia Pacific region.[180] All in all, through participation in international telecommunications

[178] Federation of American Scientists, Space Policy Project, *ChinaStar*, http://www.fas.org/ssp/guide/china/comm/chinastar.htm (accessed 03.17.04).
[179] Federation of American Scientists, Space Policy Project, *APT Satellite Co.*, http://www.fas.org/ssp/guide/china/comm/apstar.htm (accessed 03.17.04).
[180] Federation of American Scientists, Space Policy Project, *Asia Pacific Mobile Telecommunications Satellite* (APMT), http://www.fas.org/ssp/guide/china/comm/apmt.htm, (accessed 03.17.04).

consortia and benefiting from Western satellite technology, China entered and became an important player in the emerging market of satellite telecommunications.

Commercial space cooperation with the West was not the only direction of Chinese opening to the world and its commercial cooperation. In 1993, China reopened its links with Russia with the visit of the chief of staff of the People's Liberation Army, Chi Haotian, to Star City, Russia's cosmonaut training center in Moscow.[181] A formal agreement on cooperation between the Russian Space Agency (RSA) and the Chinese National Space Administration (CNSA) followed in May 1994. Later, Chinese cosmonauts, or as they are referred to "taikonauts," underwent training in the Russian Star City training center.[182] In March 1995, Chinese space experts return to Moscow for the first time since the Sino-Soviet split of 1960 in order to negotiate and sign a commercial contract for purchasing Russian space products and technology. They were particularly interested in space systems for a manned flight, such as environmental control systems and docking and emergency systems. The Chinese also bought some Russian RD-120 rocket engines. After a reciprocal visit of the Russian delegation to China, the Chinese bought an entire spacecraft life support system, an Energiya docking module and the Kurs rendezvous system, used to dock supply crafts with the *Mir* space station.

Trade relations between China and Russia expanded from manned space flight into other areas of space activities as well. Since the second half of the 1990s China

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[181] Mowthorpe reports that even prior to this—in May 1990—Chinese and Russian industrial representatives signed an agreement to cooperate on ten projects covering such areas as satellite navigation, space surveillance, propulsion, satellite communications, joint design efforts, material, intelligence sharing, scientific personnel exchanges, and space system testing. See Matthew Mowthorpe, *The Militarization and Weaponization of Space* (Lanham: Lexington Books, 2004), 97.

[182] On August 20, 1996, a group of Chinese visitors—according to some estimates, from 20 to 50 taikonaut trainees and future instructors—arrived in Star City led by Shen Jungjun. See Harvey, *The Chinese Space Programme*, 1998, 147-148.

stopped launching its imaging intelligence satellites, Fanhui Shi Weixing, or return type satellites, and instead began purchasing satellite images from Russia on a commercial basis.[183] During an official visit of the Russian head of the government, Mikhail Kas'yanov, to China in early November 2000, the Chinese and Russians negotiated on the joint exploitation of the Russian satellite navigation system GLONASS.[184] Later, the Sino-Russian space cooperation expanded into satellite communication. In June 2003, the Russian Satellite Communication Company and ChinaSatCom, the Chinese National Satellite Communications Operator, signed the Agreement on Cooperation in development of satellite telemedicine network in China, Russia and South East Asian countries.[185]

Thus, China vigorously pursued the commercialization of its space activities and, similarly to Russia, it had to go quite a distance in order to transform its space industry from being highly secretive, tightly controlled sector of communist economy into a commercial player at the international level. Although it started early with its economic reforms, China needed to catch up technologically in order to be competitive at the international level. China developed mutually beneficial relationships with major space-faring states, including the Untied States and Russia, across a wide spectrum of commercial space activities. In its commercial endeavors China particularly sought

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[183] See, for example, Pike, in *SIPRI Yearbook 2002: Armaments, Disarmament and International Security*, 2002, 635.

[184] Igor' Korotchenko, "Moscow and Beijing Expand Strategic Relations," *Independent Military Review*, November 10, 2000, http://nvo.ng.ru/printed/wars/2000-11-10/1_kasyanov.html (accessed 11.16.00). Before that, China was reported as expressing interests in acquiring GLONASS. See Cooper and Contant, in Jimerson and Williamson, *Space and Military Power in East Asia*, 2000. China plans to build and deploy its own regional satellite navigation system, the Beidou Navigation System. On October 31, 2000, China' *Long March 3* rocket successfully put the first navigation satellite, the Beidou Navigation Testing Satellite, into orbit. See "China Puts 1st Navigation Positioning Satellite into Orbit," Press Release, *SpaceRef.com*, October 31, 2000, http://www.spaceref.com/news/viewpr.html?pid=2944 (accessed 10.07.03).

[185] See News at the official website of the Russian Satellite Communications Company (RSCC), http://www.rscc.ru/eng/news_comp25.html (accessed 03.17.04).

access to advanced space technology in order to build modern space capabilities. In the post-Cold War era, China's commercial space activities became a part of its comprehensive development strategy whose goal was to provide for economic development and modernization of the People's Republic of China.

THE SECURITY IMPLICATIONS OF SPACE COMMERCIALIZATION

The commercialization of outer space activities in the three major space powers—the United States, Russia, and China—was begun nearly simultaneously and marked the next step in the evolution of space technology and space utilization. This transition was influenced by such factors as progress in space and information technologies, ideological revolution neo-conservatism, economic globalization, and political changes brought about, first, by the superpower détente of the mid-1980s and later by the end of the Cold War. Outer space started to play an increasingly important role not only in the security realm but also in the economy of the three states under the study, as well as the world as a whole.

According to some estimates, worldwide commercial space revenues in 1990 were some $8 billion, whereas worldwide government spending on space at that time was at approximately $35 billion.[186] By the end of the 1990s, the commercial space sector generated some $60.4 billion while worldwide government spending on space remained under $40 billion.[187] The populations of commercial satellites grew dramatically over

[186] The number is approximate. See Watts, *The Military Use of Space*, 2001,16.
[187] According to the Satellite Industry Association, worldwide satellite revenues that included manufacturing, launch, ground segment and services, were estimated at $60.4 billion in 1999, and at $86.8 billion in 2002. See Satellite Industry Association, "Perspective on the Commercial Satellite Industry," http://telecomweb.com/papers/FCCsat.pdf (accessed 03.31.04). Other assessments offer different estimates. The discrepancy is due to different sources of data and methodologies that may include different segments of space industry due to the absence of a unified definition of the space industry.

this decade. Whereas previously, communication satellites providing commercial services were confined mostly to the geostationary orbit, with the arrival of the new generation of commercial communication satellites providing mobile communication services commercial satellites now spread into LEO and MEO. With respect to the degree of commercial utilization of outer space, it is estimated that commercial satellites in LEO comprise 70 percent of the LEO satellite population, 59 percent of MEO satellite population and 78 percent of the high orbits satellite population.[188] The commercialization of space, thus, represents a mainstream trend in the closing decade of the 20th and early 21st centuries rather than a marginal, or temporary phenomenon caused by budget reductions. The commercialization of space activities in the three states was accompanied by changes in the domestic legal foundations on which space activities relied, policies that provided an encouraging economic environment, restructuring of space industries of the three spacepowers and by the emergence of commercial actors engaged in the development of space. As a result of commercialization of space activities, a global space market emerged.

The formation of the global space market was a response to demands of globalizing world economy. Satellite networks and services they provide—communications, satellite TV and radio broadcasting, GPS, Earth observation and remote sensing—represent a part of a vital infrastructure of the world economy supporting global economic activities.[189] In its turn, the level of interconnectedness achieved via satellite networks represents a qualitatively new phase of globalization.

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[188] See Carrington, 1999.
[189] See G. Pandozy, "Market Strategy and Ethics," in G. Haskell and M. Rycroft, eds., *New Space Markets*, 1998, 148.

The commercialization of outer space activities required major efforts on the part of the three space powers under consideration, though the distance that they had to go setting up market relations differed significantly: in the United States the space industry was already a market participant, whereas in Russia and China space industries were integral parts of defense sectors in non-market, centrally planned economies. What all three spacepowers had in common was that with the commercialization of their space activities they had to take steps towards "civilianization," deregulation, and liberalization of major space sectors. As a result of the commercialization, all three spacepowers became dependent on the global space market: China grew to depend on the global space market for technology, while trying to take shortcuts to full-fledged modern space capabilities and propel economic development of its country into the 21st century; Russia grew to depend on the global space market for the survival of its space industry, as its domestic market and state funding could support only a fraction of its space activities; the United States, the sole superpower with dominant space capabilities, came to rely on the global space market both as a supplier of space services and products and as a consumer as required by its global interests.

All in all, space commercialization that transformed space activities into an economic mainstream has serious consequences for national and global security. First, outer space commercialization means an increasing participation of commercially motivated actors in outer space activities, including private actors. Space activities thus become more and more influenced by interests of commercial and private actors, making their calculations based on market incentives, and less by governments' politically motivated calculations.[190] As a corollary, space activities become more and more affected by market forces of supply and demand, their fluctuations and incentives.[191]

As space competition becomes tougher on the international market, the desire to succeed has lead commercial actors to turn to the states for help. Under the conditions when World Trade Organization's rules restrict subsidies to industries and services, some commercial space actors have to obtain help under the "umbrella" of defense, thereby fueling again the militarization of space activities.[192] At the same time, the reality of technology-based competition has led many space firms to form multiple, complex international strategic alliances with foreign firms.[193] This has raised concerns with technology transfers—technology that often just recently was in the exclusive province of the military.[194]

Second, the commercialization of space activities allows states not only to make returns on their huge investments in space research and development as well as industries but also to promote technological progress of their economies and economic prosperity of their domestic societies. In the 1990s, the global space industry became one of the world's vital economic engines stimulating developments in important high-tech sectors, such as software and hardware development, sophisticated electronics,

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190 See, for example, Klotz, *Space, Commerce, and National Security*, 1998, 14; and Watts, *The Military Use of Space*, 2001, 73.

191 Because space industry provides vital infrastructure for the global economy and thus is tightly integrated into it, global economics directly affects space industry. It was the case during the Asian financial crisis of 1998, and during the global economic recession began in 2001. See, for example, on the effects of the Asian financial crisis *The 1998 State of the Space Industry*, 1998, 10.

192 Commercial space activities remain highly dependent on various forms of government assistance, including subsidies. WTO rules restrict subsidies, leaving states with just a few options to help out its national firms. See, for example, Hansson and McGuire, 1999, 199-205. See also Haller and Sakazaki, *Commercial Space and United States National Security*, 2001. See Patrick A. Salin, "Privatization and Militarization in the Space Business Environment," *Space Policy* 17 (February 2001): 19-26. For the period under consideration, the WTO's influence affected only the United States, as Russia is not yet a member of the WTO and China only recently joint the organization.

193 Haller and Sakazaki, *Commercial Space and United States National Security*, 2001.

194 Ibid.

telecommunications, advanced materials research, which in their turn contributed to a whole range of other industries.[195] Thus, the commercialization of space also means that there are greater incentives for various states, and non-state actors, to obtain their own space capabilities, firstly, because of the benefits that space activities would bring to their economies, and secondly, because it may be easier now, as some technological components can be acquired in the global space market. Given the inherent dual-use nature of space technology, this proliferation of space technology and capabilities raises serious security concerns. Furthermore, security concerns also arise with proliferating and becoming more available and affordable commercial space services, such as accurate timing, navigation data and other critical information that are generated by satellites, since they may be used towards hostile ends.

Third, the more modern economies depend on space services, the more they become vulnerable to threats from hostile acts against space assets. The global economy as a whole has grown to depend on satellite networks. The world financial system would probably come to a halt if, for example, timing data from GPS ceases.[196]

The commercialization of outer space activities coupled with the reduction of military budgets in the 1990s has also led to a significant reliance of the military on commercial space service providers.[197] Furthermore, commercialization means that the locus of control over technological innovation shifts from the governments to commercial actors, making states more dependent on the market for advanced technology and the

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[195] See, for example, the effect on software industry, and news, entertainment, communications, and consumer electronics in *1998 State of the Space Industry*, 1998, 10-12.

[196] William C. Martel and Toshi Yoshihara, "Averting a Sino-U.S. Space Race," *Washington Quarterly* 26 (autumn 2003): 20.

[197] See, for example, Todd, 2002.

direction it takes.[198] And finally, outer space commercialization means increasing economic and security interdependence of states. Thus, the commercialization of space activities profoundly affects national and international security.

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[198] See, for example, Watts, *The Military Use of Space*, 2001, 1.

CHAPTER V

THE UNITED STATES' SECURITY STRATEGY AND SPACE INTERESTS IN THE POST-COLD WAR ERA

The task of this chapter is to examine the evolution of the United States' grand strategy and American space security interests in the post-Cold War era. The analysis is based on the official pronouncements of the U.S. security strategies from the George Bush Administration to the George W. Bush Administration. It is argued in this chapter that during 1992-2002 the U.S. strategy transformed from what can be called a hesitant primacy into an assertive primacy. American security interests in space grew together with a greater reliance on the military and commercial uses of space. Progressively, the U.S. military and commercial interests were integrated into the overall U.S. strategy of primacy, with space activities becoming a crucial component of this strategy.

U.S. GRAND STRATEGY AFTER THE END OF THE COLD WAR

Since the dissolution of the Warsaw Pact Organization and then the collapse of the Soviet Union itself, the United States as the sole remaining superpower has been formulating its national interests and security strategy for an emerging world order that is quite different from the previous era. Under these new international conditions, the United States has been leading with overwhelming military capability and an unparalleled ability to project its power globally, and it has been dominating economically with its large consumer market and corporations in the vanguard of technological progress in many key areas.[1] Early in the post-Cold War era, however, the

[1] Kapstein and Mastanduno, *Unipolar Politics*, 1999, 14.

perception was—at least for a while—that bipolarity has been transformed into a multipolarity. In the *National Security Strategy of the United States*, issued in March 1990, the transformation in the East was seen as hopeful but its future and consequences uncertain. Some of the Bush Administration's main questions were: "How can we ensure continued international stability as U.S.-Soviet bipolarity gives way to global interdependence and multipolarity? What will be America's continuing leadership role—and the new roles of leadership assumed by our allies?"[2] Even when it became clear that the world has become unipolar, there were wide spread expectations that unipolarity would be transformed into multipolarity rather shortly.[3]

In the immediate aftermath of the Cold War, main tasks for the United States were to manage a peaceful decline of the Soviet Union and transition from bipolarity to unipolarity. While these tasks inevitably became a U.S. responsibility, building a new world order in place of a bipolar one required a choice, as well as a vision and a grand strategy. The United States faced four strategic options: (1) neo-isolationism; (2) selective engagement; (3) cooperative security; and (4) primacy.[4] According to the neo-isolationist strategy the United States would not need to use its power to build a new world order. Protected from potential hostile powers by geography and overwhelming military power, the United States would simply withdraw from its Cold War

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2 White House, *National Security Strategy of the United States*, Washington D.C., March 1990, 7.
3 See, for example, Christopher Layne, "Unipolar Illusion: Why New Great Powers Will Rise," *International Security* 17 (spring 1993): 5-51. Layne defines unipolarity as a structure of the international system, in which "single power is geopolitically preponderant because its capabilities are formidable enough to preclude the formation of an overwhelming balancing coalition against it." See Ibid, 5, note 2. He predicted that unipolarity would give way to multipolarity between 2000-2010. See Ibid., 7. See also Charles W. Kegley, Jr., and Gregory A. Raymond, *A Multipolar Peace Great Power Politics in the Twenty-First Century* (New York: St. Martin's Press, 1994).
4 Barry R. Posen and Andrew L. Ross, "Competing Visions for U.S. Grand Strategy," in Michael E. Brown, Owen R. Cote, Jr., Sean M. Lynn-Jones, and Steven E. Miller eds., *America's Strategic Choices* (Cambridge: the MIT Press, 1997), 1-49.

commitments in Europe and Asia, leaving them to their own devices. Beyond this option, however, the United States faced a formidable task of building a new security order in Europe and in the world as a whole, and managing an open world economy under the conditions of accelerating globalization. A strategy of selective engagement would call for the use of U.S. power when and where the United States would find it in its interests, such as, for example, to prevent wars among world's great powers or to stop nuclear proliferation. A strategy of cooperative security called for preserving world's peace via international institutions with the support of other democratic states. International institutions would coordinate international military actions against aggressor states, manage the arms control process, and maintain confidence-building regimes. A strategy of primacy would require the United States to maintain a preponderance of world power and prevent the rise of any great powers that could compete with the United States. According to this strategy, the United States would need to maintain forces around the world and be prepared to contain any potential hegemon, such as China or Russia, or both.[5]

Throughout the 1990s, the U.S. strategy appeared to be hesitant and uncertain.[6] This hesitation and uncertainty materialized in U.S military intervention policy, as evident in cases of Somalia, Bosnia, and Rwanda. These features were also apparent in U.S. attitude towards the United Nations. In its relationship with Russia, the U.S. proclaimed a cooperative relationship with Russia but also pursued NATO enlargement strongly opposed by Russia. In U.S.-China relations, the United States tried to develop

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[5] Posen and Ross, "Competing Visions for U.S. Grand Strategy," in Brown, Cote, Lynn-Jones, and Miller, eds., *America's Strategic Choices*, 1997, 32.

[6] This opinion is not shared by all scholars. Some see U.S. strategy in the 1990s as a consistent strategy of preeminence. See, for example, Mastanduno, "Preserving the Unipolar Moment," 1997, 55.

extensive economic ties with China and, at the same time, considered China its main potential adversary. In the absence of pronounced and clearly identified threats to the United States' interests, its strategy represented a mixture of selective engagement, cooperative security, and primacy. Unipolarity also imposed lesser constrains on the United States' behavior compared to the bipolar structure that preceded it, leaving much greater room for the choice of action for the United States.[7] This situation changed dramatically with the terrorist attacks of September the 11th, 2001. In fact, the post-Cold War period can be divided into two distinct historic periods: the period between 1992 and 2001, which represents a post-Cold War transitional phase; and the period since 2001, the beginning of which was marked by the tragic events of September the 11th in New York City and Washington D.C. During the first period the U.S. strategic priorities in official pronouncements shifted gradually from containment to engagement. During the latter, they changed swiftly from engagement to "embracement,"[8] with an overriding goal of maintaining American preeminence in the international system and preserving the "unipolar moment" for the sake of providing U.S. security and a stable and more peaceful world.

In August 1991, when the Cold War was over but a new world order was an aspiration rather than a fact, the George Bush Administration's National Security Strategy (NSS) called for the United States to take responsibility and lead the world in building a new world order:

> We cannot be the world's policeman with responsibility for solving all the world's security problems. But we are the country to whom others turn when in

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[7] See, for example, Mastanduno, "Preserving the Unipolar Moment," 1997, 55.

[8] Gregory S. Martin, "U.S. National Security Strategy and the Imperative of 'Geopresence,'" *Air & Space Power Journal*, Summer 2003, Online publication, http://www.airpower.maxwell.af.mil/ airchronicles/apj/apj03/sum03/martin.html (accessed 11.25.03).

> distress… In the 1990s, as for much of this century, there is no substitute for American leadership. Our responsibility, even in a new era, is pivotal and inescapable.[9]

This strategy acquired further development and more concrete features in the then much-discussed Bush Administration's draft Defense Planning Guidelines (DPG), leaked to the press in March 1992.[10] This draft provided a blueprint that outlined measures for precluding the rise of any great power capable of challenging the United States' position in the international system:

> Our first objective is to prevent the reemergence of a new rival, either on the territory of the former Soviet Union or elsewhere, that poses a threat on the order posed formerly by the Soviet Union… [Aside from the former USSR,] there are other potential nations or coalitions that could, in the further future, develop strategic aims and a defense posture of region-wide or global domination. Our strategy must now refocus on precluding the emergence of any potential future global competitor.[11]

The goal of America's preeminence was to achieve "real peace—not the illusory and fragile peace maintained by a balance of terror, but an enduring democratic peace based on shared values," to make the end of the 20th Century the beginning of an "Age of Democratic Peace."[12] This objective came from the Bush Administration's realization that there was a dividend of peace, an opportunity for the United States—no longer burdened by the enormous military requirements of containment—not only to defend the interests of the United States but to promote them and shape America's future at home and abroad. Moreover, the domestic imperatives and international opportunities became seen as interdependent. The 1993 NSS report stated: "Our economic future lies more

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[9] White House *National Security Strategy of the United States*, Washington D.C., August 1991, 2.

[10] See, for example, Robert Jervis, "International Primacy: Is the Game Worth the Candle?" *International Security* 17 (spring 1993): 54.

[11] "Excerpts from Pentagon's Plan: 'Prevent the Re-Emergence of a New Rival,'" *New York Times*, March 8, 1992, 14, quoted in Jervis, "International Primacy," 1993, 54.

[12] White House, *National Security Strategy of the United States*, Washington D.C., January 1993, ii.

than ever in the global marketplace…."[13] And the global marketplace, in its turn, depended upon the United States to provide an overarching security order in which international trade can prosper. Thus, addressing domestic economic and social issues, promoting open global economy, and spreading democracy around the world became the main U.S. security priorities. The demise of the strategy of global containment, as the Cold War ended, led to a shift in the U.S. defense strategy to a "new regional defense strategy,"[14] relying on American leadership, old alliances, new partners, and collective security institutions. This new defense strategy included four elements: (1) strategic deterrence and anti-ballistic missile defense, (2) forward presence, (3) crisis response—the capability to project power across the world to respond to a crisis, and (4) reconstitution—the ability to reestablish a global war-fighting capability.

The Clinton Administration in its National Security Strategy report formulated a grand strategy of "engagement and enlargement" that continued to shift the focus towards broader security goals. The document stated:

> Our national security strategy is based on enlarging the community of market democracies while deterring and containing a range of threats to our nation, our allies and our interests. The more that democracy and political and economic liberalization take hold in the world, particularly in countries of geostrategic importance to us, the safer our nation is likely to be and the more our people are likely to prosper. [15]

The report, published in 1995, used a broader definition of security than in the NSS reports of the previous administration and shifted the emphasis from defending the United States and its interests against a new class of "dangers" to exploiting "the

[13] White House, *National Security Strategy of the United States*, 1993, 2, 9.
[14] Ibid., p. 13.
[15] White House, *A National Security Strategy of Engagement and Enlargement*, Washington D. C., February 1995, 2, http://www.au.af.mil/au/awc/awcgate/nss/nss-95.pdf (accessed 07.12.04).

opportunities to make the nation more safe and prosperous."[16] As the Cold War threats faded into the background, there seemed to be little evidence of a consensus, and as the result, there was less clarity in the priorities of national security strategy. There was less attention to military aspects of security and more to "enlarging" existing and creating new security institutions, promoting democratization around the world and engaging with key democratizing countries to ensure success and irreversibility of this process, and engaging and integrating other key nations, such as China, into the global economy and international institutions.

Restoring America's economic vitality took an important, if not the central, place in the new strategy. In the 1996 National Security Strategy, the "long-term health and competitiveness of the American economy" and " efficient and environmentally sound use of our resources" were made "a major priority."[17] The way to improve America's competitiveness included not only reducing the federal deficit, but also encouraging integration of the commercial and military industrial sectors and restructuring of research and development efforts to place an emphasis on dual-use technologies. A prosperous American economy would need open international markets and economic growth around the globe. This became one of the three central elements of U.S. national security strategy formulated in the 1996 NSS document. These included: (1) maintaining strong defense capabilities and employing diplomacy to promote cooperative security measures; (2) open markets and global economic growth; and (3) promoting democracy abroad.

[16] Ibid., i.

[17] White House, *A National Security Strategy of Engagement and Enlargeme*nt, February 1996, Chapter II "Advancing our Interests Through Engagement and Enlargement," http://www.fas.org/spp/military/docops/national/1996stra.htm (accessed 11.11.03).

The 1996 NSS report clearly stated the Clinton Administration's position on the use of military force: "We must use military force selectively, recognizing that its use may do no more than provide a window of opportunity for a society—and diplomacy—to work. We therefore send American troops abroad only when our interests and our values are sufficiently at stake."[18] It called on the United States to continue playing the global leadership role, stressing preventive diplomacy through such steps as support for democracy, economic assistance, an overseas military presence, interaction between U.S. and foreign militaries and involvement in multilateral negotiations on important security issues around the world "in order to reduce tensions and defuse conflict before they become crises."[19] Maintaining a strong capability was stated as the foundation of U.S. military security. In the new international environment, however, this capability was no longer seen as a global war-fighting capability, it was aimed instead at regional contingencies. Arms control was perceived as an effective tool for reducing the danger of nuclear, chemical, biological and conventional conflict and promoting stability. The report stressed achievements, such as strengthening of the Missile Technology Control Regime (MTCR) by bringing in it such key states as Russia, Brazil, and South Africa and securing compliance with the regime by China; ensuring the accession of Ukraine, Kazakhstan, and Belarus to the NPT as non-nuclear states and indefinite extension of the Non-Proliferation Treaty (NPT); entrance into force of the START I treaty and a move towards bringing about ratification of the START II treaty; progress made in the Comprehensive Test Ban Treaty (CTBT) negotiations; creation of the Wassenaar Agreement on Export Controls for Conventional Arms and Dual-Use Goods and

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[18] Ibid.

[19] White House, *A National Security Strategy of Engagement and Enlargemen*t, 1996, Chapter II "Advancing our Interests Through Engagement and Enlargement."

Technology, replacing the old Cold War Coordinating Committee for East-West Trade (CoCom); progress made in negotiations to update the ABM Treaty by establishing an agreed demarcation between strategic and theater ballistic missiles. These successes were seen as important contributions to the U.S. security. The significance of arms control to the Clinton Administration's security strategy was also seen in its expected contribution to the economic objectives formulated in the NSS report by allowing the United States to "reduce the size of national defense industry establishment and thus permit the growth of more vital, nonmilitary industries."[20]

The threat of WMD was identified as one of the most urgent threats and the key to success in dealing with it, as well as to obtaining other U.S. security objectives, was seen in international cooperation.[21] Therefore, the emphasis was put on seeking to ensure U.S. influence over and participation in "collective decision-making" at the international stage, as opposed to pursuing primarily unilateral solutions.

The main features of the strategy of engagement and enlargement were reiterated in the NSS reports during the second Clinton Administration. The 1998 report titled *A National Security Strategy for a New Century*, published shortly after the financial crisis in Asia, clearly shifted further an accent to global economic stability as its major security concern. In the opening paragraphs, the document stated that without harnessing global forces the United States would not sustain its predominant position in the world:[22]

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[20] Ibid.
[21] Ibid.
[22] Globalization, defined in the document as "the process of accelerating economic, technological, cultural and political integration", is one of the global forces mentioned by the document. Along with instability of global economic processes, the document identifies other threats such as spread of weapons of mass destruction, terrorism, transnational crime, extreme nationalism, rapid population growth, uncontrolled refugee migration, resource depletion, new infection diseases, and environmental damage. See White House, *A National Security Strategy for a New Century*, Washington D.C., October 1998, iii, 1.

> As we approach the beginning of the 21st century, the United States remains the world's most powerful force for peace, prosperity and the universal values of democracy and freedom. Our nations challenge—and our responsibility—is to sustain that role by harnessing the forces of global integration for the benefit of our own people and people around the world.
>
> The United States has profound interests at stake in the health of the global economy. Our future prosperity depends on a stable international financial system and robust global growth.[23]

Engagement with the world and leadership were perceived as an imperative: in order to be secure and prosperous at home, the United States must lead abroad. While the military component of security strategy remained important for meeting new challenges, the document put the development of U.S. military forces within the parameters that would meet the requirement of balancing the U.S. budget. This strategy envisioned a continuous American commitment to international cooperation via a network of international institutions, such as the United Nation and NATO, and arrangements with key countries, such as Partnership for Peace (PfP) and the NATO-Russian Permanent Joint Council, and via arms control process for providing the foundations of security and prosperity in the 21st century. International cooperation was considered as vital for building security due to accelerating globalization and transnationalization of threats.[24] In the 1999 National Security Strategy report the new emphasis was added to the U.S. support of regional security cooperation when other countries had taken their initiative and led to resolve regional security crises, such as Europeans in the Balkans, Asians in East Timor, and Africans in Sierra Leon. The argument in favor of this support was grounded on the realization that the U.S. strategy of "selective engagement" must allow for other countries to lead security cooperation while the United States would play a supporting role, otherwise it would be left with a dilemma of either leading in every

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[23] Ibid., iii, iv.
[24] Ibid., 7.

international effort of resolving a regional crisis or doing nothing.[25] This was an acknowledgement of some limitations of the Clinton Administration strategy, indicating that the mixture of "selective engagement," "cooperative security" and "primacy" strategies was problematic for the United States.

The September 2002 National Security Strategy (NSS) report, the first report by the new Bush Administration, represented the first statement of the American security strategy in the post-September 11th world, opening a new era in the U.S. pursuit of security.[26] The new document, thoroughly ridded off of old Cold War rhetoric and concepts, offered a clear identification of the main threats and ways to deal with them:

> ...[S]hadowy networks of individuals can bring great chaos and suffering to our shores for less than it costs to purchase a single tank. Terrorists are organized to penetrate open societies and to turn the power of modern technologies against us.
>
> To defeat this threat we must make use of every tool in our arsenal—military power, better homeland defenses, law enforcement, intelligence, and vigorous efforts to cut off terrorist financing. The war against terrorists of global reach is a global enterprise of uncertain duration.
>
> We will defend the peace by fighting terrorists and tyrants. We will preserve the peace by building good relations among the great powers. We will extend the peace by encouraging free and open societies on every continent.[27]

When the gravest threat "lies at the crossroads of radicalism and technology" at the hands of a few hidden enemies, the old Cold War strategies of containment and deterrence cannot work. Moreover, while the use of weapons of mass destruction (WMD) was considered as the last resort by the states possessing them during the Cold War, the new enemies would likely prefer them to other means once they are available.

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[25] White House, *A National Security Strategy for a New Century*, Washington D.C., December 1999, iv.
[26] See, for example, John L. Gaddis, "A Grand Strategy of Transformation," *Foreign Policy*, November-December, 2002, Online Publication, http://www.foreignpolicy.com/issue_novdec_2002/gaddis.html (accessed 11.25.03).
[27] White House, *National Security Strategy of the United States of America*, Introduction, Washington D.C., September 17, 2002, http://www.whitehouse.gov/nsc/nssall.html (accessed 03.18.04).

Therefore, the threat of proliferation of WMD and the means of their delivery became the focus of the U.S. security strategy and led the George W. Bush Administration to make a strong commitment to build defenses against ballistic missiles and protect the homeland, U.S. friends and allies, and its forces abroad. The Bush Administration also declared its commitment to multilateralism—to cooperation with other countries in order to prevent dangerous technologies and WMD from falling into the hands of terrorists and tyrannical regimes. Furthermore, the NSS asserted that the United States would act preemptively against emerging threats—that is, before they are fully formed.[28] Preemption was added to deterrence and defense as the third important component of the U.S. security strategy under the new conditions and represented the most dramatic difference, setting this NSS sharply apart from the earlier U.S. security strategies of the Cold War and post-Cold War eras.[29] In order to legitimize the preemptive strategy, the NSS report suggested adapting the concept of "imminent threat" to fit the new conditions of global war on terrorism.[30]

The U.S. strategy relying on deterrence, defense and preemption necessitated preeminence. The 2002 NSS called for the U.S. military supremacy:

> The United States must and will maintain the capability to defeat any attempt by an enemy – whether a state or non-state actor – to impose its will on the United States, our allies, or our friends. We will maintain the forces sufficient to support our obligations, and to defend freedom. Our forces will be strong enough to dissuade potential adversaries from pursuing a military build-up in hopes of surpassing, or equaling, the power of the United States.[31]

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[28] White Hosue, *National Security Strategy of the United States of America*, Introduction and Chapter 5 "Prevent Our Enemies from Threatening Us, Our Allies, and Our Friends with Weapons of Mass Destruction," 2002.

[29] Ibid. See also Thomas M. Nichols, "How Really New is the New Bush National Security Strategy?" George Mason University, Online Publication, October 14, 2002, http://hnn.us/articles/1031.html (accessed 11.25.03).

[30] White House, *National Security Strategy of the United States of America*, Introduction and Chapter 5 "Prevent Our Enemies from Threatening Us, Our Allies, and Our Friends with Weapons of Mass Destruction," 2002.

[31] Ibid., Chapter 9 "Transform America's National Security Institutions to Meet the Challenges and Opportunities of the Twenty-First Century."

The U.S. strategy rested on military supremacy was expected to lead to more cooperation on the part of other great powers in the international system, such as Russia and China, on the full spectrum of issues, and not only on the war on terrorism. In fact, cooperative relations with the other centers of power was a proclaimed component of George W. Bush's NSS.

Another distinct feature of the 2002 NSS had to do with the argument about the commitment to spread democracy around the globe. According to the Bush Administration's assessment, the cause of terrorism, America's greatest threat, was not so much in poverty but in resentment of the various groups of people in response to the lack of representative institutions in their own countries. Therefore, in the new document the task of democratization acquired a very specific security purpose—it became one of the important components of the war on terrorism. Furthermore, unlike Clinton's "engagement" policy, it became no longer enough to assume that the movement towards democratization around the world was irreversible and simply required the United States to "engage" with the rest of the world and "enlarge" this process via inviting nations to participate in global economy and international institutions. The task now amounted to transforming the Muslim Middle East, including ridding this region of tyrannical regimes who were pursuing weapons of mass destruction, supporting terrorism directly or radicalizing their populations by denying them opportunities, freedom, and political representation.[32] The 2002 NSS committed the United States to "actively work to bring the hope of democracy, development, free market, and free trade to every corner of the world."[33]

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[32] Ibid., Chapters 4-5. See also Gaddis, "A Grand Strategy of Transformation," 2002.
[33] White House, *National Security Strategy of the United States of America*, Introduction, 2002.

The 2002 George W. Bush Administration's NSS report represented the most important and far-reaching reformulation of the U.S. security strategy since the end of the Cold War.[34] It left no doubt that the international system has become unipolar and that the United States would actively reshape the world in accordance with its security interest,[35] leaving behind the vestiges of the Cold War, including the arms control process and arms control treaties standing in the way of the U.S. military supremacy. Thus, it can be concluded that in the post-Cold War era, the U.S. grand strategy evolved in response to dramatic and sometimes tragic events from a hesitating primacy to an assertive primacy. The balance between economic and security priorities changed from the Clinton Administration's security through economic strength to the George W. Bush Administration's economic strength through security.

U.S. SECURITY INTERESTS IN OUTER SPACE

In the post-Cold War era, the role of space in U.S. security interests evolved along with the changing grand strategy. The first major correction of U.S. interests and plans with respect to the military uses of space was undertaken by the George H. W. Bush Administration. The 1988 Reagan NSS report envisioned a transformation of military uses of outer space prompted by a revolution in military technology:

> Space will also become a more prominent area of activity, not least because of its growing importance for air, ground, and naval warfare. We expect that this revolution in military technology will continue well into the next decade and necessitate the adaptation both of military doctrines and of national security strategies.[36]

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[34] Gaddis argues that the 2002 NSS report is the most important and fundamental reformulation of the U.S. grand strategy in half a century. See Gaddis, "A Grand Strategy of Transformation," 2002.
[35] See also Robert Jervis, "The Compulsive Empire (U.S. Hegemony)," *Foreign Policy*, July-August, 2003, http://www.foreignpolicy.com/issue_julaug_2003/jervis.html (accessed 05.05.04).
[36] White House, *National Security Strategy of the United States*, Washington D.C., January 1988, 9. Following the NSS report, the Reagan Administration issued National Space Policy in February 1988. This

In light of the growing military importance of space, the 1988 NSS called for U.S. "space leadership" that would be based on preeminence in key areas of space activities, including communication, navigation, early warning, and surveillance. President Reagan's space policy included the development of those space capabilities that were needed for performing critical strategic deterrence functions, those capabilities that directly supported military forces on the ground and increased their effectiveness, and capabilities for defense of space assets.[37] The Reagan Administration's plans also included a program for the development of a defense system against ballistic missiles, prospectively including stationing of weapons systems in outer space. By developing such anti-ballistic missile defense, the Reagan Administration sought to maintain deterrence and move away from reliance on retaliation and towards making ballistic missiles obsolete.[38] Strategic Defense Initiative (SDI) would allow the United States to shift deterrence to "a safer and more stable basis through reliance on strategic defense"

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document replaced President Reagan's first space policy statement NSDD-42 of July 4, 1982. The 1988 document reflected a number of significant changes: the policy implications of the *Challenger* tragedy, increased commercial uses of space, and the report of the blue ribbon National Commission on Space. The new Department of Defense Space Policy was promulgated a year earlier. Secretary of Defense Casper W. Weinberger signed the new Department of Defense Space Policy on February 4, 1987. The unclassified summary of this policy was published on March 10, 1987. The new DoD Space Policy recognized military space activities critical to the U.S. national security, called for support of the Presidents' Strategic Defense Initiative, support of the development of new technologies improving access to space, exploration of the potential use of military man-in-space, and the development and deployment of systems for space control at the earliest date, including a comprehensive anti-satellite capability. See U.S. Department of Defense, Secretary of Defense Memorandum, *Department of Defense Space Policy* (unclassified), March 10, 1987, http://www.fas.org/spp/military/docops/defense/87/memo.htm (accessed 01.14.04).

[37] President Reagan dramatically changed the longstanding U.S. view of space as a sanctuary. However, it was president Carter who took the first step, setting the stage for President Reagan's space policy. President Carter issued PD-37 "National Space Policy" on May 11, 1978, in which, among other things, a dual track policy on the ASAT issue was adopted and the Secretary of Defense was assigned a task to develop a plan to use civil and commercial space systems for military purposes during declared national emergencies. This was the first step towards weakening the dominance of the sanctuary school of thought on space. See U.S. President, Presidential Decision Directive PDD/NSC 37, "National Space Policy," May 11, 1978, http://www.fas.org.spp/military/docops/national/nsc-37.htm (accessed 05.09.04). See also Matthew J. Mowthorpe, "The United States Approaches to Military Space During the Cold War," *Air and Space Power Chronicles*, March 2001, http://www.airpower.maxwell.af.mil/airchronicels/cc/mowthorpe.htmp (accessed 11.20.03).

[38] White House, *National Security Strategy of the United States*, 1988, 10.

and at the same time was seen as facilitating Soviet acceptance of significant arms reduction agreements.[39] Thus, the 1988 U.S. Space Policy formulated four requirements for U.S. military space utilization: (1) deterring, or if necessary, defending against enemy attack; (2) assuring that forces of hostile nations cannot prevent the use of space by the United States; (3) negating, if necessary, hostile space systems; and (4) enhancing the space operations of the United States and its allies.[40] This directive outlined measures that would have amounted to the next step in the military utilization of space: a move from the use of space for space support and force enhancement to space support, force enhancement, space control and force application.[41] This program was perceived by the Soviet Union as an American commitment to qualitative strategic superiority and overall military supremacy.

Besides military uses of outer space, space activities were seen by the Reagan Administration as important for obtaining economic, technological and scientific benefits and for international cooperation on space issues as one of the significant components of U.S. foreign policy. The Reagan Administration also formulated the U.S. policy of space commercialization, particularly the task of attracting commercial investment into outer space.[42]

The Bush 1990 NSS report continued the Reagan Administration's course towards military uses of space. It also stated a commitment to the further development of SDI, pointing not only to its value as a defense system, but also to its deterrent value. SDI was seen as affecting the calculations and confidence of potential aggressors already

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[39] Ibid., 15.
[40] Ibid., 22.
[41] Mowthorpe, "The United States Approaches," 2001.
[42] White House, *National Security Strategy of the United States*, 1988, 22.

possessing ballistic missiles and those who had hopes to develop ballistic missiles in order to deter the United States. At the same time, President Bush pledged to conduct SDI activities within the limits specified by the ABM Treaty.[43] The 1990 strategy followed President Bush's statement of the new U.S. National Space Policy NSPD-1 issued on November 2, 1989. In this document the incoming Bush Administration elaborated more fully the U.S. space policy, reiterating many of the elements of Reagan's 1988 National Space Policy. The fundamental objective of U.S. space policy remained "space leadership."[44] Like its predecessor, it called for American preeminence in the key areas of space activities that would guarantee the achievement of the U.S. national security, scientific, technical, economic, and foreign policy goals. It also called for a greater contribution of private investment in space development. In order to encourage commercial activities in space, the U.S. government was to become a customer purchasing commercially provided space services and goods to "the fullest extent feasible."[45] With respect to national security issues, the 1989 document repeated positions of the 1988 National Space policy, including support for the SDI program, development of force enhancement and space control capabilities.[46]

If Bush's 1989 National Space Policy and 1990 NSS report represented continuity of the U.S. space strategy, the 1991 NSS made the first significant departure from the previous space strategy. In the 1991 NSS report, the Bush Administration declared that the Cold War was over and modified plans for the development of SDI program.[47] As

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[43] White House, *National Security Strategy of the United States*, 1990, 25.
[44] U.S. President, National Security Presidential Directive 1, "National Space Policy," November 2, 1989, http://www.au.af.mil/au/awc/awcgate/nspd1.htm (accessed 11.13.03).
[45] Ibid.
[46] Ibid.
[47] White House, *National Security Strategy of the United States*, 1991, 1.

the relationship with the Soviet Union improved and fundamental changes in Eastern Europe were taking place, the possibility of a nuclear conflict was considered as "markedly reduced." At the same time, the threat from ballistic missiles developed by third countries or an accidental launch remained. The 1991 document, thus, reported that the SDI program was redirected to pursue a system providing Global Protection Against Limited Strikes (GPALS). This defense system would provide protection against a limited ballistic attack against the United States as well as its forces and allies around the world. It would be based on technologies developed within the SDI project, but would be smaller and less expensive than the original SDI plan.[48]

The overall space policy, as reflected in the 1991 NSS, made a shift in its focus towards non-military space activities. A plan developed by the National Space Council envisioned space as a medium for discovery and commerce and included such key elements as: (1) developing space launch capability as a national resource; (2) expanding human presence by developing a manned space station and extending space exploration beyond earth orbit, including manned missions to the Moon and establishing permanent human settlements on the Moon and putting men on Mars; (3) developing commercial applications, such as satellite communication, energy production, and material manufacturing, and civil applications, such as environmental monitoring; (4) encouraging private investment in space that would create jobs, boost the economy and strengthen science, engineering and industry, making the American economy more competitive on the international market. The new space policy also stressed the importance of preserving freedom of access to space and, in this context, called for a healthy military space program that would allow the United States to monitor events in space, warn of

[48] White House, *National Security Strategy of the United States*, 1991, 26.

threats and protect important space assets, including the development and deployment of anti-satellite (ASAT) capabilities.[49]

The 1993 Bush NSS report restated the U.S. commitment to the development of the Global Protection Against Limited Strikes (GPALS) in order to defend the United States from an accidental launch of ballistic missiles or an attack by a "rogue" state and protect the U.S. forces and allies abroad. In contrast to its predecessor, the 1993 document reflected a shift towards international cooperation in developing anti-ballistic missile defenses—a remarkable move that symbolized the end Cold War rivalry between the United States and Russia. At the June 1992 Summit, President Bush and Russian President Yeltsin agreed to work together in developing a concept of a Global Protection System against a limited ballistic missile attack. The 1993 report hailed this commitment to cooperation on the part of the two leaders as a landmark in U.S.-Russian relations.[50]

The Clinton Administration's policy towards space moved the accent further away from military uses of space towards greater international cooperation and the commercialization of space activities. The 1996 Clinton NSS report identified two major space-related threats: a growing threat from the proliferation of weapons of mass destruction (WMD) and their delivery vehicles and a threat of intrusions into U.S. military and commercial information systems. The document stated that greater efforts have been put into preventive measures, such as detecting proliferation activities via intelligence capabilities and stemming proliferation by limiting the spread of weapons-related materials and technologies via international regimes such as the Missile Technology Control Regime (MTCR) and the Wassenaar Arrangement on Export

[49] Ibid., 22-23.
[50] White House, *National Security Strategy of the United States*, 1993, 18.

Controls for Conventional Arms and Dual-Use Goods and Technology, but that developing the capability to defend against this kind of threats was also important. The report asserted:

> Although the intelligence community does not believe that an intercontinental-range missile threat to our homeland is likely to emerge from rogue state in the foreseeable future, we are developing a national missile defense deployable readiness program so we can respond quickly (within 2-3 years) should a sooner-than-expected threat materialize.[51]

To this end, the Clinton Administration, confirmed its commitment to "full and faithful implementation" of the ABM Treaty and, at the same time, pushed forward negotiations with Russia on an agreed demarcation between strategic and theater ballistic missiles defenses to allow the United States to develop and deploy theater anti-ballistic missile systems.

The 1996 space policy called for U.S. leadership in space through "its technical expertise and innovation." The NSS report emphasized the maintenance of an international legal regime for space, similar to the concept of freedom of the high seas as especially important. In fact, continuous freedom of access to and use of space was identified by the 1996 NSS report as one of the main U.S. security objectives in space. The document also put forth such objectives as "maintaining the U.S. position as the major economic, political, military and technological power in space, deterring threats to U.S. interests in space and defeating aggressive or hostile acts against U.S. space assets if deterrence fails, preventing the spread of weapons of mass destruction to space, and

[51] White House, *A National Security Strategy of Engagement and Enlargement*, Chapter II "Advancing our Interests Through Engagement and Enlargement," 1996.

enhancing global partnership with other space-faring nations across the spectrum of economic, political and security issues."[52]

In September 1996, the Clinton Administration replaced President George H. W. Bush's National Space Policy of 1989 with a new National Space Policy. The new document reaffirmed the commitment of the Clinton Administration to maintain U.S. leadership role in space—not by striving to "preeminence in the key areas of space activity" as in the 1989 Bush National Space Policy—by "supporting a strong, stable and balanced national space program that serves our goals in national security, foreign policy, economic growth, environmental stewardship and scientific and technical excellence."[53] On the list of goals of U.S. space activities, the national security objectives were moved to the second place in the 1996 National Space Policy from the first place in the 1989 National Space Policy.[54] Similarly to the 1989 document, the new National Space Policy directed the United States to develop and operate space control capabilities in order to ensure freedom of action in space. Unlike its predecessor, it suggested enhancing these capabilities with "diplomatic, legal or military measures to preclude an adversary's hostile use of space systems and services."[55] With regard to anti-ballistic missile defense, the new National Space Policy also differed from the 1989 National Space Policy, which had pledged to develop SDI. The new document made a commitment to develop a theater missile defense capability, a national missile defense deployment readiness program, and an advanced technology program to provide options for improvements to

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[52] Ibid.
[53] White House, *National Space Policy Fact Sheet*, September 19, 1996, http://www.au.af.mil/au/awc/awcgate/sep96.htm (accessed 11.13.03).
[54] The 1996 document put on top of the list enhancement of knowledge of the Earth, the Solar system and the Universe through human and robotic exploration. See U.S. President, NSPD-1, "National Space Policy," 1989, and White House, *National Space Policy Fact Sheet*, 1996.
[55] White House, *National Space Policy Fact Sheet*, 1996.

planned and deployed defenses.[56] It represented a major roll back of the SDI project, which had envisioned, among other things, placing weapons in outer space.[57]

While the 1996 National Space Policy sharply differed from the 1989 National Space Policy on the national security approach, it embraced all the important elements of the Bush's policy towards commercial space activities. As the commercialization of space had progressed significantly since the end of the Cold War, the enhancement of U.S. economic competitiveness in space activities in the face of emerging commercial space competitors became the fundamental U.S. goal. International cooperation in space activities was expanded in the 1996 National Space Policy to include Russia and other former republics of the Soviet Union and was envisioned not only to support American national security and foreign policy objectives, but also to create new opportunities for U.S. commercial space activities. All in all, the objectives of the Clinton Administration's space policy amounted to a cooperative, liberal approach to space issues in accordance with the grand strategy of engagement and enlargement. This approach found its further development in later NSS documents of the Clinton Administration.

The 1998 and 1999 NSS reports reiterated the main positions of the 1996 National Security Strategy. A major development reported in the documents was the signing by the United States, Russia, Belarus, Ukraine, and Kazakhstan of five agreements relating to the ABM Treaty. These agreements on demarcation between national and theater

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[56] Ibid.

[57] The Strategic Defense Initiative Organization (SDIO) established in April 1984 released its first study of the architecture for the strategic defense in October 1985. The study favored a design that contained 7 layers of defenses and thousand of defense satellites, targeting incoming missiles at different stages of their flight: boost, post-boost, midcourse, and terminal phase. Later architectures also included emplacement of space weapons. See, for example, Crockett L. Grabbe, *Space Weapons and the Strategic Defense Initiative* (Ames: Iowa State University Press, 1991), 13, 151.

ballistic missile defenses reaffirmed the commitment of all sides to the ABM regime.[58] The signing of these agreements, however, suggested not only the five countries' commitment to the ABM treaty as a cornerstone of strategic stability,[59] but also a weakening of the ABM regime. The new agreements would allow the United States to deploy a theater missile defense (TMD) while remaining in compliance with the modified ABM treaty.

The 1998 document acknowledged that in the 1990s space emerged "as a new global information utility with extensive political, diplomatic, military and economic implications for the United States."[60] There was an "ever-increasing migration of capabilities to space as the world seeks to exploit the explosion in information technology."[61] Some of the uses of space assets included telecommunication, telemedicine, international financial transactions, global entertainment, news, education, weather forecasting and satellite navigation. The document reported that over 500 U.S. companies were engaged in the space industry with revenues of $77 billion in 1996. Space became an important commercial medium upon which many sectors of the American economy had grown to depend. The growing importance of outer space was also reflected in the Clinton Administration's White Paper on Critical Infrastructure Protection.[62]

The shift of focus in U.S. space policy towards commercial uses of space did not mean a diminished importance for the security aspects of space activities. The main objectives of the 1998 space policy were identified as: (1) maintaining the U.S.

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58 White House, *A National Security Strategy for a New Century*, 1998, 10.
59 White House, *A National Security Strategy for a New Century*, 1999, 7.
60 White House, *A National Security Strategy for a New Century*, 1998, 25.
61 Ibid.
62 See U.S. President, PDD 63, "White Paper on Critical Infrastructure Protection," 1998.

leadership in space by promoting development of the full range of space based capabilities, (2) protecting U.S. national security, including by maintaining a capability to counter space systems and services that could be used for hostile purposes against U.S. ground, air and naval forces, command and control system or other capabilities critical to national security, and (3) promoting U.S. prosperity and well-being.

From the 1998 President's report on U.S. national security strategy to the 1999 report, an important shift in characterization of U.S. space interests occurred. The 1998 document stated: "Unimpeded access to and use of space is essential for protecting U.S. national security, promoting our prosperity and ensuring our well-being in countless ways."[63] In the 1999 National Security Strategy, outer space was recognized as U.S. vital national interest: "Unimpeded access to and use of space is a vital national interest—essential for protecting U.S. national security, promoting our prosperity and ensuring our well-being."[64] According to the National Security Strategy, there are three categories of national interests: vital interests, important national interests, and humanitarian and other interests. Vital interests are "those of broad overriding importance to survival, safety and vitality of our nation."[65] Thus, the importance of outer space was recognized as one of the highest U.S. national interests.

While the significance of space was highlighted in the official security documents, the pronouncements of military space activities were toned down in the President Clinton's NSS reports. Plans for further military uses of space continued developing at the Department of Defense. In 1996, the Chairman of the Joint Chiefs of Staff issued a new conceptual guide *Joint Vision 2010* for the future building of U.S.

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63 Ibid.
64 White House, *A National Security Strategy for a New Century*, 1999, 12.
65 Ibid., 1.

military forces. The task of this document was to incorporate—at the conceptual level—the potential of unfolding revolution in information and communication technology into future military capabilities. The four main concepts espoused by the document—"dominant maneuver," "precision engagement," "full dimensional protection," and "focused logistics" providing for the achievement of " full spectrum dominance"—called for greater reliance on space-based capabilities.[66] The document also contained a commitment to the development of a theater missile defenses as one of the joint war-fighting capability objectives.[67] These concepts were further elaborated in *Joint Vision 2020* published in 2000. The goal of this document was to transform the U.S. military into a force that would be dominant "across the full spectrum of military operations – persuasive in peace, decisive in war, preeminent in any form of conflict."[68] The document stated that due to the changes in the information environment information superiority became a "key enabler of the transformation of the operational capabilities of the joint force and the evolution of joint command and control."[69]

Simultaneously, the document drew attention to the fact that commercialization of space activities made available satellite images over the Internet widely available, giving potential adversaries new capabilities at relatively low cost. Asymmetric approaches aimed at exploiting U.S. vulnerabilities were identified as possibly "the most serious danger the United States faces in the immediate future." The danger included long-range ballistic missiles and other direct threats to the U.S. citizens and territory.[70] Therefore,

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66 U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, *Joint Vision 2010*, 1996, 20-27, http://www.dtic.mil/jv2010/jv2010.pdf (accessed 01.19.04).
67 Ibid., 23.
68 U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, *Joint Vision 2020*, June 2000, 1, http://www.dtic.mil/jointvision/jv2020.doc (accessed 01.19.04).
69 Ibid., 4.
70 Ibid., 6.

the main goal of the U.S. forces was identified as creation and maintenance of capabilities necessary to deter, defend against, and defeat any adversaries, including those pursuing asymmetric advantages. This is what in the document is referred to as the strategy of "full spectrum dominance." Full spectrum dominance called for freedom of operation for U.S. forces in all domains—space, sea, land, air, and cyberspace—and for a capability to project power rapidly worldwide.[71] As one of the operational objectives, the *Joint Vision 2020* requested theater missile defenses and "possibly limited missile defense of the United States."[72]

Joint Vision 2020 was preceded by another important pronouncement of U.S. defense space policy—the Department of Defense Directive 3100.10 signed by the Secretary of Defense on July 9, 1999. This document replaced the 1987 DoD Space Policy of the Reagan Administration. The new DoD Space Policy took into account dramatic changes that had taken place in the security environment, including not only the end of the East-West confrontation but also the global spread of space systems, technology, and information, commercial space activities, increased international cooperation in space, and technological advances and changes in the force structure they brought about since 1987.[73] The Memorandum of the Secretary of Defense accompanying the DoD Space Policy clearly stated the position of the Department of Defense on the importance of military space activities:

> Space is a medium like the land, sea, and air within which military activities will be conducted to achieve U.S. national security objectives. The ability to access and utilize space is a vital national interest because many of the activities conducted in the medium are critical to U.S. national security and economic well-

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[71] Ibid., 8.
[72] Ibid., 33.
[73] U.S. Department of Defense, Department of Defense Directive No. 3100.10, *Department of Defense Space Policy*, July 9, 1999, 1, http://www.fas.org/spp/military/docops/defense/dodspcpolicy99.pdf (accessed 01.19.04).

> being. The globally interdependent information- and knowledge-based economy as well as information-based military operations make the information lines of communication to, in, through, and from space essential to the exercise of U.S. power.
>
> Space power is as important to the nation as land, sea, and air power. It is a strategic enabler of the National Military Strategy and Joint Vision of 2010. Space forces support the execution of strategy and the realization of doctrine by enabling information superiority through domination of the collection, generation, and dissemination of information. The command, control, communications, intelligence, surveillance, and reconnaissance (C3ISR) capabilities provided by space forces are necessary to maintain military readiness, enable implementation of the operational concepts of dominant maneuver, precision engagement, focused logistics, and full dimension protection, and support the planning and conduct of military operations.[74]

The 1999 DoD Space Policy incorporated space as the fourth medium for military operations of vital importance for the United States' security. It is noteworthy that it pointed out not only the possibility, but also the desirability of international cooperation in military uses of space. U.S. space forces were considered as an enhancer of U.S. forward presence, providing a means to support commitments, while minimizing risk to the U.S. troops on the ground. In other words, integration of space capabilities into international operations was seen as a means of strengthening U.S. defense relationships and alliances' structures, and therefore, strengthening national security.

The Department of Defense Directive 3100.10 also reflected another important aspect of the Clinton Administration's military space policy—the expanding relationship between military space activities and the growing commercial space sector. The document directed the DoD long-range planning of military space activities to ensure that commercial capabilities would be used "to the maximum extent feasible and practical (including the use of allied and friendly capabilities, as appropriate)"[75] and clearly stated the preference for commercial acquisition of space goods and services for national

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[74] Ibid., 2.
[75] U.S. Department of Defense, *Department of Defense Space Policy*, 1999, 8.

security purposes.[76] The document also called on the Department of Defense to facilitate access for the U.S. private space sector to "appropriate DoD space-related hardware, facilities, and data."[77] Furthermore, outsourcing and privatization of space and space-related tasks and functions were to be pursued "aggressively."[78] The twofold purpose of this space policy was to foster an internationally competitive, vibrant U.S. commercial space sector and provide for effective space military activities within the limits of a balanced budget.

With respect to space arms control, DODD 3100.00 confirmed the U.S. commitment to compliance with existing international law and named the MTCR as U.S. primary tool in preventing or limiting the spread of missile technology and minimizing the threat of WMD via such proliferation.[79]

All in all, the Clinton Administration's space policy was characterized by less visible pronouncements of military space activities at the level of the U.S. national security strategy and by the important steps taken at the level of the Department of Defense towards further incorporation of space into U.S. military structure and operations. It was also marked by the recognition of the importance of commercial space activities and an increasing reliance of the U.S. military space activities on U.S. commercial space sector.

The George W. Bush 2002 National Security Strategy, in contrast to the earlier documents issued by the Clinton Administration, contained limited reference to space issues. In the introduction, it stated:

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[76] Ibid., 11.
[77] Ibid., 10.
[78] Ibid., 12.
[79] Ibid., 15.

> We will build defenses against ballistic missiles and other means of delivery. We will cooperate with other nations to deny, contain, and curtail our enemies' efforts to acquire dangerous technologies. And, as a matter of common sense and self-defense, America will act against such emerging threats before they are fully formed.[80]

This was a concise statement of a far-reaching change in the U.S. policy towards outer space. As the global war on terrorism required, the new space policy envisioned greater reliance on space for security purposes,[81] protection against ballistic missiles, defense of space assets, and transition to real action towards realization of this policy.

The George W. Bush's space policy contained in the 2002 NSS report was issued after the Rumsfeld Commission assessing United States' National Security Space Management and Organization had published its report and recommendations with respect to space security activities.[82] The Commission concluded that the U.S. security and well-being depended on the ability of the United States to operate in space and recommended to elevate space to the top of the national security agenda.[83] It identified three main U.S. security interests in space: (1) promoting the peaceful use of outer space, (2) using the U.S. potential in space in support of domestic, economic, diplomatic and national security objectives, and (3) developing and deploying the means to deter and defend against hostile acts directed at U.S. space assets and against the uses of space to threaten U.S. interests. The Commission envisaged space as a crucial medium, that would allow the United States to transform its military into a modern force able to deter and defend against evolving threats to the U.S. homeland, its forces and allies abroad and

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[80] White House, *National Security Strategy of the United States of America*, Introduction, 2002.

[81] Ibid., Chapter 9 "Transforming America's National Security Institutions to Meet the Challenges and Opportunities of the Twenty-First Century," 2002.

[82] Commission to Assess United States National Security Space Management and Organization, Report, Executive Summary, 2001. The Commission was chaired by Donald Rumsfeld from its inception until December 28, 2000, when he was nominated for the position of Secretary of Defense by President-elect George W. Bush.

[83] Ibid., 9.

U.S. interests in space. The Commission found that problems of growing dependence on outer space, burgeoning opportunities, and threats from space were not adequately addressed and that, as a result, the United States was vulnerable to a "Space Pearl Harbor."[84] It called on the U.S. government to revise national space policy, support commercial space activities so that the United States would remain the world's leader in space, and suggested the consideration of weapons in space in order to defend the United States and its interests:

> The Commissioners believe that the U.S. Government should vigorously pursue the capabilities called for in the National Space Policy to ensure that the President will have the option to deploy weapons in space to deter threats to and, if necessary, defend against attacks on U.S. interests.[85]

Extending deterrence and defense in outer space would require the development and deployment of military capabilities for operation to, from, in and through space. The report directly pointed out that the capability of projecting power through and from space in response to events anywhere in the world would not only provide for a much stronger deterrent but also would give the United States an "extraordinary military advantage" in a possible conflict.[86] Simultaneously, the report recommended establishing "rules of the road" for military uses of space.[87]

It was after this report and the tragic events of September the 11th, 2001, that President Bush gave Russia a six-month notice of his intent to withdraw from the ABM Treaty and proceed with plans to develop and deploy a National Missile Defense.[88] This

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[84] Ibid., 15.
[85] Ibid., 12.
[86] See Commission to Assess United States National Security Space Management and Organization, Report, 2001, Chapter III "U.S. Objectives for Space," 33.
[87] Ibid., Executive Summary, 13.
[88] Under Article XV of the ABM Treaty the Treaty was of unlimited duration but Parties could withdraw from the treaty "if it decides that extraordinary events related to the subject matter of this Treaty have

notice was given on December 13, 2001 and by June 13, 2002 the six-month period expired, opening the door for the weaponization of outer space.[89]

In the National Security Presidential Directive NSPD-23, issued on December 16, 2002, the new policy of the U.S. government on ballistic missile defense was promulgated. In response to the changed security environment after the September 11th events, the Bush Administration pledged to develop and deploy ballistic missile defense with the date for the beginning of the deployment of a set of missile defense capabilities scheduled for 2004. Ballistic missile defense was envisaged in the document as a part of a "new triad composed of long-range conventional and nuclear strike capabilities, missile defenses, and a robust industrial and research development infrastructure."[90] The document reported that the artificial distinction between "national" and "theater" missile defenses was eliminated. According to the document, the capabilities planned for operational use in 2004 and 2005 included ground-based interceptors, sea-based interceptors, additional Patriot (PAC-3) units, and sensors based on land, at sea, and in space. Possible improvements of these components included the option of developing and testing of space-based defenses. Missile defense cooperation was envisioned for the closest allies and as a vehicle for building new relationships with states like Russia. In

jeopardized its supreme interests." See "Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," Article XV.

89 The ABM Treaty prohibited development, testing and deployment of space-based components as part of an ABM system "to counter strategic ballistic missiles or their flight elements in flight trajectories". It did not prohibit space-based anti-satellite weapons, for which the door was open even during the period covered by the ABM Treaty. Acceptance of the principal and practice of satellite reconnaissance reflected in the treaty's non-interference clause supported conditions in which ASAT weapons were not seen as a necessity by the two superpowers. Thus the utility of the ABM Treaty for preventing of the weaponization of space was of a limited nature, possibly more symbolic than real. See "Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," Article II. On the limited role of the ABM Treaty in averting an arms race in outer space see von Kries, 2002, 175-178.

90 See U.S. President, National Security Presidential Directive 23, "National Policy on Ballistic Missile Defense," December 16, 2002, http://www.fas.org/irp/offdocs/nspd/nspd-23.htm (accessed 11.13.03).

order to stimulate cooperation, the United States pledged to implement the MTCR in a manner that would not impede missile defense cooperation.[91] The MTCR, no longer seen as a primary tool for dealing with the threat of proliferation of missile systems and technology, was nonetheless considered as playing a helpful role in reducing the threat of missile proliferation complementary to the role that would be played by missile defenses.

All in all, the evolution of the U.S. space security interests has made almost a full circle from the Reagan's SDI and leadership in space to George W. Bush's National Ballistic Defense project and plans for development of space capabilities to fulfill space support, force enhancement, space control and space force application missions.

Thus, the following overall conclusions follow from the present analysis: First, in the post-Cold War decade, under the conditions of unipolarity U.S. security strategy evolved form a hesitating primacy to an assertive primacy, with the balance between economic and security priorities changing from the Clinton Administration's security through economic strength to the George W. Bush Administration's economic strength through security and introduction of preemption in addition to deterrence and defense as a component of U.S. security strategy. Second, the U.S. space security interests in the post-Cold War decade also transformed from President Bush's commitment to SDI to President George W. Bush's NMD and plans for space control and development of space war-fighting capabilities within the strategy of "full spectrum dominance." Third, the commercialization of outer space launched by the Reagan Administration as a top-down policy led in the 1990s to the emergence of a dynamic commercial space sector. U.S. commercial space systems became a part of the U.S. vital infrastructure, on which the

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[91] White House, *Fact Sheet on Missile Defense*, May 20, 2003, Online Publication, http://acronym.org.uk/docs/03/05/doc16.htm (accessed 10.29.03).

U.S. economy, government and military became increasingly dependent.[92] Fourth, the Clinton Administration's dual space policy that fostered an internationally competitive, vibrant U.S. commercial space sector and effective space military activities resulted in expanding relationship between the U.S. military and the commercial space sector: in 1998, outer space was identified "as a new global information utility with extensive political, diplomatic, military and economic implications for the United States;"[93] in 1999, outer space was incorporated as the fourth medium for military operations of vital importance for the United States' security and was recognized as a vital U.S. interest;[94] in 2000, commercial space activities were recognized as raising serious security concerns and, finally in 2001, the U.S. government was advised to take measures to prevent a "Space Pearl Harbor," including via the weaponization of space. Fifth, the U.S. uses of outer space—both for commercial and military purposes—became an integral part of the overall U.S. strategy aimed at maintaining its dominant position in the world both economically and militarily. And finally, an important shift occurred in U.S. attitude towards arms control as an instrument of security policy: the United States became more willing to take unilateral steps in defending its vital interests in space, and in providing for its security more generally. In sum, the United States increasingly came to consider the command of outer space as a foundation of its dominant position in the world.

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92 Doerer, 2000.
93 White House, *A National Security Strategy for a New Century*, 1998, 25.
94 White House, *A National Security Strategy for a New Century*, 1999, 12.

CHAPTER VI

RUSSIA'S SECURITY STRATEGY AND SPACE INTERESTS IN THE POST-COLD WAR ERA

The goals of this chapter are, first, to evaluate Russia's shift in security strategy after the end of the Cold War and show that it evolved over time to become more in line with the security approaches of the liberal democracies, at least as reflected in official writings; and second, to analyze how Russia's security interests in general, and in regard to outer space in particular, have changed since the end of the Cold War. This analysis is based on official Russian security-related documents and pronouncements—the Russian Federation Law "On Security" of 1992, the 1993 Military Doctrine of the Russian Federation, the 1997 National Security Concept of the Russian Federation, the 2000 National Security Concept and Military Doctrine—and some other important policy publications. This chapter asserts that although it is difficult to discern grand strategy throughout most of the period that followed the end of the Cold War in Russia, Russia's transition to a new security approach is a significant enough development to have an effect on Russia's security interests. Furthermore, it is argued that, as Russia's economic and social conditions deteriorated, the sources of its security concerns and, therefore, its focus became increasingly inward-oriented. Over time Russia increasingly put an emphasis in its security strategy on the improvement of domestic economic conditions as the foundation of all other security-related solutions, including its space security.

RUSSIA'S CHANGING SECURITY APPROACH AFTER THE COLLAPSE OF THE SOVIET UNION: TOWARDS A LIBERAL SECURITY CONCEPT AND NATIONAL SECURITY INTERESTS

Russia emerged from the collapsed Union of the Soviet Socialist Republics in December 1991 as the heir to the large part of the Soviet military and Soviet space program. At that time, Russia faced the fundamental task of reforming its political system and its centrally planned economy, and a task of finding a new national identity and new place in the international community. The new Russia had to reassess its security environment, deal with some old security issues, meet new challenges, and reform its military.

Even as Russia was undergoing a dramatic transformation in the aftermath of the collapse of the Soviet Union, its first post-Cold War official assessment of the new security environment appeared in 1992.[1] The emergence of the Russian republic set the stage for revolutionary changes to take place in the security and military fields. For the first time since 1917, both civilian and military leaders could reassess Russia's security interests in general, and military security in particular, free of ideological constraints and Soviet dogmatism. The task they faced, however, was immense: new security interests had to be formulated based on Russia's national interests—something that previously was largely missing. During the Soviet era security interests were based on the premises of the Marxist theory of class struggle. The then Russian Foreign Minister, Andrei Kozyrev, admitted:

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[1] The last Soviet draft military doctrine was issued in 1990. The end of the Cold war and the dissolution of the Warsaw Pact and then of the Soviet Union itself made the reformulation of the security and military doctrines an urgent necessity but more pressing political issues postponed the commencement of the deliberations. A draft of the new military doctrine emerged in May 1992. See Mark E. Kipphut, "Re-Clawing the Bear, Russia's New Military Doctrine," http://www.globalsecurity.org/military/library/report/1993/KME.htm (accessed 06.25.04).

> It is particularly difficult for us to return to "normality." Our country was hostage to messianic ideas before, especially in the 20th century, ideas that eclipsed and replaced our national interests. The communist idea led to expansion and instinctive confrontation with the surrounding world and imposed ideological models on it.[2]

Despite the difficulties of this task, the new federal law "On Security" that for the first time tried to define the very notion of Russia's national security and outlined Russia's security concept in basic terms was adopted in 1992. The document also defined the threats to the newly established Russian Federation and described various military means available for its defense, organizational aspects of the provision of Russia's security and its legal foundations. In sharp contrast to the Soviet documents on security the notion of security relied on individual and national values:

> Security is the situation whereby the vital interests of the individual, society, and state are secure from internal and external threat. The following are ranked as fundamental objects of security: the individual—his rights and freedoms; society—its material and spiritual assets; the state—its constitutional system, sovereignty, and territorial integrity.[3]

The 1992 Federal Law "On Security" created a National Security Council whose task was to assess changing security environment, formulate strategy to provide security of the Russian Federation and, when appropriate, issue changes to security doctrine. The Council was to include representatives from the Russian Parliament, and the Council of Ministers and to be chaired by the President. The new legislation codified the key role of civilian officials in defining objectives for national defense. The law entrusted the Supreme Soviet with the responsibility to oversee the formulation of military policies and doctrine of the Russian Federation.[4] It envisaged that the President would submit the

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[2] Andrei Kozyrev, "Main Tasks," *Trud*, February 28, 1992, 3. Translated in *Daily Reports*, Central Eurasia, FBIS-SOV-92-0-40, February 28, 1992, 29-30.

[3] Russian Federation, Public Law, "On Security," Russian Federation Law No. 2646-1, 1992, *Rossiyskaya Gazeta*, May 6, 1992, 5. See *Daily Reports, Central Eurasia*, FBIS-SOV-92-088, May 6, 1992, 34-38.

[4] Ibid.

military doctrine to the Russian parliament for consideration. The role of the Defense Ministry was limited to preparing proposals regarding military policies and doctrine for the Supreme Soviet and the President, and participating in discussions and further deliberations. Thus, the role of the military was circumscribed and a new relationship between the military and the civilian leadership was established. Furthermore, Russia's democratic transformation laid the foundation for a wide spectrum of ideas and opinions to be expressed and discussed with the unprecedented participation of civilian strategists, academicians, journalists, politicians, and the broad public.

In May 1992, the newly formed Security Council presented the first draft of the military doctrine—three weeks after the announcement of the new security concept. The new draft doctrine dealt with the dramatically changed security environment of the early 1990s and represented a major step forward in identifying Russia's new threats. International challenges were seen as coming from potentially provocative actions such as (1) efforts by some states to dominate the world community; (2) the presence of powerful armed forces in a number of states, and especially their concentration near Russia's border; (3) instability of the international military-political situation and (4) efforts to use economic or military blackmail against Russia.[5] After months of debates, in November 1993, a revisited document the "Basic Provisions of the Military Doctrine

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[5] In late May 1992, the new Russian Defense Minister, General of the Army Pavel Grachev, chaired a four-day conference at the General Staff Academy in Moscow, in which leading military theorists took part. The results of this conference were made public in July 1992 when presentations made at the conference were published in one of the leading journals of armed forces *Voennaya Mysl'*. It was the first attempt in the post-Cold War era to define the current and emerging threats, political-military doctrine, and structure of the armed forces for the new Russia. See Pavel Grachev, "Basic Content of Russia's Military Doctrine and of the Russian Armed Forces Organizational Development Concept," *Voennaya Mysl'*, July 10, 1992. See translation in FBIS/JPRS, *Central Eurasia Reports*, September 30, 1993, 58-62. Shortly, a conference was held at the Russian Academy of Science on Russia's security issues, in which civil experts took part in order to make a civilian input on security matters. See A. Yegorov, "A Conference in the Russian Academy of Science: There were more Declarations than Recommendations," *Krasnaya Zvezda*, July 4, 1992, 2. See translation in JPRS Reports, JPRS-UMA-92-026, July 15, 1992, 46. It took seventeen months to complete the work and the debate on the new military doctrine.

of the Russian Federation" was finally adopted.[6] This document was envisioned as an integral part of the security concept of the Russian Federation for a transitional period—the period of establishing the new Russian statehood, the period of domestic democratic reforms and the restructuring of the whole system of international relations after the end of the Cold War.[7] This document included all major issues in Russia's security and defense agenda and, despite the fact that it raised much controversy and diverging views on the significance and interpretation of particular trends in Russia's security policy, it represented Russia's first attempt to free its security thinking of ideological approaches, analyze new security environment from a national perspective and formulate clear national security priorities.

First, the 1993 Doctrine promulgated key political principles on which military security should rely and elaborated on "the prevention of wars and armed conflicts, on military organizational development, on country's defense preparation, on the

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[6] The Security Council of the Russian Federation considered *Basic Provisions of the Military Doctrine of the Russian Federation* at its sessions on 3 and 6 October 1993. The Russian Federation Security Council approved the finalized document on November 2, 1993. *Basic Provisions of the Military Doctrine of the Russian Federation* was then adopted by edict No. 1833 of the President of the Russian Federation on 2 November 1993. Only exerpts of the document were published for the public. The document consists of an introduction and three sections: the political foundations; the military foundations; and the military-technical and economic foundations of the military doctrine, and a conclusion, http://russia.shaps.hawaii.edu/security/russia/russia-mil-doc.html (accessed 11.25.03). Term "doctrine" has different defitions in the Russian and American usage. The official Russian defention of military doctrine is "a nation's officially accepted system of scientifically founded views on the nature of modern wars and the use of armed forces in them, and also on the requirement arising from these views regarding the country and its armed forces being made ready for war." Miliatary doctrine answers the following five questions: (1) Who is the enemy in a probable war? (2) What is the probable character of a war, and what will be its aims and tasks? (3) What forces will be necessary to fulfill these tasks, and what direction will military development follow? (4) How should preparation for war be carried out? (5) What will be the means of warfare?

[7] The transitional period was not defined but efforts in organizational development cover a period until the year 2000. The reference to the transitional character of the document suggests that many of the issues put forth in it are open for discussion and further development. According to James F. Holcomb, this makes the new doctrine more akin to a "white paper" than to a traditional Soviet "military doctrine." See James F. Holcomb, "The Implications of Russia's Military Doctrine," in James F. Holcomb and Michael M. Boll, *Russia's New Doctrine: Two Views*, Strategic Studies Institute, United States Army War College, Carlisle Barracks, July 20, 1994, http://www.fas.org/nuke/guide/russia/doctrine/rusnudoc/pdf (accessed 11.26.03).

organization of countermeasures to threats to state's military security, and on the utilization of the Russian Federation Armed Forces and other troops for the defense of the Russian Federation's vitally important interests."[8] The new doctrine attempted to deal with the consequences of the end of the Cold War and the collapse of the Soviet Union. Its goals included the following: to restructure, withdraw from territories of other states, and reduce the armed forces, during the first phase; and in the second phase, to create a new military infrastructure. It affirmed Russia's commitment to the principles of peaceful settlement of international disputes, respect for sovereignty and the territorial integrity of states, noninterference in their internal affairs and announced that the Russian Federation "regards no state as its enemy" and that its military posture is defensive. It concluded that the immediate threat of direct aggression being launched against the Russian Federation considerably declined under the new international conditions, but did not disappear completely. Armed conflicts arising from social, political, territorial, religious, national-ethnic conflicts, including those within Russia itself or neighboring states were seen as posing a particular danger to Russia's security. It stated that ensuring military security of the Russian Federation and its vitally important interests depended first and foremost on the domestic reforms of economic, political, and social spheres.

The 1993 document listed a number of external "military dangers" that included a danger of the proliferation and use of weapons of mass destruction against the Russian Federation, a danger from strategic instability caused by violations of international arms control accords and agreements, expansion of military blocs and alliances, and

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[8] President of the Russian Federation, "Basic Provisions of the Military Doctrine of the Russian Federation," Edict No. 1833 of the President of the Russian Federation, 2 November 1993, published in *Rossiiskie Vesti*, No. 18, November 19, 1993: 1-2, in FBIS-Sov-93-222-S, November 19, 1993: 1-11, http://russia.shaps.hawaii.edu/security/russia/russia-mil-doc.html, accessed 11.25.03.

international terrorism. In order to safeguard the military security of the Russian Federation, the 1993 Doctrine set out a course for international cooperative approaches: on development of bilateral and multilateral accords among states renouncing power politics and rejecting the use of threat of force among states involved in such accords, on wide participation in collective security structures, on international collaboration for the creation of a mechanisms effectively dealing with proliferation of weapons of mass destruction and means of their delivery; on promotion of the "multilateralization" of talks on nuclear disarmament; and on broadening of confidence-building measures in the military security realm and preservation, and the strengthening of the body of arms control treaties.[9]

The issue at the center of the debate on the 1993 military doctrine was Russia's new nuclear weapons posture. The new doctrine abandoned Soviet "no-first use" and non-use of nuclear weapons against non-nuclear states.[10] It became clear quite early in the post-Cold War transformation that, while Russia reformed its political, economic and social systems and the military, its conventional forces would not be fully able to provide Russia's security and, therefore, Russia would have to rely more on its nuclear arsenal as

[9] President of the Russian Federation, "Basic Provisions of the Military Doctrine of the Russian Federation," Part 2 "Political Bases of the Military Doctrine, 1993.

[10] The Doctrine states that the Russian Federation will not use its nuclear weapons against any state-party to the Treaty on the Non-Proliferation of Nuclear Weapons which does not have nuclear weapons except: (a) when there is an armed attack against the Russian Federation, its territory, Armed Forces and other troops, or its allies by any state which is connected by an alliance agreement with a state that does possess nuclear weapons; and (b) when there are joint actions by such a state with a state possessing nuclear weapons in the carrying out or in support of any invasion or armed attack upon the Russian Federation, its territory, Armed forces and other troops or its allies. In other words, according to this new nuclear policy, Russia can use its nuclear weapons against any nuclear power, any non-nuclear ally of a nuclear power, any non-nuclear non-aligned state, acting militarily together with a nuclear power, and any non-nuclear non-aligned state, not acting together with a nuclear power, if that state is not a party to the 1968 NPT. See President of the Russian Federation, "Basic Provisions of the Military Doctrine of the Russian Federation," Section 2 titled "Political Bases of the Military Doctrine," 1993. See also Nikolai Sokov, "An Assessment of the Draft Russian Military Doctrine," Nuclear Threat Initiative, October 1999, Online Publication, http://www/nti.org/db/nisprofs/over/doctrine.htm (accessed 11.25.03).

a means of deterring military attacks against its territory or its vital interests.[11] Although this shift in Russia's nuclear posture aroused great concerns abroad, it was simply put in line with that of NATO's nuclear posture. This posture was supposed to recognize and reflect the fact that the primary role of nuclear weapons was deterrence. However, according to some security experts, it could indicate a step backward from the previously practiced norm of "no-first-use" of nuclear weapons—a step towards actual use of nuclear strategic arsenal against a conventional attack. The timing of this shift has been attributed to lessons Russia drew from the first Gulf War.[12] The provision for the use of nuclear weapons in response to a conventional attack was a response to the threat posed by highly accurate long-range conventional weapons.

As a corollary of this fundamental shift in Russia's nuclear weapons policy, the 1993 doctrine identified "the actions of other countries which hinder the functioning of Russian systems for the support of the strategic nuclear forces and of state and military command and control, above all, their space component" as one of the factors that transform a military danger into an immediate military threat.[13] Therefore, in the first public statement on its military security, Russia identified a threat to its space assets as one of the primary threats and announced as one of the military-technical priorities for the provision of military security of the Russian Federation "the development and production of highly efficient systems for the command and control of troops and

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[11] This was considered a controversial policy shift. It is beyond the scope of this study to analyze the new Russian nuclear posture adopted in the 1993 military doctrine. See critique of Russia's new nuclear posture by Alexei Arbatov, "Russian Military Doctrine and Strategic Nuclear Forces to the Year 2000 and Beyond," Paper presented at the conference "Russian Defense Policy Towards the Year 2000," Naval Postgraduate School. Monterey, California, March 26-27, 1997, http://www.fas.org/nuke/guide/russia/doctrine/arbatov.htm (accessed 11.26.03). See also Holcomb and Boll, 1994.

[12] James F. Holcomb, "The Implications of Russia's Military Doctrine," in Holcomb and Boll, 1994.

[13] President of the Russian Federation, "Basic Provisions of the Military Doctrine of the Russian Federation," Section 2 "Political Bases of the Military Doctrine," 1993.

weapons, communications, intelligence, strategic warning, electronic warfare, and precision, mobile, non-nuclear weapons, as well as systems for their information support."[14] This reflected Russia's growing reliance on space for security in parallel with its increasing reliance on nuclear forces. At the same time the military space activities were to be confined—according the law "On Space Activity" and "On the Priorities of the Federal Space Policy" adopted in 1993—to "the use of space systems for military command and control, communications, intelligence, and other types of backup for the Armed Forces."[15]

The new security concept and military doctrine of the early 1990s ushered in a revolution in Russia's security approach to match the fundamental changes that had occurred in the country and abroad after the end of the Cold War. Russia transformed its security approach from being based on ideological principles of Marxist class struggle to being based on Russian national interests: military doctrine became a part of the overall national strategy. In the documents of the early 1990s, Russia outlined measures that could be construed as aimed at bringing Russia into the community of liberal democracies. The dissolution of the Warsaw Pact and then the Soviet Union itself, as well as the lessons learned from the first Gulf War led to the shift in Russia's nuclear posture and an increase in the importance of Russia's military space segment as reflected in Russia's first official promulgations of its security concept and military doctrine in the post-Cold War era.

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[14] President of the Russian Federation, "Basic Provisions of the Military Doctrine of the Russian Federation," Section 4 "Military-Technical and Economic Foundations of Military Doctrine," 1993.

[15] Russian Federation, Supreme Soviet, "On the Priorities of Russian Federation Space Policy," Resolution of the Russian Federation Supreme Soviet No. 4878-1, April 27, 1993. Space activities for military purposes were more clearly defined by the Law of the Russian Federation "On Space Activity," Article 4 "The Principles of Space Activity," August 20, 1993.

RUSSIA'S SECURITY APPROACH UNDER THE CONDITIONS OF DEEPENING CRISIS: "FIRST USE" AND PREEMPTIVE STRIKES

The need to revise Russia's security concept became apparent by the mid-1990s, when the euphoria that had followed the end of the Cold War and overly optimistic hopes for a new emerging world order and Russia's own political, economic and social reforms had dissipated. The new Security Concept was signed by President Yeltsin on December 17, 1997. It acknowledged rapid changes, taking place in the international arena, and identified two major, mutually exclusive trends shaping the emerging new world order: (1) the trend towards a multipolar world and integrational processes with multilateral approaches to governance of international affairs, and (2) the trend towards the creation of the international system based on unilateral, and even military-coercive approaches to international affairs, with the first trend being the dominant one.[16] While the overall international conditions were favorable for "demilitarization" of international relations and a threat of direct aggression against the Russian Federation was seen as diminished,[17] a number of developments within Russia and in the international system raised security concerns.

The 1997 Security Concept emphasized that the economic crisis in the Russian Federation was the main source of Russia's security threats. It described it as:

> ... [T]he significant contraction in the manufacturing sector, decline in investment and innovation activities, destruction of the scientific and technical potential, stagnation in the agricultural sector, disarray in the financial and monetary systems, the decline of the federal budget's income, increase of the federal debt... an increase of the share of the fuel and energy sector, formation of the economic model based on the exports of fuel and raw materials and imports of equipment, food, and consumer goods..., the outflow of capital from Russia and strategically important resources under the conditions of extremely

[16] See President of the Russian Federation, "National Security Concept of the Russian Federation," Adopted by the Presidential Decree No. 1300, December 17, 1997, Section I "Russia in the World Community," http://www.armscontrol.ru/start/rus/docs/snconold.htm (accessed 11.07.03).
[17] Ibid., Section III "Threats to National Security of the Russian Federation."

> inefficient or criminal utilization of profits, outflow of highly skilled cadres and intellectual property from Russia...[18]

It maintained that ensuring Russian national interests was possible only on the basis of stable domestic economic growth. Thus, by the mid-1990s, it became clear that Russia's key security concerns and interests lay in the economic sphere.

Among the main "external dangers," the new concept identified attempts by "some states" to preclude, or impede, Russia's becoming one of the influential centers in a mutlipolar international system. The document expressed a clear preference for a multipolar world order and considered a trend towards uniplority—an international system "based on domination of some Western countries under the leadership of the United States and aimed at unilateral, above all military-coercive solution of key problems in world politics in circumvention of fundamental norms of international law"[19]—as a negative development that contradicted with its national interests. The 1997 Concept still considered the world order as evolving and the trend towards unipolarity existing alongside a more positive trend towards a multipolar international system with interstate relations based on economic and political cooperation and integration, and improvements in the mechanism of international governance.

The proliferation of nuclear and other weapons of mass destruction, the formation of new military coalitions near Russia's borders or the expansion of existing military alliances towards Russia's borders, above all the expansion of NATO to the East, the growing threat of terrorism, and the low efficacy of the international mechanisms supporting international security were also listed as external threats.[20] It furthermore

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[18] Ibid.
[19] Ibid., Section I "Russia in the International Community."
[20] Ibid., Section III "Threats to National Security of the Russian Federation."

pointed out that military threats had increased due to the technological advances of some developed industrial countries and the emergence of a new generation of weapons, creating conditions for the new round of arms race and fundamental change in the forms and means of militarized conflicts. Accordingly, the new concept called for the creation of a new 21st century model of international relations for providing global, regional, and sub-regional security based on the principals of equality and indivisibility of security for all.[21] This required the establishment of a new system of Euro-Atlantic security in which a leading coordinating role would be played by the Organization for Security and Cooperation in Europe. The new model also envisioned greater efforts for creation multilateral structures for security cooperation in the Asia-Pacific region and South Asia, and greater role for the UN Security Council, strengthening of the non-proliferation regime for weapons of mass destructions and the means of their delivery. Russia reaffirmed strong allegiance to the existing arms control agreements and to the reduction of weapons of mass destruction and conventional weapons, to confidence building measures and stability enhancing measures, to international export control of goods, technologies, and military and dual-use services. This commitment to multilateral cooperative approaches to security reflected Russia's tendency to compensate for its own weakness with international security arrangements. With a deepening economic and social crisis and ongoing military reform, Russian leadership did not want or could not afford to take part in the emerging revolution in military affairs.

Thus, Russia's dependence on its nuclear forces continued to grow through the 1990s. The 1997 document confirmed that the most important task of the military forces of the Russian Federation was to deter a nuclear, as well as large scale or regional

[21] Ibid., Section IV "Provision of National Security of the Russian Federation."

conventional war and to protect its allies. Thus, the 1997 security concept stipulated that "The Russian Federation must possess nuclear forces capable of guaranteed delivery of predetermined damage to any aggressor-state or a coalition of states" and its Armed Forces, under the conditions of peacetime, must be able to defend against an air and space attack.[22] According to the concept, the Russian Federation would use its nuclear weapons when in the course of a military aggression against it "there would be a threat to the very existence of the Russian Federation as an independent sovereign state."[23] This represented another step towards lowering the threshold on the use of nuclear weapons.

The work on the concept of Russia's security continued and, as the economic situation in Russia continued to deteriorate further throughout the later half of the 1990s, the new Concept concentrated even more on Russia's internal problems. So much so that the new Security Concept signed by the acting Russian President Putin on January 10, 2000, was overwhelmingly introverted, devoting most of its attention to the economic crisis, domestic social and political instability as the main threats to Russia's national security.[24]

Despite continuous negative trends in Russia and, thus, further deterioration of Russia's security situation, some experts pointed out, as a positive development in the new document in comparison with the 1997 doctrine, a further expansion and elaboration on the liberal component. It became more consistently formulated, with the individual and its rights and interests put at the top of the priority list, then civil society, and

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[22] Ibid.

[23] Ibid., Section IV "Provision of National Security of the Russian Federation."

[24] The new 2000 National Security Concept represents an edited version of the Draft Concept adopted by the Russian Security Council on October 5, 1999. The Draft Concept in its turn was not an entirely new document but a revisited 1997 National Security Concept. The work on the new document was headed by Vladimir Putin. The then Prime Minister, Putin was in charge of amending the Concept since October 1999.

democratic governance, with the state providing law, order, and favorable conditions for the development of the individual and society.[25] At the same time, the new concept emphasized social inequality and the lack of law and order as internal threats more strongly than its predecessor and envisaged a greater role for the state, as a result. However, the state was not only to provide and oversee the fair application of "rules of the game," but also to become the engine of the economic growth. Turning the economic situation around and achieving prosperity for the people, and the country as a whole, was made an overriding priority.[26] The concept made clear that the deteriorating economic situation in the country would not allow Russia to provide adequate security.

Among military threats, the 2000 document directly pointed to the protracted process of reforming Russia's military organization and defense complex, and under-financing of national defense.[27] As in its predecessor, the 2000 Concept reaffirmed that, while the goal of military security was to provide military forces adequate for the challenges of the 21st century, national defense spending must be within rational limits.[28]

In the 2000 Concept, the optimism of the earlier versions concerning positive trends in the world and the friendly security environment was largely absent. Resulting from the analysis of deteriorating internal and external conditions and drawing lessons from Kosovo, the new document continued to relax the conditions for the use of nuclear

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[25] See, for example, Nikolai Sokov, "Putin's Russia: New Priorities in the Kremlin, Russia's New Concept of National Security," *East European Constitutional Review* 9 (winter/spring 2000), http://www.law.nyu.edu/eecr/vol9num_onehalf/feature/nationalsecurity/html (accessed 11.06.03).

[26] President of the Russian Federation, "National Security Concept of the Russian Federation," Adopted by the Presidential Decree No. 24, January 10, 2000, Section III "Threats to the Russian Federation's National Security," http://www.russiaeurope.mid.ru/RussiaEurope/russiastrat2000.html (accessed 11.07.03).

[27] Ibid., Section I "Russia's National Interests."

[28] President of the Russian Federation, "National Security Concept of the Russian Federation," 1997, Section IV "Provision of National Security of the Russian Federation," and "National Security Concept of the Russian Federation," 2000, Section IV "Provision of National Security of the Russian Federation,"

weapons. The 1997 Concept stated that the goal of Russia's Armed Forces was nuclear deterrence in order to prevent both a nuclear war or large-scale conventional war and that Russia might use nuclear weapons when "there is a threat to the very existence of the Russian Federation as an independent sovereign state," the 2000 concept envisioned "the use of all available means, including nuclear weapons to repel an armed aggression if all other measures to resolve the crisis have been exhausted or have turned out to be inefficient." If the 1997 Concept required the Russian Federation to posses a nuclear arsenal "capable of guaranteeing an infliction of damage to the desired extent on any aggressor state or a coalition of states," the 2000 concept called for nuclear forces that "are capable of guaranteeing the infliction of damage to the desired extent on any aggressor state or a coalition of states in any conditions and circumstances." Furthermore, the 2000 variant of the security concept lacked explicit negative assurances to non-nuclear weapons states. The new military doctrine developed on the basis of the 2000 security concept filled this gap with the following statement:

> The Russian Federation will not use nuclear weapons against states who are parties to the non-proliferation treaty and who do not possess nuclear weapons, except in those cases when these states attack Russian Federation, Armed Forces of the Russian Federation or other forces, its allies or a state, with which she has agreements concerning security, while being aligned with or supporting the attack of a state possessing nuclear weapons.[29]

The description of principal characteristic of global trends, including the expansion of NATO to the East and adoption by the alliance of its new strategic doctrine and real practice of using force outside the zone of their responsibility and without UN Security

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[29] President of the Russian Federation, "Military Doctrine of the Russian Federation," adopted by the Presidential Decree on April 21, 2000, Section 1 "Military-Political Foundations," *Information Bulletin,* Press Service of the President of the Russian Federation, http://russia.shaps.hawaii.edu/security/russia/r_mil_doctrine_2000.html (accessed 11.05.03).

Council sanctions,[30] and modernization of the U.S. conventional forces that started to create a large military gap between the United States and the rest of the world, resulted in the conclusion that the level and scope of the military threat were increasing and, hence, the importance of nuclear weapons for provision of Russian security also increased. In the meantime, the threshold for their use declined.[31]

As in the previous concept, the 2000 document repeated that the proliferation of WMD and the means for their delivery continued to be one of the external threats Russia faced in the international arena. In order to deal with this threat, Russia was to work towards strengthening of the nonproliferation regime.[32] It is characteristic of this document that as a means of provision of Russia's security, besides greater reliance on its nuclear arsenal, it devoted considerable attention to international cooperation and arms control as an effective form of collective international management of security affairs. Four out of twelve national objectives reiterated in the document dealt with the arms control issues such as: (1) achieving progress in nuclear arms control and maintaining strategic stability in the world on the basis of full implementation by all states of their international commitments in this area; (2) fulfilling mutual obligations to reduce and eliminate WMD and conventional arms, promoting confidence-building and strengthening stability, ensuring international export controls over dual-use and military goods, technologies and services; (3) adjusting the existing agreements on arms control and disarmament to the new international conditions, working out new agreements if necessary, on confidence-building and security; and (4) promoting the establishment of

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30 President of the Russian Federation, "National Security Concept of the Russian Federation," 2000, Section III "Threats to the Russian Federation's National Security."

31 Ibid., Section I "Russia in the World Community" and Section III "Threats to the Russian Federation's National Security".

32 Ibid., Section IV "Ensuring the National Security of the Russian Federation."

nuclear-free zones. A new point in this list is the provision to "adapt the existing arms-control and disarmament agreements to the new conditions of international relations, as well as to develop, as necessary, new agreements, first of all with respect to confidence building measures." This provision indicated Russia's shift in attitude towards arms control: on the one hand, Russia wanted more of arms control, but on the other hand, it wanted to revisit those agreements that no longer met its security requirements. In particular, the ban on ICBMs with Multiple Independently-targeted Reentry Vehicles (MIRVs), as established by the START process, was no longer considered in Russia's interests and, as START II became void after the U.S. withdrawal from the ABM Treaty, Russia is believed to have taken the direction of MIRVing those ICBMs that under the START II would have been prohibited. There is also a debate on the acceptability of Russia's self-imposed restrictions on tactical nuclear weapons.[33]

Five more objectives identified in the document called for greater cooperation via global or regional international organizations for providing Russia's security and greater international stability.[34] Thus, facing internal difficulties and greater external threats from horizontal proliferation of WMD and means of their delivery by countries seeking greater influence on international affairs and vertical proliferation of weapons and their systems by a number of developed countries, Russia turned greater attention to arms control and reliance on collective governance of international security.

Thus, as a result of Russia's domestic transformation and changes in the international system in the post-Cold War era two features of Russia's security approach became pronounced: increasing reliance on Russia's nuclear forces and progressive

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33 Sokov, "Putin's Russia," 2000.

34 President of the Russian Federation, "National Security Concept of the Russian Federation," Section IV "Ensuring the National Security of the Russian Federation," 2000.

lowering of the nuclear threshold, and greater attention to arms control. The former trend was developed still further in Russia's new draft military doctrine. In October 2003, the Ministry of Defense presented a new draft military doctrine of the Russian Federation until the year 2030 at a meeting in the Kremlin between President Putin and the Armed Forces' leadership. Although this is outside the timeframe of this study, it is an important development that emphasizes the important features of Russia's security strategy. The new document is a revised version of the military doctrine adopted in April 2000. This new version no longer referred to multipolarity as the dominant trend and no longer identified NATO and its expansion as one of the Russia's main security concerns.[35] The Defense Minister Sergei Ivanov, however, pointed out in his oral presentation of the new draft military doctrine: "If NATO is preserved as a military alliance with its existing offensive military doctrine, this will demand a radical reconstruction of Russian military planning...including changes in Russian nuclear strategy."[36] He also identified the possible direction of such reconstruction, saying that Russia would not rule out a preemptive attack anywhere if national interests demand it. The necessity of this measure was partly explained in Ivanov's presentation. While nuclear deterrence remained Russia's foundation for military security, the document emphasized that it was no longer efficient without modern conventional forces. At the meeting President Putin announced that Russia would start replacing Russia's aging nuclear arsenal that was currently in service with a considerable arsenal of new MIRVed ICBMs (SS-19 Stiletto) that are

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[35] The document has not yet been published. Information about the content of the document is based on the published reports of the representatives of media who were invited to the meeting.

[36] See Paul Ames, "NATO to Quiz Minister Over Threat," RANSAC Nuclear News, October 9, 2003, http://www.ransac.org/Project%20and%20Publications/News/Nuclear%20News%/1092003123008PM.html (accessed 12.04.03).

capable of penetrating Ballistic Missile Defense (BMD).[37] According to President Putin, this arsenal will allow Russia to provide for its military security till approximately the mid-21st century, while giving Russia's Armed Forces an opportunity to develop and deploy modern weapons systems to supplement its nuclear arsenal. The new draft military doctrine put upgrading of the Russian Federation's conventional forces on the top of the priority list. It also required the Russian Armed Forces to defend against air and space attacks and, after strategic mobilization, to be able to fight two local wars simultaneously. President Putin reaffirmed Russia's readiness to resort to preemptive strikes during the interstate Russian-German consultations held in Yekaterinburg later in October 2003. These declarations were made in reaction to the United States' new security strategy that added preemption as an important component of U.S. security strategy. They reflected the overall direction of Russia's still emerging security approach and indicated that Russia, even after a decade after the end of the Cold War and liberal reforms, did not consider itself to be a part of the U.S. led community of liberal democracies.

RUSSIA'S SECURITY INTERESTS IN OUTER SPACE

Russia's official pronouncements of national security and military doctrines only indirectly reflected Russia's concerns and interests with respect to outer space. Similar to the previous edition of the Russia's security concept, the 2000 Security Concept did not mention the ABM Treaty, Russia's main battleground for its security interests with regard to outer space as well as Russia's overall security since it became increasingly

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[37] See "Military Doctrine till the year 2030: Ministry of Defense Decided With Whom War is Needed. Putin Shares a State Secret with the Public. Align with the USA?" OPEC.RU, Expert Channel "Open Economy," News, October 3, 2003, http://www.opec.ru/news_doc.asp?d_no=42352 (accessed 10.28.03).

dependent on the nuclear strategic forces. Throughout the 1990s, Russia continued to insist that the ABM Treaty was "the cornerstone of strategic stability" and that the U.S. deployment of missile defenses would undermine stability and upset the whole body of arms control that had emerged in the past three decades. [38]

There were a number of reasons for Russia's support of the 1972 ABM treaty. First, and likely the most important, its insistence on the preservation of the ABM Treaty came from the desire to postpone the onset of an arms race in outer space and forthcoming problems with Command, Control, Communications, and Intelligence (C3I) in the context of Russia's domestic economic difficulties. According to some estimates, ensuring the effectiveness and reliability of the C3I alone would require Russia to spend at least as much on this in the next decade as all strategic weapons development and procurement for the same period combined.[39] There were no estimates what would it take to engage in an actual arms race in outer space.

Second, Russia's official reason for support of the ABM Treaty appealed to the logic of strategic deterrence during the Cold War. The ABM treaty, banning nation-wide ballistic missile defense systems in the United States and Soviet Union, provided the foundation for the Cold War model of strategic deterrence under which neither the United States nor the Soviet Union could threaten an attack on the other without facing an

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[38] Russia insisted on this vision of the ABM Treaty and it was reflected in a number of joint U.S.-Russian statements. See, for example, *U.S.-Russian Joint Statement Concerning the Anti-Ballistic Missile Treaty*, March 21, 1997, http://www.fas.org/nuke/control/abmt/text/s970321at.htm (accessed 03.19.04); see also "Second Agreed Statement Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," May 26, 1972, September 29, 1997, http://www.fas.org/nuke/control/abmt/text/abm_scc2.htm (accessed 03.19.04); and also *U.S.-Russian Joint Statement on Strategic Stability Cooperation Initiative Between the United States of America and Russian Federation*, September 6, 2000, http://www.fas.org/nuke/control/abmt/text/090600js.htm (accessed 03.19.04).

[39] Vladimir Baranovsky, "Changing Perceptions of the Military Roles in Post-Soviet Russia," in Sergey Oznobishchev and James H. Brusstar, eds., *U.S.-Russian Partnership: Meeting the New Millennium.* National Defense University Press, 1999, Online Publication, http://issuisse.ifrance.com/emmaf2/USRUS/usrp19.html (accessed 11.29.03).

overwhelming retaliatory strike. This model of deterrence, the so-called Mutual Assured Destruction (MAD), meant that the strategic balance was stable—neither side had an incentive to attack first no matter how far the confrontation went between the two superpowers in a crisis. The deployment of a nation-wide ballistic missile defense system in the United States, as opposed to the limited anti-ballistic defense allowed by the ABM Treaty, would undermine the foundation for this type of deterrence. If the United States had a capability to intercept ballistic missiles and, therefore, it did not fear retaliation, it would have an incentive to attack first. Facing nuclear devastation or a highly accurate conventional attack against its strategic forces that would leave Russia with very little to retaliate with, Russia would have an incentive to launch a preemptive strike. Based on this argument, Russia opposed steps that would undermine the ABM treaty. This opposition only deepened in the 1990s, when Russia's dependence on nuclear strategic forces increased as a result of the significantly deteriorated domestic economic and social conditions and prolonged reforms of the military.

Third, Russian military officials expressed doubts that the U.S. National Missile Defense (NMD) system would be aimed at defending against missile attacks by "rogue states" and believed that it was the Russian nuclear forces against which such defense would be primarily directed. The then Defense Minister Sergeev said:

> The results of our military-technical analysis indicate that the threat of the carrying out of a strike against the USA by intercontinental ballistic missiles launched by so-called "problem" states, which the USA sets forth as the primary reason for the development of its national ABM system, is, in reality, not being considered [i.e., it is not the real reason for the development of the national ABM system]. We do not see any [real] motives for the deployment of this national ABM system other than the striving of the USA to acquire strategic domination

> in the world. We are deeply convinced that such a deployment would be primarily directed against Russia.[40]

Fourth, Russia's opposition to the U.S. plans to modify or abandon the ABM Treaty and deploy ballistic missile defense was founded not only on the assumption that it would destroy the foundation of bilateral stability between the United States and Russia, but also on the expectation that it would undermine global strategic stability. Russia was particularly concerned with China's potential response to the U.S. global anti-ballistic missile defense. China, who had a rather limited arsenal of ICBMs, would feel its deterrent undermined. If the United States were to deploy a global Ballistic Missile Defense (BMD), China's security interests would be significantly damaged in the context of the situation with Taiwan, where China wanted to have an option of using force in order to uphold the principle of sovereignty and integrity of its territory. In its turn, Russia's security might be seriously undermined, if China was to modernize and build up its nuclear forces. Russian security experts pointed out that in order for China to maintain the credibility of its deterrent in case of the U.S. deployment of its NMD, it would have to significantly expand its missile force. Russian analyst Alexander Pikayev asserted: "Currently, the predominance of Chinese conventional weapons vis-à-vis the vast but sparsely populated Russian Far East is balanced by Moscow's superiority in nuclear weapons. China's nuclear build-up might considerably erode this superiority, further weakening Russia's position in the Far East."[41] Moreover, this buildup may prompt other countries near Russia's territory to react with nuclear buildups.

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40 Igor' Sergeev on "Military Reform, Chechnya, ABM Defense," *Vek*, Febraury 23, 2001, cited in Amy F. Woolf, "National Missile Defense: Russia's Reaction," Report for Congress, Congressional Research Service, June 14, 2002, CRS-7.

41 Alexander Pikayev, "ABM Treaty Revision: A Challenge to Russian Security," *Disarmament Diplomacy* 44, March 2000, Online publication, http://www.acronym.org.uk/dd/dd44/44abm.htm (accessed 06.06.04).

Furthermore, the BMD capabilities that the United States plans to deploy to protect its homeland against a ballistic missile attack are intimately connected in technology and in a military-strategic sense with anti-satellite capabilities.[42] Even without a BMD space-based component, BMD would impinge on space security and, therefore, is bound to set off an arms race in outer space. China would feel particularly compelled to develop its own ASAT capabilities and space weapons in response to the U.S. deployment of a space-based NMD.[43]

Former Defense Minister Sergeev, speaking about the Clinton Administration's limited NMD maintained that such a system would be the "first step towards the future emergence of a multifunctional global system for combating all types of ballistic, aerodynamic, and space targets and subsequently also surface and land targets. This comprehensive defense system will be directed first and foremost against potential of the Russian Federation and the People's Republic of China."[44] Plans of the George W. Bush Administration have already started to evolve towards creation of such a comprehensive

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[42] See, for example, Weber and Drell, in Alexander L. George, Philip J. Farley, and Alexander Dallin, eds., *U.S.-Soviet Security Cooperation*, 1988, 418.

[43] China acquired space technology from its foreign commercial partners that could be used for the development of ASAT capability and provide a great assistance in this development. It is argued that with technology and technical assistance that China acquired from Russia, it could develop direct ascent anti-satellite weapons. It is believed that China has already developed space and ground-based anti-satellite laser weapons and space based anti-satellite weapons called "parasitic satellites." See U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China,* Report to Congress of the United States, Chapter II "Developments in Chinese Doctrine and Force Structure," Segment C "Advanced Technologies Which Would Enhance Military Capabilities, Section 2 "Space Development," June 2000, http://www.fas.org/news/china/2000/china06222000.htm (accessed 8.19.02); see also Cooper and Contant, in Jimerson and Williamson, Space and Military Power in East Asia, 2000.

[44] Vitaliy Tret'yakov, "SShA Rasrushayut Strategicheskuyu Stabil'nost'" (The USA is Destroying Strategic Stability. Interview with Russian Federation Defense Minister Igor' Sergeev), *Nezavisimaya Gazeta*, No.113 (2175), June 22, 2000, http://ng.ru/world/2000-06-22/6_pro_sergeev.html (accessed 06.26.04).

system by eliminating the "artificial" distinction between a "theater" and "national" ballistic missile defense.[45]

Russian officials insisted that, instead of relying on missile defenses and upsetting strategic stability and arms control agreements, the United States and Russia should engage in establishing an international space security regime that would address the threat of missile proliferation. In June 1999, Russia proposed the establishment of a Global Missile and Missile Technology Non-Proliferation Control System (GCS) under U.N. auspices. It outlined the regime's principal components at a G-8 meeting in Cologne, Germany. The idea was not new: on January 29, 1992, the then Russian President Yeltsin proposed Global System for Protecting the International Community Against Missile Attack in his speech given at the UN Security Council.[46] This idea was further developed at two international conferences held in Moscow in March 2000 and February 2001. According to this evolved version, the regime would include two blocks: (1) a missile non-proliferation block that includes the MTCR, its Code of Conduct, incentive mechanisms, security assurances, national and multinational measures to enhance missile non-proliferation; and diplomatic and economic enforcement measures;

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[45] President Bush revealed his NMD plans on May 1 2001, which included a multi-tired and layered missile defense "system of systems" that was to be based on "all available technologies and basing models for effective missile defenses that could protect the United States." See U.S. President, *President Bush's Speech on National Ballistic Missile Defense*, Speech by President George W. Bush at the National Defense University, Washington D.C., The White House transcript, May 1, 2001, http://www.fas.org/nuke/control/abmt/news/010501bush.html (accessed 03.19.04). See also U.S. President, NSPD-23, "National Policy on Ballistic Missile Defense," 2002.

[46] On June 17, 1992, President Bush and President Yeltsin issued a joint statement on a global protection system (GPS), in which they confirmed that they agreed "that their two nations should work together with allies and other interested states in developing a concept for such a system as part of an overall strategy regarding the proliferation of ballistic missiles and weapons of mass destruction." See *U.S.-Russian Joint Statement on A Global Protection System*, June 17, 1992, http://www.fas.org/nuke/control/abmt/text/b92061m.htm (accessed 03.19.04).

and (2) a missile transparency regime, including pre- and post-launch notifications.[47] The United States, however, met Russia's proposal with suspicion and did not take part in the Moscow conferences of 2000 or 2001. By 2001, the GCS was transformed into a comprehensive concept, combining various multilateral, bilateral, and national efforts into an integrated international response to missile proliferation. The United States did not make contributions to the development of this concept.

In June 2000, Russian President Putin proposed cooperation with European nations on developing defenses against theater ballistic missiles shortly after his summit meeting with President Clinton. This proposal was followed by meetings between NATO officials and Russian Defense Minister, Igor' Sergeev, later in June. In February 2001, in a paper titled "Phases of European Missile Defense," Russia proposed to the then NATO Secretary General, Lord Robertson, a European anti-missile defense system (AMD) against non-strategic ballistic missiles to address the emerging missile proliferation threat. Moscow offered its anti-missile research and development facilities, tests ranges, and existing S-300 and S-400 surface-to-air interceptors.[48] This proposal was treated with suspicion, as an attempt to split the U.S. allies in Europe away from the United States.[49]

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[47] Alexander Pickayev, "The Global Control System," in *Missile Proliferation and Defense: Problems and Prospects*, Occasional Paper No. 7, Center for Non-Proliferation Studies, Monterey, California, 2001, 22.
[48] Ibid., 23.
[49] On November 21, 2002, during the Prague Summit, NATO committed its member states to a NATO Missile Defense Feasibility Study in order to examine options for addressing an increasing missile threat to alliance's territory, population and forces. A working group on missile defense was established under the auspices of the NATO-Russia Council, which was to "focus initially on missile defense terminology, concepts, and system capabilities in order to develop procedures that could facilitate protection of forces in a joint, non-Article V crisis response operation." See Rebecca Johnson, "Introduction: Ballistic Missile Defense and the Weaponization of Space," Space Without Weapons, Acronym Institute, September 2003, http://www.acronym.org.uk/space/index.htm (accessed 05.12.04). The Theater Missile Defense *Ad Hoc* Working Group created under the aegis of the NATO-Russia Council conducted the first joint NATO-Russia TMD Command Post Exercise (CPX) at the United States Joint National Integration Center in Colorado Springs, Colorado, from 8-12 March 2004. The purpose of the CPX was to validate the

The issue of the ABM treaty and non-weaponization of space was so important for Russia that it launched a world-wide public relations campaign in order to hasten the international consensus on non-weaponization of space and to rally support for the ABM Treaty.[50] Russia joined China on various occasions to criticize the U.S. plans for the deployment of missile defenses as a threat to international stability and a trigger for an arms race in outer space.[51] Russia sought support for its cause from the U.S. allies in Europe and issued declarations with many nations in support of the ABM Treaty and in opposition to the U.S. NMD plans. The UN General Assembly adopted resolutions—cosponsored by Russia and China as well as other countries—calling for the preservation of and compliance with the ABM Treaty.[52]

Furthermore, in April 2001, in commemoration of the 40th anniversary of the first human space flight, Russia held an international conference in Moscow under the slogan "Space Without Weapons: An Arena for Peaceful Cooperation in the 21st Century," that

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Experimental Concept and associated Experimental Concept of Operations developed over the past year by the joint NATO-Russia TMD *Ad Hoc* Working Group. Thus, the joint NATO-Russia work on NATO TMD began despite the initial skeptical reception. See NATO Press Release (2004) 031, "NATO-Russia Council Theater Missile Defense Command Post Exercise (TMD CPX), March 5, 2004, http://globalsecurity.org/military/library/news/2004/03/mil-040305-nato01htm, accessed 05.21.04. See also Woolf, 2002, CRS-16.

[50] According to the Eisenhower Institute's publication "The Future of Space: the Next Strategic Frontier", Russia considers keeping outer space free of weapons as a crucial goal, an ultimate stand—its"21 Century Stalingrad." See Eisenhower Institute, Project "The Future Of Space: The Next Strategic Frontier," Online Publications, 2003, http://www.eisenhowerinstitute.org/programs/globalpartnerships/fos/newfrontier/weapons.htm (accessed 10.20.03). See also a survey of reactions on President Putin's diplomatic initiatives, Katherine L. Starr, "Missile Defense: Putin's Crusade Against NMD; Defying U.S. Hegemony," FAS Project, Online publication, http://www.fas.org/news/russia/2000/russia-000721b.htm (accessed 07.12.04).

[51] For example, the Russian and Chinese leadership announced their common positions on the ABM treaty in the Joint Statement on Russo-Chinese Relations at the Turn of the 21 Century approved at the summit level on November 23, 1998; in the Russo-Chinese Information Communique on Consultations on Questions Pertaining to the ABM Treaty issued on April 14, 1999; and the Russo-Chinese Joint Statement approved at the summit level on December 10, 1999. On July 18, 2000, Russian President Putin and Chairman of the People's Republic of China Jiang Zemin signed a joint statement on the Anti-Ballistic Missile Treaty that was sent to the Conference on Disarmament in Geneva to be circulated as an official document on August 1, 2000.

[52] The UNGA Resolutions on the Preservation of and Compliance with the Anti-Ballistic Missile Treaty, cosponsored by Russia, China, and other countries were adopted at the 54th, 55th, and 56th Sessions of the UN General Assembly.

President Putin had originally proposed to hold at the UN Millennium Summit in New York. Delegates from 105 countries jointed the commemoration of the 40th anniversary of the first human flight in Moscow, while the United States and the United Kingdom boycotted the forum, indicating that disagreements ran deep and disapproval of Russia's international initiatives with respect to space military security issues was serious.[53] The Conference framework included five thematic symposia focusing on a number of space issues, including the prevention of an arms race in outer space.[54]

In a statement during a commemorative ceremony, President Putin visiting Star City, Russian cosmonauts' training center, explained the importance of outer space activities for Russia. He maintained that Russian space program was vital for the country, for it served as "the locomotive that will pull forward all other industry spheres" and pledged to support Russian space industry.[55]

In a greeting message to the Moscow conference read by the Deputy Chairman of the Government of the Russian Federation, Il'ya Klebanov, President Putin publicly iterated to the representatives of the international community—national space

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[53] See presentation by Lt. General Mikhail S. Vinogradov for the Eisenhower Institute, Mikhail Vinogradov, "Future of Space: Prevention of Arms Deployment in Space," the Eisenhower Institute, Online publication, January 17, 2002, http://www.eisenhowerinstitute.org/programs/globalpartnerships/fos (accessed 06.06.04). Vinogradov reports that not only did the United States decide to ignore the conference in Moscow, it appealed to other nations to do the same. The boycott was important as a sign of profound disapproval of Russia's actions. Previously, the United States boycotted the 1980 Olympic Games in Moscow after the Soviet Union invaded Afghanistan.

[54] According to the April 22nd Russian Foreign Ministry special information bulletin, the symposium on the prevention of an arms race in outer space included the following issues: (1) implications of deploying weapons in outer space on strategic stability and international security; (2) political and legal aspects of the prevention of an arms race in outer space, including ways to improve and develop the international legal mechanisms for regulating military activities in outer space; (3) measures to build confidence and to ensure transparency and predictability in conducting outer space activities; (4) international cooperation to prevent an arms race in outer space, including cooperation within the framework of the UN General Assembly and the Conference on Disarmament; and (5) conversion of space technology. See Sergei Rogov, "Space Without Weapons: An Arena for Peaceful Cooperation in the 21st Century," Report on the International Conference held in Moscow, April 11-14, 2001, 8, http://www.eisenhowerinstitute.org/programs/globalpartnerships/fos/newfrontier/weapons.htm (accessed 03.19.04).

[55] Ibid.

administrations officials, officials from foreign and defense ministries, members of the academic communities, businessmen, members of various international non-governmental organizations dealing with outer space issues, representatives of insurance companies and banks involved in space business, cosmonauts and astronauts from around the world—Russia's attitude towards further militarization of outer space and called for action:

> The whole international experience in space activities confirms the necessity of a careful and responsible approach to the exploration of outer space. By joint efforts we are obliged to keep it peaceful for ourselves and succeeding generations. I am convinced that there should be no weapons in space.
>
> Most of the members of the UN currently stand for averting an arms race in outer space. It is necessary to move to practical steps in this direction. Russia is ready to begin, even from today, to elaborate them. I am appealing to the other space powers to join in this initiative.[56]

The Deputy Foreign Minister of the Russian Federation, addressing the audience of the Moscow conference further explain Russia's position on the issue of weaponization of space:

> We are convinced that aspirations in the direction of the so-called "weaponization" of space are incompatible with the very essence of the concept of strategic stability. Their realization would signify not only the expansion of spheres of military rivalry, but also its qualitative spurt, fraught with unpredictable consequences.
>
> Russia is saying "no" to the deployment of weapons in space not only because we want to avoid a new and unnecessary military-technological competition, but also because having survived the enormous costs of the Cold War and global confrontation, we are against a return to the times of unrestrained siphoning off of colossal funds and resources for purposes incompatible with the true requirements of our people and all humanity.[57]

While still trying to preserve the ABM Treaty and prevent weaponization of outer space throughout the 1990s, Russian leadership tried to prepare the Russian military for the U.S. steps towards the deployment of the BMD system and moving ahead with other

[56] Ibid., 10.
[57] Ibid., 12.

military space plans. By the late 1990s, Russia restructured its military space activities. Military space forces responsible for the development, launching, and maintenance of military satellites and missile space defense were merged into strategic missile forces in order to meet the new challenges and rationalize the organization and structure of Russia's space related forces.[58] In June 2001, the Space Forces of the Russian Federation was created. This step was taken to reflect the growing role of national space systems in the support of activities of Russia's armed forces and was meant as a step in improving Russia's security in general and space security in particular.[59] This measure completed the process of consolidation of Russia's military space activities under centralized management of Space Forces, as Russia prepared for outer space to become a sphere of military competition.[60]

In an interview with a Russian newspaper, the Commander of Space Forces, Colonel General A. N. Perminov, explained the creation of Space Forces as a necessary response to the emerging security situation in outer space: the situation when space became a sphere of major nations' vital interests—the medium vital for providing economic well-being as well as security. This new situation was characterized, according to Perminov, by the toughening competition for orbital positions, radio frequencies and other space resources, and by the increasing use of space for military purposes, including for supporting military operations on the ground, in the sea and in the air. Russia created its Space Forces in order to defend Russia's security interests in outer space. Perminov

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[58] This attempt at the restructuring and integration of different military space activities was largely unsuccessful. See Russian Federation Ministry of Defense, "Main Milestones of the Space Forces," Official Website of the Ministry of Defense of the Russian Federation, http://www.mil.ru/index.php?menu_id=697 (accessed 11.05.03).

[59] See Russian Federation Ministry of Defense, "Historic Note," Official Website of the Ministry of Defense of the Russian Federation, http://www.mil.ru/index.php?menu_id=387 (accessed 11.05.03).

[60] Anatolii Dokuchaev, "Russian Space Shield," Official Website of the Ministry of Defense of the Russian Federation, http://www.mil.ru/print.php?menu_id=711 (accessed 11.05.03).

noted that Russia's first choice for solving security problems with regard to outer space would be the creation of an international legal security regime prohibiting the emplacement of weapons in space and the use of force in space, but the increasing importance of space for economic well-being and national security of the leading states, including Russia, necessitated the defense of national interests in outer space "by all means, including force."[61]

All in all, in the course of its transformation throughout the 1990s and early 2000s Russia fundamentally reformulated its security interests and policies on the basis of a liberal model and put its security priorities and policies in line with those of the West, at least in writing. Russian leadership has been reforming the military structure, organization and military culture with varying degree of success throughout this post-Cold War period.[62] There is a debate as to what direction this reform has taken and whether there is any improvement at all. However, the slow pace of the military reform itself can be considered, to some degree, as a sign of a "liberal transition," whereby the country is not willing to throw all its resources into military-building, subordinating all other needs and well-being of its people in order to satisfy military security requirements: economic issues and reforms have been put ahead of military requirements on the list of national priorities.

Russia's internal conditions, above all, its economic conditions, did not allow Russia to keep up with the United States, and as the gap in capabilities and in military

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[61] Russian Federation Ministry of Defense, "Interview of the Commander of Space Forces Colonel General A. N. Perminov to the *Red Star* Newspaper," Official Website of the Ministry of Defense of the Russian Federation, http://www.mil.ru/print.php?menu_id=708 (accessed 11.05.03).

[62] In a report titled "On Main Results of Russia's Armed Forces Development in 2003," Russia's Defense Minister Sergei Ivanov finally announced that "the most painful military reform stage is now behind." He made clear that there was still a long way to go to complete the transition. See "Defense Ministry Ready to Discuss Army Reform with Society," *Pravda.Ru*, November 18, 2003, http://newsfromrussia.com/main/2003/11/18/51330_.html (accessed 03.21.04).

technology increased, Russia felt its security vis-à-vis the United States and its allies significantly undermined. Russia's hopes for security cooperation remained largely unfulfilled. As a result, over the past decade since the end of the Cold War, Russia has grown to rely more on its strategic nuclear arsenal, progressively lowering its nuclear threshold.

Despite the new security pronouncements, Russia's security interests with respect to outer space remained remarkably persistent throughout the post-Cold War transition era. Although Russia's space security interests did not find an adequate reflection in Russia's public official documents related to security, Russia's actions and occasional statements of the civil and military leadership made them clear. In the new international environment and with the new security approach, Russia consistently opposed U.S. plans to develop and deploy National Ballistic Missile Defenses as a step to outer space weaponization. In the post-Cold War era, this opposition, in large part, came from Russia's unwillingness to engage in a space arms race when its domestic reforms needed major resources. There was a rather clear understanding that during this difficult period, engaging in a space arms race would bring the country back into the grip of militarism when every aspect of the nation's life would again be subordinated to military goals.

Recognizing the vast economic potential of space and having mastered advanced space technology, Russia actively pursued commercial space activities and grew to depend on the global space market for the survival of its space industry and its space program.[63] Its leadership considered commercial space activities as one of the important

[63] Russia's dependence on commercial resources for financing the rebuilding of GLONASS constellation, the Russian global navigation system, for example, is estimated to be 60 percent. Only 40 percent of cost for rebuilding a 24-satellite constellation is planned to come from the federal and regional budgets. See

avenues, integrating the country into the world economy and bringing real benefits to the Russian economy as well as the world through the provision of space goods and services.[64] Russia considered weaponization of space a serious threat not only to its security but also to the global space market and commercial space activities.[65] However, Russia responded to the deteriorating space security situation by preparing to defend its interests in space, by force if necessary. Commercial considerations have probably been important in the Russian stance towards space security, but strategic concerns seem to have had an overwhelming weight.

"Rossiya Sozdaet Global'nuyu Navigazionnuyu Sistemu" (Russia Creates Global Navigation System), *Lenta.Ru*, August 1, 2001, http://www.lenta.ru/Russia/2001/08/-1/space/_Printed.htm (accessed 08.01.01).

[64] According to the head of the Russian Aerospace Agency, Yurii Koptev, the economic benefits of space activities are very significant: every dollar invested in space research brings 10 dollars in profit. See Rogov, 2001, 15.

[65] According to the Russian space experts that took part in a seminar held by the Eisenhower Institute at the Space Research Institute (IKI) in Moscow in January 2002, in order to gain a Russian perspective on the U.S. plans for military uses of outer space, weaponization of space threatens commercial activities via the destruction of the entire regulatory regime for international space activities. One of the participants expressed his opinion that from the position of its superiority in outer space the United States will have full control over other nations' military and commercial activities in space and will dictate who can have what satellites and what frequency may or may not be used for what purposes. Another Russian expert suggested that a collective security-type regime would be a more appropriate approach to space security challenges: "Those who would attack a satellite are the enemies of all of us… We must together determine what measures we can introduce to make the situation more stable for us all." See Eisenhower Institute, Project "The Future of Space: the Next Strategic Frontier," Report on the Seminar at the Space Research Institute (IKI) with the Eisenhower Institute, Moscow, Russia, January 17, 2002, Project "The Future of Space: the Next Strategic Frontier," http://www.eisenhowerinstitute.org (accessed 03.20.04).

CHAPTER VII

CHINA'S SECURITY STRATEGY AND SPACE INTERESTS IN THE POST-COLD WAR ERA

The goal of this chapter is, first, to evaluate China's security strategy and factors that influenced it after the end of the Cold War, and then, to analyze the evolution of China's security interests regarding outer space in this period. In the post-Cold War era, China published a number of official documents on its national security strategy in order to declare its security interests and policies and elicit an understanding and favorable attitude from the international community: the 1995 White Paper on Arms Control and Disarmament, the 2000 White Paper on China's Space Activities, the 1998, 2000, and 2002 White Papers on China's National Defense.[1] Examination of China's officially promulgated security policies should help to answer two central questions of the present analysis: (1) whether China's security interests in the issue area of outer space have converged with those of the two other main space-faring states—the United States and Russia; and (2) how its commercial space activities contributed to this evolution.

This chapter argues that after the end of the Cold War the security strategy of the PRC continued to be based on a non-liberal concept of security—the communist concept of "peaceful coexistence." Its main goal was to provide a favorable, peaceful international environment for China's economic and social development and achieving "comprehensive national strength"—that is, to provide for China's ascendance as a major

[1] In 1991, China published the White Paper on "Human Rights in China," in 1992—"Tibet – Its Ownership And Human Rights Situation," in 1994—"Situation of Chinese Women," in 1995—"The Progress of Human Rights in China," in 1996—"Environmental Protection in China," and in 2003—White Paper on "China's Nonproliferation Policy" and others. See, for example, People's Republic of China, Embassy of the People's Republic of China in the State of Israel, List of White Papers issued by the State Council of the People's Republic of China, Official Website of the Embassy of the People's Republic of China in the State of Israel, http://chinaembassy.org.il/eng/c12921.html (accessed 12.12.03).

player in the international system. Cooperative approaches to security, including arms control process, grew to be increasingly used by China in the pursuit of its security interests. This chapter also maintains that space activities, including commercial space activities, became an integral part of a comprehensive developmental strategy and military modernization. The military aspects of space security became China's prime concern in the context of reunification with Taiwan—the issue that increasingly dominated China's security concerns in the post-Cold War decade. While in its commercial space activities China grew to rely more and more on the U.S. and, generally, on Western markets, as the situation with Taiwan deteriorated it progressively perceived the United States as its potential adversary in a conflict over Taiwan. And finally, this chapter concludes that China's security interests concerning outer space security progressively converged with those of Russia: both states opposed the U.S. plans for the deployment of NMD system as a step towards weaponization of space that would set off a space arms race, as well as other plans for further uses of outer space by the U.S. military, while increasingly cooperating on missile non-proliferation issues.

FOUNDATIONS OF CHINA'S SECURITY STRATEGY

Although China's grand strategy has not been comprehensively elaborated in Chinese official documents, experts on China's strategy believe that it has been aimed at achieving three key objectives: first and foremost, preservation of domestic order and well-being; second, defense against external threats to national sovereignty and territory; and third, attainment of geopolitical influence as a major, or primary, state.[2] The

[2] Michael D. Swaine and Ashley J. Tellis, *Interpreting China's Grand Strategy: Past, Present, and Future* (St. Monica: RAND, 2000), x, Online publication, http://www.rand.org/publications/

supremacy of the first objective was rooted in the historical Chinese perception that social chaos, political fragmentation, and economic collapse made deterrence of and defense against external threats infeasible and the weakness of China's state often invited foreign aggression.

While these three objectives lingered nearly unchanged over a long historical period—at least during the modern period since approximately 1850—security strategies that were to deliver a realization of these objectives varied considerably depending on a number of factors, including the strength of China's state, the level and origin of resources available to the state for national defense versus internal security and social welfare, and the capabilities of China's rivals and foes. In 1949, a new Chinese state emerged which was founded on Communist principles and ideology. A new era in China's history began—an era of China's dramatic transformations from the Great Leap Forward through the Cultural Revolution to the Four Modernizations.

The Common Program of the Chinese People's Political Consultative Conference (CPPCC) was adopted in 1949 and served as a provisional constitution for the People's Republic of China.[3] This foundational document promulgated the basic principles and objectives of China's security strategy and foreign policy. It stipulated that the fundamental objectives of People's Republic of China were to guarantee independence, freedom and territorial integrity of the state, to support lasting world peace and friendly cooperation among peoples of all countries in the world, and to oppose imperialist

MR/MR1121/ (accessed 12.12.03).

[3] The Constitution of the CPPCC was adopted at the First Session of the Second CPPCC National Committee on December 21-26, 1954. According to the document, the Common Program was to be replaced by the country's constitution. See National People's Congress and the Chinese People's Political Consultative Conference, Official Website, http://www.china.org.cn/english/archiveen27750.htm (accessed 12.16.03).

policies of aggression and war. Pursuing these objectives, China opposed what it called the "hegemonism" of the two superpowers during the Cold War and declared her solidarity with the developing countries in resisting imperialism and colonialism. China became a formal observer of the nonalignment movement and cooperated with the group of Seventy-Seven and the South Pacific Forum. After a period of self-imposed isolation, China also sought to establish fruitful relations with the developed countries for the sake of achieving economic and technological progress, as economic autarky came to be perceived as a bankrupted and unsustainable policy for economic development. Normalization of China-U.S. relations in the 1970s was a breakthrough in China's diplomacy and brought about dramatic improvement of its external security environment.[4] It is after this shift in China's security situation that the country embarked on economic and military reforms aimed at development and achievement of "comprehensive national strength."[5] Economic reforms and successful economic development were seen as being instrumental for: (a) achieving domestic order and survival of the Communist regime, (b) restoration of China's international status as a great power with participation in international governance and real influence over international affairs, and (c) technological progress for managing both further economic development and emerging security order.

The reforms initiated by Deng Xiaoping in the late 1970s led to modification of China's security strategy. The new, "calculative" security strategy was characterized by

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[4] In his greeting statement on the occasion of President George W. Bush visit to China to celebrate the 30th anniversary of the release of the 1972 Shanghai Communique in February 2002, President Jaing Zemin stated: "The release of the China-U.S. Shanghai Communique is an epoch-making milestone in the history of China-U.S. relations." See People's Republic of China, Embassy of the People's Republic of China in the United States of America, "Jiang, Bush Swap Greetings on Anniversary of Shanghai Communique," Official Website of the Embassy of the People's Republic of China in the United States of America, 03.01.02, http://www.china-embassy.org/eng/zmgx/zysj/bsfh/t36198.htm (accessed 05.07.04).

[5] Swaine and Tellis, *Interpreting China's Grand Strategy*, 2000, 98-99.

highly pragmatic approach that emphasized the primacy of domestic economic growth and stability, the fostering of cooperative and friendly international relations, the relative restraint in the use of force, while its military was being modernized, and the search for asymmetric gains internationally, including via participation in international regimes.[6]

At the first Plenary Session of the Eighth National People's Congress in 1993, the Chinese Constitution of 1982 was amended for the second time.[7] Although the Cold War had ended and a new era in international relations begun, the Preamble of the Constitution reiterated a concept for China's security strategy and foreign policy that Chinese leadership had professed since the early days of the Communist state:

> China adheres to an independent foreign policy as well as to the five principles of mutual respect for sovereignty and territorial integrity, mutual non-aggression, non-interference in each other's internal affairs, equality and mutual benefit, and peaceful coexistence in developing diplomatic relations and economic and cultural exchanges with other countries; China consistently opposes imperialism, hegemonism and colonialism, works to strengthen unity with the people of other countries, supports the oppressed nations and the developing countries in their just struggle to win and preserve national independence and develop their national economies, and strives to safeguard world peace and promote the cause of human progress.[8]

Thus, throughout the second half of the 20th century, China followed a Communist, state-centric model of security strategy similar to that espoused by the Soviet Union during the Cold War and then abandoned by Russia after the end of the Cold War.[9]

A number of features of China's security strategy need to be emphasized as important for this study. First, China professed "peaceful coexistence" as a preferable model of international relations. This was a non-liberal concept developed particularly

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6 Ibid., 97-98.
7 The 1982 Constitution of the PRC was first amended in 1988.
8 Constitution of the People's Republic of China, Preamble, http://english.peopledaily.com.cn/constitution/consitution.htm (accessed 12.16.03).
9 The principles of "peaceful coexistence" were developed by V. I. Lenin and laid in the foundation of Soviet security strategy and foreign policy. See A. M. Prokhorov, chief ed., *Soviet Encyclopedia* (Moscow: Soviet Encyclopedia, 1989), 821.

for the maintenance of peaceful international relations between countries with different political and economic systems. The bedrock of this concept was strict respect to state's sovereignty and territorial integrity. The "mutual non-aggression" principle, as one of the five principles of "peaceful coexistence" advocated by the Chinese government, stood for non-use of force or a threat of use of force in relations between countries. The principles of "non-interference in each other's internal affairs" and the right of people to choose their own destiny were understood as a necessary conditions of cooperative and peaceful interstate relations. The principle of "equality and mutual benefit" meant political equality and respect of differences between the countries, economic equality and cooperation in pursuit of common interests and mutual benefits. These principles were seen as a foundation for building a peaceful multipolar world order, in which China could prosper and be one of the poles.[10]

As a result of perceiving itself as a victim of imperialist aggression and oppression for over 100 years before the founding of the PRC, China attached a particular weight to independence as the main objective of its security strategy and resisted any infringements upon its national sovereignty and interference in its internal affairs. So much so that, in order to maintain its independence, China declared that it would neither enter into an alliance with any other country or a group of countries, nor establish a military bloc, join in the arms race or seek military expansion.

Second, Chinese extensive borders make it vulnerable to external attacks. As a result of the political and economic decline of the Chinese Empire under the Manchu rulers and the revolutionary turmoil and political fragmentation that followed it, China

[10] See John W. Garver, "China's Response to the Strategic Defense Initiative," *Asian Survey* 26 (November 1986), 1232.

lost substantial territories to the Europeans and the Japanese in the 19^{th} and early 20^{th} centuries. In 1949, as a result of the split between the Communist Party and the Kuomintang (KMT, or Nationalist Party), who retreated to Taiwan with the help of the United States, China was divided into mainland under the rule of the Chinese Communists and the island under the control of the KMT. Since the rise of the Chinese Communist Party (CCP) and the establishment of the People's Republic of China, reunification of the motherland became one of the main national goals pursued under the leadership of the CCP. In the 1990s, after rounds of negotiations, Hong Kong and Macao were reunited with the People's Republic of China,[11] leaving reunification with Taiwan as the most important outstanding issue of reunification. In its Constitution China reaffirmed that: "Taiwan is part of the sacred territory of the People's Republic of China. It is the lofty duty of the entire Chinese people, including our compatriots in Taiwan, to accomplish the great task of reunifying the motherland."[12] Chinese leaders have resolutely opposed any Taiwan's movements towards independence from the mainland and called on Taiwan's authorities to enter into political negotiations with the mainland at an early date in order to end the state of hostility, improve relations between the two sides, and work together towards reunification. However, the Chinese leadership has pointedly not excluded the use of force, if needed, to reunify the island with the mainland. In its 1993 White Paper "The Taiwan Question and Reunification of China," the Chinese government reiterated:

[11] After 22 rounds of talks, the Chinese and British governments reached an agreement and signed the *Joint Declaration on the Question of Hong Kong* and three appendixes. Hong Kong reunited with the PRC on July 1, 1997. The Chinese and Portugal governments signed the *Joint Declaration on the Question of Macao* and two appendixes in 1984 after 4 rounds of talks. China resumed sovereignty over Macao on December 20, 1999.
[12] Constitution of the People's Republic of China, Preamble.

> Peaceful reunification is a set policy of the Chinese Government. However, any sovereign state is entitled to use any means it deems necessary, including military ones, to uphold its sovereignty and territorial integrity. The Chinese Government is under no obligation to undertake any commitment to any foreign power or people intending to split China as to what means it might use to handle its own domestic affairs.[13]

Third, in its official pronouncements the Chinese government emphasized its opposition to arms races and during the Cold War condemned the two superpowers for engaging in all-out military build-ups. In contrast, against the backdrop of thousands and thousands of nuclear warheads in the two-superpowers' arsenals, China developed a rather small nuclear strategic force consisting of a few dozens of missiles.[14] It obtained a strategic retaliatory force in accordance to what is known as "minimal deterrence." According to this concept, a small credible strategic retaliatory force would deter an attack by a nuclear superpower, which would not risk even a small nuclear retaliation. At the same time, "minimal deterrence" comported well with China's reforms aimed at achieving economic growth and development. It allowed the Chinese government to save the nation's resources from being wasted on nuclear buildups.[15] However, a security strategy that is based on the concept of "minimal deterrence" is vulnerable, for a deterrent effect from a small retaliatory force can be neutralized or minimized by anti-ballistic missile defenses. It is for this reason that China's security is particularly sensitive to the United States' plans to develop and deploy a National Missile Defense.[16]

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[13] People's Republic of China, State Council, "The Taiwan Question and Reunification of China," White Paper issued by the State Council of the People's Republic of China, August 1993, Section III "The Chinese Government's Basic Position Regarding Settlement of the Taiwan Question," http://www.china.org.cn/e-white/taiwan/ (accessed 06.06.04).

[14] It is believed that China obtained an operational nuclear retaliatory force of several dozens nuclear-armed medium-range rockets by early 1970s. See Garver, 1986, 1222.

[15] Ibid., 1221.

[16] Ibid., 1223.

China realized its security vulnerability in the context of the U.S. Strategic Defense Initiative (SDI) project in the mid 1980s, when Chinese analysts and media started to criticize Reagan's SDI as an attempt to take an arms race into outer space after the two superpowers had failed to achieve a decisive advantage over one another on the ground.[17] The dominant Chinese view on the SDI during the Cold War was that the SDI program was more malevolent than the Reagan administration led the world to believe. It was seen by the Chinese as an attempt by the United States to gain strategic superiority in outer space over the Soviet Union, meaning by that the achievement of a first strike capability with its implications for stability and peace in the international system. Furthermore, it was interpreted as revived U.S. aggressiveness and hostility to socialism and to "communist-ruled countries" in general, and as an attempt to dominate and control the Third World.[18] It was recognized by the Chinese experts that development and deployment of space weapons would reshape the "international political map:" weaponization of outer space was seen as profound a step as the beginning of the Nuclear Age itself.[19]

In the fall of 1985, the top Chinese leaders began calling on the two superpowers to cease their military rivalry in outer space and to sign an agreement prohibiting the placement of weapons in outer space.[20] Even though the argument against the weaponization of outer space was sometimes put in moral terms and seen as a violation of the status of outer space as the common heritage of all mankind,[21] the bottom-line

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[17] Ibid., 1986, 1229, 1230
[18] Ibid., 1228.
[19] Ibid., 1229-1230.
[20] Ibid., 1230, 1231.
[21] Beginning in 1984, China started to propose to the United Nations General Assembly draft resolutions on preventing an arms race in outer space. China maintained that outer space belonged to all mankind and should be used exclusively for peaceful purposes and should be kept free of weapons. See People's

calculation on the part of China was that the deployment of missile defenses by the two superpowers would undermine credibility of Chinese retaliatory capability vis-à-vis both the Soviet Union and the United States. It was also realized that attempts to compensate for this deteriorating security situation might undermine China's goals of economic reforms and development.

CHINA'S SECURITY STRATEGY AFTER TIANANMEN

There are a number of factors that influenced China's security strategy and affected its interests in the post-Cold War era. Firstly, with the end of East-West confrontation, China found itself in a significantly altered security environment. The Sino-Russian relations that had started to improve significantly during the Gorbachev's *perestroika,*[22] went on to develop into a "strategic partnership" between the two countries after the demise of the East-West rivalry. Withdrawal of the Soviet forces from Mongolia, as had been promised by Gorbachev, was completed in 1992. In 1994, Russia and China agreed on measures that would reduce the risk of dangerous military incidents. Russia and China agreed to observe a "no first use" pledge in their bilateral relations[23] and to de-target nuclear warheads that were aimed at each other. They significantly

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Republic of China, State Council, "China: Arms Control and Disarmament," White Paper issued by the State Council of the People's Republic of China, November 1995, Section VI "Actively Promoting International Arms Control and Disarmament," http://www.china.org.cn/e-white/army/, (accessed 11.07.03).

[22] According to some experts, a major shift in Chinese policy toward the Soviet Union occurred in 1982-83 when Beijing dropped solution of the "three obstacles" as a precondition for improvements in Sino-Soviet relations. See Garver, 1986, 1234. During Gorbachev's *perestroika*, the bilateral relations received a boost and rapidly improved in many areas. In 1991, after nearly three decades of border contentions, the Soviet Union and China successfully concluded negotiations on delimitation of their borders and signed the first agreement legally establishing their borders along a 4,300-kilometer stretch. More agreements resolving the two countries border issues followed later in the 1990s.

[23] See People's Republic of China, State Council, "China's National Defense," White Paper issued by the State Council of the People's Republic of China, July 1998, Section V "Arms Control and Disarmament," http://english.peopledaily.com.cn/whitepaper/2(5).html (accessed 11.07.03).

expanded military-to-military contacts, arms sales, and military-technical cooperation.[24] In 1996, the leaders of Russia, China and three Central Asian states—Kazakhstan, Kyrgyzstan, and Tajikistan—established a framework for security cooperation and agreed to a set of confidence-building and transparency measures. In 1997, at the summit of the Shanghai Five, Russia agreed to reduce the size of its armed forces in the border area in the Far East by 15 percent, thereby significantly relieving China's concerns with its security along the northern border.[25] Furthermore, Russia supported China's position on Taiwan and Tibet and was not apparently concerned with the methods China used in pursuing its internal security and its human rights record.[26] Throughout the 1990s and the early 2000s, while Russia helped to fill some gaps in China's defense via arms sales,[27] China relied on Russia to keep U.S. plans for anti-ballistic missile defenses within the constraints specified by the ABM treaty.

Secondly, shortly after the *New York Times* proclaimed the end of the East-West confrontation on April 2, 1989, and the *Wall Street Journal* exclaimed "We Won!" on May 24, 1989, soldiers of the Chinese People's Liberation Army (PLA) took control of

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[24] The organized transfer of Russian defense technology to China began in 1992. Pursuing military modernization, China needed improvements in its air force, command, control and communications, naval power projection, and space technology. It was willing to buy Russian technology and arms, while Russia was willing to sell its technology. Arms sales and other military technology transfers to China provided important foundation for the improving Sino-Russian relations through the 1990s. See Sherman W. Garnett, "Limited Partnership" in Sherman W. Garnett, ed., *Rapprochement or Rivalry? Russia-China Relations in a Changing Asia* (Washington D.C.: Carnegie Endowment for International Peace, 2000), 12.

[25] In April 1997, China and Russia, as well as Kazakhstan, Kyrgyzstan and Tajikistan, signed the Agreement on Mutual Reduction of Military Forces in the Border Areas, in which a number of confidence-building measures were agreed upon.

[26] Garnett, "Limited Partnership" and Dmitrii Trenin, "The China Factor: Challenge and Chance for Russia," in Sherman W. Garnett, *Rapprochement or Rivalry?* 2000, 11, 52.

[27] The *Annual Report on the Military Power of the People's Republic of China*, issued in accordance with the requirements of Section 1202 of the United States' National Defense Authorization Act for Fiscal Year 2000, Public Law 106-65, asserted that China's force modernization program was "heavily reliant upon assistance from Russia and other states of the Former Soviet Union." See U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China*, Report to Congress of the United States, Executive Summary, July 30, 2003, http://www.defenselink.mil/pubs/20030730chinaex.pdf (accessed 12.18.03).

Central Beijing, crushing demonstrations in Tiananmen Square. Many protestors were shot or crushed to death. The massacre at the Tiananmen Square was an event of great consequence for China and its relationship with the world community, including its security environment. Suettinger, in the opening of his book commemorating the tragedy in Tiananmen Square, characterizes the international resonance this event had:

> ...[T]he United States and Western countries recoiled from China in horror and disgust, expelling it from the company of modern civilized nations through sanctions of various kinds. ... [T]he relationship between the United States and China went instantly from amity and strategic cooperation to hostility, distrust, and misunderstanding.[28]

In the immediate aftermath of the Tiananmen tragedy, China's relations with the United States and other Western countries deteriorated significantly. China had to work hard to improve its international image and restore damaged relations with the United States and the international community in order be integrated into international economic structures, on which China had grown to rely for its economic growth and development in the course of her market transformation. Through the Tiananmen tragedy, China discovered that economic interdependence imposed its limits on ways China could pursue its security interests.

Thirdly, in the 1990s, the situation with Taiwan worsened considerably, as Taiwan moved to democratize its political system and progressively developed its own, national identity distinct from the mainland. Throughout the 1990s and on, Taiwan progressively drifted closer to its independence from the People's Republic of China. Seemingly in response to the U.S. decision to issue a visa to Taiwan's President Lee Teng-hui to allow him a visit in the United States, Chinese government conducted missile

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[28] Robert L. Suettinger, *Beyond Tiananmen: the Politics of U.S.-China Relations*, 1989-2000 (Washington D.C.: Brookings Institution Press, 2003), 1.

tests and military exercises in the East China Sea in 1995. And in 1996, missile tests—conducted even closer to the island—were apparently intended to intimidate Taiwan's residents and dissuade them from voting for pro-independence candidates in advance of Taiwan's first direct presidential elections. The United States sent two aircraft carriers battle groups to the region to warn China against using force to attack Taiwan. Nonetheless, China continued to increase its missile forces along the cost across from the island and tried to fill gaps in its air and naval forces,[29] Taiwan responded with its own build-ups and moved towards supporting participation in Theater Missile Defense with the United States.[30] Deployment of such a system on Taiwan, according to Chinese leadership would seriously violate the sovereignty of the People's Republic of China. Furthermore, after North Korea fired its ballistic missile in 1998, Japan—China's long-term regional rival—moved towards joint development of anti-ballistic missile defense with the United States. Under a Japanese Defense Ministry plan, Japan would spend $4.62 billion between years 2004 and 2008 and start introducing the system in 2007 to become fully operational by 2012.[31] Thus, if Japan and Taiwan deploy anti-ballistic missile defense systems, China will not only find itself considerably constrained in deterring Taiwan from declaring independence from the mainland, she will not be able to deter Japan from acting military against China or in support of others against China.

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[29] China purchased from Russia advanced air superiority aircraft such as the Su-27, advanced air defense systems such as the SA-10 and SA-25, new surface and subsurface capabilities such as Sovremennyi destroyers and Kilo submarines. See Sweine and Tellis, *Interpreting China's Grand Strategy*, 2000,126.

[30] See Mumin Chen, "Theater Missile Defense and Cross-Strait Relations," Paper for presentation at the 98th Annual Meeting of the American Political Science Association, Boston, August 29-September 1, 2002, http://www.comw.org/cmp (accessed 12.12.03).

[31] See "Report: Japan Seeks Missile Shield," *CNN.com*, Decmeber 4, 2003, http://www.cnn.com/2003/WORLD/asiapcf/east/12/04/japa.us.missile.defence.reut/ (accessed 06.26.04); and "Japan to Introduce Missile Defense System," *China Daily*, December 4, 2003, Online publication, http://www.china.org.cn/ (accessed 12.16.03). See also Michael Swaine, Rachel Swanger, Takashi Kawakami, *Japan and Ballistic Missile Defense* (St.Monica: RAND, 2001, Online publication, http://www.rand.org/publications/MR/MR1374/ (accessed 06.26.04).

Fourthly, the economic reforms initiated by Deng Xiaoping in the late 1970s resulted in impressive economic growth throughout the 1990s and the early 2000s. China became one of the most economically dynamic countries in the world, successfully modernizing both its economy and military on the basis of international economic and technological cooperation. China's dependence on the international market for economic development and technological know-how significantly progressed over the past two decades or so. China, aware of this dependence, pursued a "calculative" strategy in the post-Cold War era that was characterized by a pragmatic approach to international affairs—an approach that was designed to help China improve its domestic social and economic conditions, increase the legitimacy of its governing regime, enhance its technological and economic capabilities, and eventually strengthen its military power, while not causing serious concerns of other major actors in the region and the international system. This approach could be characterized as "constrained maximization."[32]

As China's economic and military power grew, however, the United States' strategic focus shifted from Europe to East Asia in recognition of PRC's growing economic and strategic importance in the world. The prospect for war in the Taiwan Strait emerged as one of the main concerns of the American leadership.[33] In turn, preserving its country's territorial integrity by preventing Taiwan's unilateral move towards independence, and eventually reuniting the island with the mainland—including by force, if necessary—became one of China's top national security priorities, shaping, to

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32 Swaine and Tellis, *Interpreting China's Grand Strategy*, 112-113.
33 Robert S. Ross, "Navigating the Taiwan Strait: Deterrence, Escalation Dominance, and U.S.-China Relations," *International Security* 27 (fall 2002): 48.

a high degree, China's foreign and defense policies.[34] In its foreign policy China used "cooperation" and "prevention" as two important elements of its strategy—with cooperation focusing on developing and maintaining friendly relations with the United States and other major powers in order to encourage their continuous support for China's economic ascendance, and with prevention focusing on minimizing those attempts that hinder growth of China's status and influence, or attempts to "contain" China.[35] In its defense efforts China proceeded towards objectives formulated under the concept of "local wars under modern high-technology conditions," which was developed after the first Gulf War in the early 1990s and focused on information warfare, high-resolution imagery, satellite technology, and high precision weapons.[36]

Fifthly, China's security situation deteriorated after the September 11th terrorist attacks in the United States. The U.S. response to these terrorist attacks led to a considerable expansion of the U.S. presence, including the U.S. military presence, in the regions where China had managed to increase its own influence and considerably secure its positions over the past decade or so: China's Central Asian neighbors and Russia drew closer to the United States to cooperate in a war against terrorism. With the U.S. troops in South Korea, Japan, and Central Asia, China began to find herself in "encirclement."[37]

Thus, China emerged as one of the major players with security interests growing from regional to global. Furthermore, as China continues to grow economically its

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[34] This opinion was expressed in the *Annual Report on the Military Power of the People's Republic of China*. See U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China*, Report to Congress of the United States, Executive Summary, July 2003. See also Chen, 2002

[35] Swaine and Tellis, *Interpreting China's Grand Strategy*, 2000, 114-115.

[36] M. Ehsan Ahrari, "U.S. Military Strategic Perspectives on the PRC: New Frontier of Information-Based War," *Asian Survey* 37 (December 1997): 116-118.

[37] Kerry Dumbaugh, "China-U.S. Relations: Current Issues for the 108th Congress," CRS Report for Congress, Order Code RL31815, September 15, 2003. See also Dan Ewing, "Changing Security Calculus," the Nixon Center, Online publication, reprinted from *Korea Herald*, January 21, 2002, http://www.nixoncenter.org/publications/Reality%20Chek/011602, (accessed 12.12.03).

demand for resources, particularly energy resources, will likely increase on a global scale, requiring the kind of military that could back it up in a competition with other players in the international system, including in outer space. In the 1990s, China had to reevaluate its security approaches, its security relations with two major players in the international system—the United States and Russia—and to catch up with ongoing Revolution in Military Affairs (RMA).

CHINA'S NEW SECURITY CONCEPT AND SPACE SECURITY INTERESTS

In its 1995 White Paper "China: Arms Control and Disarmament," China put forth a security strategy that emphasized arms control as an important component of its national security. The document acknowledged that China needed a peaceful international environment for its "socialist modernization." Arms control was characterized as an "effective measure to reduce the danger of war."[38] According to the China's leadership, it also comported well with the five principles of "peaceful coexistence" espoused by China and reiterated in this document. Along with these positive characteristics of arms control, the document pointed out that despite great achievements in the reduction of nuclear weapons in the two former rivals of the Cold War and arms control agreements in other areas, there were still negative developments that evidenced the continuous development of nuclear weapons and outer space weapons, and the spreading of advanced weapon systems via international market of arms. This was seen by China as a fundamental unfairness of the existing arms control—arms control that, on the other hand, was used by the developed countries as a lever against developing countries to justify discriminative anti-proliferation and arms control

[38] People's Republic of China, State Council, "China: Arms Control and Disarmament," Foreword, 1995.

measures. The White Paper directly called for "fair, rational, comprehensive and balanced arms control and disarmament" with the ultimate goal of "complete prohibition and thorough destruction of nuclear weapons and other weapons of mass destruction (including chemical and biological weapons), the complete prohibition of outer space weapons…."[39] This document emphasized that the non-proliferation of weapons of mass destruction was not an ultimate goal of arms control: without complete prohibition and thorough destruction of such weapons proliferation could not be effectively prevented. It also warned against using efforts at preventing proliferation for denying the developing countries opportunities in obtaining technology and scientific knowledge for peaceful uses and economic and technological progress. Thus, China expressed an attitude towards existing arms control that was rather ambivalent.

A large portion of this document was devoted to China's unilateral actions at reducing its military forces and military spending, and conversion of military facilities and technologies to civilian and commercial uses as real deeds towards unilateral arms control and disarmament. This document presented China as more of an outsider than an active participant of the international arms control process, but it also indicated that China's security strategy embraced the idea of cooperative security approaches and China's willingness to participated in arms control process.[40] It also demonstrated a growing problem of proliferation of military technologies under the conditions of market

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39 Ibid., Section I "Promoting Peace and Development for All Mankind," 1995.

40 China was restored to its seat in the United Nations in 1971 and assumed participation in activities relevant to international arms control. China formally joined the Conference on Disarmament in Geneva in 1980.

reforms that were extended to the enterprises of military-industrial complex in China in the context of Four Modernizations.[41]

In the 1995 White Paper on arms control China declared its opposition to the extension of arms race into outer space. A more elaborate position with respect to outer space was formulated in a separate White Paper titled *China's Space Activities* published in November 2000. In this document, China identified development of space technology and applications as "an integral part of the state's comprehensive development strategy" aimed at satisfying growing economic and national security demands, at protecting China's national interests and at building up "the comprehensive national strength."[42] International cooperation in the field of space activities—commercial as well as non-commercial—and cooperation within international regimes governing space activities were presented as crucial aspects of China's space strategy. The document pointed out that cooperation should be conducted for peaceful uses of outer space and on the basis of equality and mutual benefits.

In the second half of the 1990s and early 2000s, China's attitude towards arms control underwent an important transformation. The 2003 White Paper on "China's Non-Proliferation Policy,"[43] in which China returned to the issues of arms control, still contained the old call for "fair, rational and non-discriminatory non-proliferation regime," but it also emphasized international nonproliferation efforts as an issue of great significance for both international security and for China's own security and stressed the

[41] People's Republic of China, State Council, "China: Arms Control and Disarmament," Section IV "Peaceful Uses for Military Industrial Technologies," 1995.
[42] See People's Republic of China, State Council, "China's Space Activities," Introduction, 2000.
[43] This document was published in 2003, which is outside the timeframe of this study. However, the document is important as it indicates important features of a transformation that China's security strategy underwent in the second half of the 1990s and early 2000s.

value of universal participation of all countries in a strengthened non-proliferation regime and prevention of "any country from engaging in proliferation under the pretext of peaceful utilization."[44] This was in sharp contrast to China's statement in the 1995 document where it declared that:

> ...China holds that preventing the proliferation of nuclear weapons should not proceed without due regard for the just rights and interests of all countries in the peaceful use of nuclear energy, particularly in the case of developing country. There must not be a double standard whereby anti-nuclear proliferation is used as a pretext to limit or retard the peaceful use of nuclear energy by developing nations.[45]

China's promise to "constantly increase consultations and exchanges with multinational nonproliferation mechanisms, including the Nuclear Supplier Group, the MTCR, the Australia Group, and the Wassenaar Agreement" also represented a sharp turn in non-proliferation policy: previously China criticized these multilateral export control arrangements for their exclusive and discriminatory features.

Furthermore, the 2003 document focused on presenting concrete measures and achievements in China's policy of nonproliferation of weapons of mass destruction and means of their delivery of the past few years. It elaborated in a great detail China's new export controls system. According to this paper, China introduced stricter export controls, including "catch-all" principle. The 2003 White Paper became the first official document to clarify and comprehensively lay out the procedures and consultative process within the export control system.

The 1995 and 2003 White Papers demonstrate the distance that China traveled within the past decade in its attitude towards international security affairs. In the earlier

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[44] People's Republic of China, State Council, "China's Non-Proliferation Policy," White Paper issued by the State Council of the People's Republic of China, December 2003, http://nti.org/db/china/engdocs/nprolwp_03.htm (accessed 12.18.03).

[45] See People's Republic of China, State Council, "China: Arms Control and Disarmament," Section V "Strict Control over the Transfer of Sensitive Materials and Military Equipment,"1995.

papers, China saw itself as a victim of an unfair international order and criticized the United States for its hegemonism. The new document was written in a balanced manner and avoided targeting the United States in its rhetoric. Instead, it was designed to show China's new attitude and new role in arms control process—the role of an active participant in international non-proliferation efforts, even if not an active member of all the non-proliferation regimes. This evolution also shows that China's official security pronouncements are reflective of the changing security environment and reveal evolution of China's security perception and thinking.

At the same time, it is important to note that the degree of China's integration into the international community's non-proliferation efforts remained limited. While China acceded to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1992, signed the Comprehensive Test Ban Treaty (CTBT) in 1996, and participated in the work of the UN Group of Governmental Experts on Missiles and in discussions on proposals of Global Control System and the draft of the International Code of Conduct Against Ballistic Missile Proliferation, China did not become a formal member of the MTCR regime and did not subscribe to the Hague Code of Conduct.[46] Beijing's policy remained to be one of reservation. China's leadership did not want to join the MTCR until its concerns regarding Taiwan and the U.S. national missile defense system were addressed.[47]

Recognizing a need for a positive alternative vision of international security and the world order more broadly, as well as a need for concrete steps for providing

[46] International Code of Conduct Against Ballistic Missile Proliferation, List of Subscribing States to the International Code of Conduct Against Ballistic Missile Proliferation, November 2002, Official Website, http://www.minbuza.nl/ (accessed 12.19.03). Both the United States and the Russian Federation subscribed to the Code on November 25, 2002.

[47] Sibing He, "What Next for China in Space after Shenzhou?" *Space Policy* 19 (August 2003): 183-189.

international security, China launched an effort to prevent an arms race in outer space and its weaponization. The PRC made the prevention of an arms race in outer space one of the main issues of its security policy at the global level by addressing its initiatives to the Conference on Disarmament in Geneva. In February 2000, the Chinese delegation at the Conference on Disarmament submitted a paper titled "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space," and in June 2001—"Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space." In cooperation with Russia, China presented to the Conference on Disarmament in Geneva a "Joint Paper by the Delegation of China and the Russian Federation Outlining the Possible Elements of an International Agreements for Space" in May 2002.[48] This initiatives demonstrate not only that China's interests in space was importantly affected by recent developments in space security issue area, but also the fact that China was prepared to take a lead on arms control at the international level.

Thus, pursuing its security after the end of the Cold War, China increasingly put an emphasis on international cooperation. The PRC leadership directed its attention toward regional multilateral cooperation and international cooperation under the aegis of the United Nations in contrast to the international cooperation under the direct leadership of the United States. This increased interest in multilateralism became an important feature of China's new security strategy often referred to as "new concept of security," and should be understood in the context of China's desire for a mutlipolar world order.

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[48] These initiatives will be further analyzed in Chapter IX. See Eisenhower Institute, Project "The Future of Space: the Next Strategic Frontier," List of China's initiatives at the Conference on Disarmament in Geneva, Official Website, http://www.eisenhowerinstitute.org/programs/globalpartnerships/fos/newfrontier/weapons.htm (accessed 10.20.03).

The Chinese leadership announced its "new concept of security" in the 1998 White Paper "China's National Defense:"

> Under the new situation, especially, enlarging military blocs and strengthening military alliances run counter to the tide of times. Security cannot be guaranteed by an increase in arms, nor by military alliances. Security should be based on mutual trust and common means and strive for common development. To obtain lasting peace, it is imperative to abandon the Cold War mentality, cultivate a new concept of security and seek a new way of safeguarding peace.[49]

The "new concept of security" promulgated in the document was founded on the China's long-held five principles of "peaceful coexistence."[50] According to this document, China's economic development was announced the top priority, and international cooperation, including arms control and disarmament—important instrument for achieving both national well-being and security. The document stated:

> China being at the primary stage of socialism, the fundamental task of the state is to concentrate its strength on the socialist modernization program... China is now confronted with the extremely heavy task of economic construction, so the work in defense must be subordinate to and in the service of the nation's overall economic construction.[51]

China strongly condemned continuous practice of the deterrence policy and the U.S. plans to develop and deploy anti-ballistic missile defense and anti-satellite weapons. The document putting forth China's alternative vision for the international security order consisted of the following elements:

> A complete ban on weapons of any kind in outer space, including anti-missile and anti-satellite weapons so as to keep outer space free of weapons; a ban on the

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[49] See People's Republic of China, State Council, "China's National Defense," White Paper issued by the State Council of the People's Republic of China, July 1998, Section I "International Security Situation," http://english.peopledaily.com.cn/whitepaper/2(1).html (accessed 11.07.03).

[50] In the literature, there is no unanimous agreement on the components of China's New Security Concept. According to some experts, it includes along with the five principles of "peaceful coexistence," economic cooperation via international markets, security cooperation via international organizations, and "strategic partnerships" with key nations. The latter component, however, was not directly formulated in the White Paper. See, for example, David Finkelstein and Michael McDevitt, "Competition and Consensus: China's 'New Concept of Security' and the United States Security Strategy for the East Asia-Pacific Region," *PacNet*, No. 1, January 8, 1999, http://nyu.edu/globalbeat/asia/Finkelstein010999.html (accessed 12.12.03).

[51] See People's Republic of China, State Council, "China's National Defense," Section II "National Defense Policy," 1998.

> use of force or conduct of hostilities in, from or to outer space; and all countries should undertake neither to experiment with, produce or deploy outer space weapons nor to utilize outer space to seek strategic advantages on the ground, for example, using disposition of the important parts of ground anti-missile systems in outer space for the purpose of developing strategic defense weapons.[52]

In the document, China called for holding negotiations at the earliest possible time for the conclusion of a legally binding international agreement consisting of these elements.

At the same time, as one of the goals of military modernization, the 1998 document clearly formulated China's task "to adapt to profound changes in the world's military sphere," to make "proper preparations for defensive combat in the situation where modern technology, especially high technology prevails."[53] In this document, China also pledged that "no effort will be spared to improve the modernization level of weaponry, reform and perfect the army system and setup, and improve the training of troops and curricula and teaching methods of military academies."[54]

The 2000 China's National Defense White Paper continued to condemn efforts of a "certain country" to develop and deploy the National Missile Defense (NMD) and Theater Missile Defense (TMD) systems, for they undermined the efforts of the international community "to stem the proliferation of weapons of mass destruction and to promote disarmament."[55] It drew attention to the importance of the preservation of the ABM treaty as the "cornerstone of global strategic stability and international security." Moreover, the paper warned of an emerging danger of a space arms race and placed the prevention of such an arms race at the top of its priorities in the international arms control fora, making it an issue as urgent as the negotiations on the Fissile Material Cutoff Treaty

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[52] Ibid., Section V "Arms Control and Disarmament."
[53] Ibid., Section I "International Security Situation."
[54] Ibid., Section II "National Defense Policy."
[55] See People's Republic of China, State Council, "China's National Defense in 2000," White Paper issued by the State Council of the People's Republic of China, October 2000, Section I "The Security Situation," http://english.peopledaily.com.cn/features/NDpaper/nd1.html (accessed 10.23.03).

(FMCT).[56] The goal of arms control process, according to the document, was to maintain outer space free of weapons and its exclusively peaceful utilization for "the sole purpose of promoting economic, scientific and cultural development of all countries, and benefiting all mankind."[57] Calling on the international community to take active steps to stop the militarization of space, the paper insisted not only on strict compliance with the then existing legal instruments, such as, the ABM Treaty, but also on urgent negotiations of a new legal instrument or instruments that would include a ban on testing, deployment of use of weapons, weapon systems or their components in outer space.

Analyzing other factors negatively affecting the security situation in the world, the document pointed to "hegemonism," power politics, and "neo-interventionism" of "certain big powers" as damaging national sovereignty, independence and developmental interests of "many countries" and threatening world peace and security.[58] In the analysis of regional security, the document identified new negative security developments in the Asia-Pacific region: "The United States is further strengthening its military presence and bilateral military alliances in this region, advocating the development of the TMD system and planning to deploy it in East Asia."[59] The situation with Taiwan was characterized in the paper as "complicated and grim" and China's concerns with the security situation in Asia Pacific as "profound." In this context, the United States was identified as an active contributor to the deteriorating relations between Taiwan and the mainland. A strong opposition was expressed to plans to include Taiwan in any form into a TMD system by any country.

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[56] Ibid., Section VI "Arms Control and Disarmament."
[57] Ibid.
[58] Ibid., Section I "The Security Situation."
[59] Ibid.

As an alternative to the policies pursued by the United States, the document called for abandoning "the Cold War mentality" and adopting a "new security concept." At the heart of this "new security concept," the document again placed "mutual trust, mutual benefit, equality, and cooperation."[60] The call for a "new security concept" became China's leitmotif in the official pronouncements and discussions of security issues. In statements addressing the United Nations General Assembly, China's foreign minister Tang Jiaxuan reiterated that security had become "multifaceted and globalized," with countries "getting more dependent on one another in security."[61] He appealed to other countries to "rise above their differing ideologies and social systems, abandon the Cold-War mentality and power politics mindset," to "respect the security interests of others, while pursuing the interests of its own," and to "refrain from interfering in each other's internal affairs, so that international relations will become more democratized."[62] The idea of "democratization" of international relations, understood as mutlipolarization, received greater emphasis and further developed in China's later statements on international security issues.[63]

In the 2002 White Paper on national defense, China dramatically changed its rhetoric, emphases, and conclusions. It stated that rapid and drastic changes in the military field fundamentally altered the global balance of military power:

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60 Ibid.

61 United Nations, *Statement by H.E. Mr. Tang Jiaxuan, Minister of Foreign Affairs and Head of the Delegation of the People's Republic of China at the 56th Session of the UN General Assembly*, New York, November 11, 2001, http://www.un.org/webcast/ga/56/statements/011111chinaE.htm (accessed 03.26.04).

62 United Nations, *Statement by H.E. Mr. Tang Jiaxuan, Minister of Foreign Affairs and Head of the Delegation of the People's Republic of China at the 57th Session of the UN General Assembly*, New York, September 13, 2002, http://www.un.org/webcast/ga/57/statements/020913chinaE.htm (accessed 03.26.04).

63 Untied Nations, "To Enhance the Role of the United Nations in Promotion of Peace and Development," *Statement by H.E. Mr. Li Zhaoxing, Minister of Foreign Affairs of the Republic of China at the 58th Session of the UN General Assembly*, New York, September 24, 2003, ttp://www.un.org/webcast/ga/58/statements/chineng030924.htm (accessed 03.26.04).

> The extensive applications in the military field of new and high technologies led by IT have stretched the battlefield into multidimensional space which includes the land, sea, air, outer space and electron... As far as military technology is concerned, the gap between the developed and developing countries is wider than ever before. The developing countries are facing a serious challenge in their efforts to safeguard sovereignty and security.[64]

Although the document continued to promote China's "new security concept," according to which security would be provided through international dialogue and cooperation, its main attention was devoted to military aspects of security with an emphasis on consolidation of national defense and military modernization fully geared towards "winning local wars under modern, especially high-tech conditions... under most difficult complex circumstances." Increasing defense spending was to help People's Liberation Army to improve training, research and development of new modern weapon systems and equipment, while the military-industrial complex was to be restructured to compete more successfully on the global market. The new document, in comparison to the previous papers, put a stronger stress on the importance of the goal of reunification of the country.

Another point of sharp difference between the 2000 and 2002 White Papers was in the attitude towards plans for deploying missile defenses. While still calling for urgent negotiations on the prohibition of anti-missile and anti-satellite weapons and the weaponization of outer space, the new document expressed an understanding of the need for missile defense in the "relevant country" and a hope for prudent actions. However, the document stated clearly China's firm opposition to the deployment of a theater missile defense (TMD) in Taiwan or inclusion of Taiwan in a TMD system of any country.

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[64] See People's Republic of China, State Council, "China's National Defense in 2002," White Paper issued by the State Council of the People's Republic of China, Section I "The Security Situation," December 2002, http://english.people.com.cn/features/ndpaper2002/nd1.html (accessed 11.07.03).

Besides voicing its opposition to national and theater missile defenses and weaponization of outer space, China actively prepared for a potential conflict in the Taiwan Strait. Preparations for a conflict over Taiwan and efforts to adopt and, where necessary, to counter effects of the Revolution in Military Affairs (RMA) were the primary drivers of China's military modernization in the second half of the 1990s and early 2000s. The 2002 White Paper reflected China's greater stress on the role of air and air defense operations, electronic and information warfare, and long-range precision weapons. China placed a major emphasis on the development of space technology, particularly in space based reconnaissance and surveillance systems, including in cooperation with other countries. China was believed to be developing its own and acquiring foreign technologies, which could be used for building anti-satellite capabilities—both ground-based and space-based.[65] It became apparent from official Chinese pronouncements and actions that the issue of anti-missile defenses and weaponization of space became an issue on which the future security landscape, at a minimum in Asia, and world order in general became dependent.[66]

The remarkable economic growth and market-oriented reforms that led to China's participation in international commercial space cooperation contributed significantly to the development of China's space technology and capabilities, including its military

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[65] U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China*, Section IV "PRC Military Modernization," 2003, 36.

[66] The Stimson Report argues: "…[M]issile defenses can fortify or weaken international cooperation, diminish or rekindle big power rivalry, provide more certainty or less in a world challenged by regional unrest and global terrorism. The manner in which the United States interacts with China over the course of the development and deployment of National Missile Defense (NMD) will be important to the Asian security landscape, writ large, and a major factor in the overall U.S.-China strategic relationship over the long term." See Henry L. Stimson Institute, "China and Missile Defense: Managing the U.S. PRC Strategic Relations," Report, Online publications, http://www.stimson.org,=/pubs.cfm?ID=73 (accessed 02.07.04).

space capability.[67] International commercial cooperation also played an important role in progress of China's manned space program.[68] These efforts are believed to have lead to improvements in China's military space systems: China's manned space program is run by the military and military goals of the program are not denied by the Chinese. The arguments for the development of manned space program included two exclusively military goals: (1) the necessity to prepare for future wars over natural resources, including those located in outer space, and (2) to improve the country's military, including nuclear, capabilities in the context of the RMA.[69]

Thus, China continued to oppose the development of missile defense and anti-satellite weapons, but China's position became more moderate and pragmatic. China seemed to accept the fact—and the challenge—of revolutionary changes in military affairs and the changes in the system of international relations that they brought about. China's security strategy acquired a stronger military component and clearer emphasis on achieving national reunification, while still clinging to the hope of providing security via international cooperation rather than military competition with the United States. In the 2002 White Paper on National Defense, China started to position itself for a possible confrontation, while still trying to cooperate on mutually beneficial international issues via international organizations that China found as supporting Chinese national interests and a multipolar, more equitable world order.

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[67] Phillip Saunders, Jing-Dong Yuan, Stephanie Lieggie and Angela Deters, "China's Space Capabilities and the Strategic Logic of Anti-Satellite Weapons," Center for Non-Proliferation Studies, Online publication, July 22, 2002, http://cns.miis.edu/pubs.week/020722.htm (accessed 10.29.03).

[68] After over a decade of active work on its manned space program, China finally launched its first manned flight on October 15, 2003. China is also believed to have plans for its own space station by 2007 and its own expedition to the Moon by 2010.

[69] See D. Regentov, "Podnebesnaya—'Nebesnay' Strana," *Novosti Kosmonavtiki* 13 (November 2003): 13.

All in all, China's security strategy in the post-Cold War era, despite China's remarkable economic growth and integration into the world economy, remained to be based on a non-liberal concept of security. China's strategy was aimed at achieving three main goals: (1) to provide for China's security as a sovereign state, with reunification with Taiwan increasingly becoming one of the top priorities; (2) to provide overall favorable conditions for China's economic development and ascendance as a major player on the international stage; (3) support and promotion of cooperative approaches to security, including arms control, whose particular importance was seen in preventing the weaponization of outer space and avoiding an arms race into outer space. China's interests with respect to outer space were overwhelmingly dictated by China's strategic calculations.

SECURITY STRATEGIES AND CONVERGING AND DIVERGING SECURITY INTERSTS IN OUTER SPACE IN THE POST-COLD WAR ERA

In the post-Cold War era, the U.S. grand strategy evolved from a hesitating primacy to an assertive primacy, while the international system transitioned from bipolarity to unipolarity. The U.S. economic and security priorities changed from the Clinton Administration's belief that security must be provided through the strength of the U.S. economy and economic leadership at the global level to George W. Bush Administration's belief that security must be provided above all else, while economic prosperity was believed to follow. In the meantime, the evolution of the U.S. space security interests made almost a full circle from the Reagan SDI and leadership in space to George W. Bush's National Ballistic Defense project and plans for development of space war-fighting capabilities. The U.S. commercial space systems became a part of

American vital infrastructure, on which the U.S. economy, government and military became increasingly dependent for economic well-being and national security. The U.S. uses of outer space—both for commercial and military purposes—became an integral part of the U.S. overall strategy aimed at being the world's hegemon: an economic and military sole superpower.

As a result of the ongoing revolutionary transition from a communist state to a liberal democracy, Russia's security approach after the end of the Cold War changed to become more in line with security approaches of the liberal democracies. Russia's internal conditions, and above all its economic conditions, did not allow Russia to keep up with the developing security challenges, while its hopes for security cooperation remained largely unfulfilled. As a result, over the past decade since the end of the Cold War, Russia grew to rely more on its strategic nuclear arsenal and progressively lowered its nuclear threshold.

Despite the new security pronouncements and this realignment, Russia's security interests with respect to outer space remained persistently in opposition to the U.S. plans for deployment of the NMD system as a step towards weaponization and extension of military capabilities to outer space. Russia's unwillingness to engage in a space arms race can be explained by the needs of domestic reforms, requiring major resources for productive purposes. Russia actively pursued commercial space activities and grew to depend on the global space market for the survival of its space industry. Russian leaders considered commercial space activities as one of the important avenues for integrating the country into the world economy and for benefiting the Russian economy. Russia considered weaponization of space as a serious threat not only to its security and its position in the international system, but also to the global space market and commercial space activities.

China's security strategy continued to be based on a non-liberal concept of security—the communist concept of "peaceful coexistence." Its main goal was to provide a favorable, peaceful international environment for the country's economic and social development and ascendance as a major player in the international system. China's space activities, including commercial space activities, became an integral part of a comprehensive development strategy and military modernization. Military aspects of space security became China's prime concern in the context of reunification with Taiwan. Although China grew to rely more and more on the United States as a commercial partner, including in its space endeavors, as the situation with Taiwan deteriorated the PRC progressively perceived the United States as its potential adversary in a conflict over Taiwan. Thus, in the post-Cold War era, China's security interests concerning outer space security increasingly converged with those of Russia: like Russia, China opposed American plans for the deployment of NMD system as a step towards weaponization of space and setting off an space arms race; and similarly to Russia, China increasingly cooperated on missile non-proliferation issues, while preparing for the consequences of further militarization of outer space. But unlike Russia, China seems to be more prepared to take on military challenges in space. This is because, unlike the situation with Russia, it is not simply a matter of economic development, technological progress and integration into the global economy. China's ability to provide for its security in general rests on a small nuclear strategic arsenal that is particularly vulnerable to the effects of U.S. missile defenses. Likewise, China's fundamental goal of reestablishing sovereignty over Taiwan has forced Chinese planners to develop more explicit plan for confronting American military capabilities.

CHAPTER VIII

SPACE SECURITY AND BILATERAL RELATIONS: THE UNITED STATES-RUSSIA, THE UNITED STATES-CHINA, AND RUSSIA-CHINA RELATIONS

The previous three chapters analyzed the evolution of security strategies and space security interests relying on the official promulgations of the three spacepowers—the United States, Russia, and China. By the time the Cold War ended all three spacepowers had managed to improve their overall security relations and were pursuing the commercialization of their space activities under the relaxed security conditions of the post-Cold War era. In all three cases, the importance of outer space in overall security strategies increased over time. The United States, Russia, and China became dependant on space both militarily and for their economic well-being. Because of this dependency, all three grew increasingly concerned about space security. They, however, developed different visions of security in outer space: the United States increasingly considered space as the fourth medium for its military operations for providing the United States security and economic well-being; Russia and China considered collective arrangements for space security that would preserve space free of weapons as their first choice.

The task of this chapter is to examine the dynamics of the bilateral interaction between these three spacepowers: the United States-Russia, the United States-China, and Russia-China. Since these three spacepowers are either former, potential or latent rivals, their bilateral interaction in the issue area of outer space is of particular importance. The bilateral dimension is crucial, for it is at this level that states' interests and security strategies—formulated at the domestic level—play out and generate interstate conflict and cooperation. Space cooperation at the bilateral level is represented by a whole spectrum of interstate activities: from security and military space cooperation to commercial space cooperation, such as trade and commercial joint ventures, to civil space cooperation. These activities are often intertwined.

This chapter addresses the three hypotheses formulated in this study: (1) the first realist hypothesis that contends that the commercialization of outer space leads to non-converging security interests, (2) the second realist hypothesis that assumes the reverse causality—that is, converging security interests lead to greater commercial cooperation, and (3) the liberal hypothesis asserting that greater commercialization and commercial cooperation lead to converging security interests. Three questions are of a particular interest in this chapter: (1) What was the timing of the improved overall security relations vis-à-vis commercialization of the space activities and bilateral commercial space cooperation? (2) How did the three states' space interests and perceptions of each other change as commercialization of space activities proceeded in the post-Cold War era? (3) Did the spacepowers manage to put bilateral security arrangements in place to address their security concerns as the Cold War space security regime continued to erode?

This chapter argues that the improvement of overall security relations between the spacepowers was an important condition for space commercialization and commercial cooperation to take off in all three dyads. For the U.S.-Russia dyad, space security, the overall strategic relationship, and commercial space issues had to be resolved in a complex, since outer space played a major role in their bilateral relationship as an arena of competition. It is shown that in the U.S.-Russian and U.S.-Chinese cases, space commercialization and commercial space cooperation did not lead to non-converging security interests with regard to outer space, while converging security interests led to both greater commercial and security cooperation in space in the Sino-Russian bilateral relationship.

U.S.-RUSSIA BILATERAL RELATIONS AND SPACE SECURITY INTERESTS

During the Cold War, cooperation in space security emerged between the United States and Soviet Union rather promptly after the dramatic beginning of the Space Age, as the two superpowers came to realize that a security regime to regulate their military uses of space was in their mutual interests. Within a few years after the beginning of the Space Age, the Partial Test Ban Treaty, the legally binding international treaty relating to outer space, was signed that for the first time restricted the use of force in outer space by outlawing nuclear explosions in outer space. Other arms control agreements regulating space activities followed that helped to make the superpower relationship more transparent and more stable. Under the conditions of the bipolar confrontation the two spacepowers managed to build a multifaceted security regime that was remarkably successful during the Cold War. Although outer space was militarized, it was not weaponized and military confrontation was not extended to outer space during the years of the East-West bipolar rivalry. Instead, outer space was used by both superpowers as an arena of peaceful competition.

The two superpowers were caught in a fierce space race and space occupied an important place in their overall security relations. Nonetheless, space was also used as an arena for superpower cooperation in space activities. The famous Soyuz-Apollo project and the "handshake in space" of 1975 followed President Nixon's 1972 visit to Moscow and signing of the landmark arms control agreements within the Strategic Arms

Limitation Talks I (SALT I)—the ABM agreement and the Interim Agreement on strategic offensive arms.[1] The U.S.-Soviet cooperation in civil space activities was meant to symbolize a turning tide in their bilateral relations, their overall political détente. This space cooperation was used by the two states for political purposes and, being a highly politicized program, it suffered a major setback after the end of the superpower détente of the 1970s.[2] However, it paved the way to post-Cold War space cooperation between the United States and Russia within the Mir-Shuttle program and International Space Station (ISS) program. The Soyuz-Apollo project also led to practical, but less visible and less politicized, space cooperation that survived through the worst years of deteriorating U.S.-Soviet relations—the time of the "Evil Empire" and "Star Wars" of the early 1980s and uncertain transitions of the post-Cold War era: the COSPAS-SARSAT program. It was cooperation on the search and rescue satellite-aided tracking system with the United State, the Soviet Union, Canada, and France as partners that served to save people's lives all around the world.[3] Thus, even at the time of bipolar confrontation, the United States

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[1] The Strategic Arms Limitations Talks (SALT I) extended from November 1969 to May 1972. In a summit meeting in Moscow the first round of talks was concluded, with President Nixon and General Secretary Brezhnev signing the ABM Treaty and the Interim Agreement on strategic offensive arms.

[2] In May 1977 the leaders of the National Aeronautics and Space Administration (NASA) and the Soviet Academy of Science signed an agreement that called for "Study of the Objectives, Feasibility and Means of Accomplishing Joint Experimental Flights of the Long-Duration Station of the Solyut-type and a Reusable 'Shuttle' Spacecraft." The agreement was not implemented because the Carter Administration decided to abandon close cooperation with the Soviet Union in outer space in response to Soviet violations of human rights and the1979 invasion of Afghanistan. In 1982, the Reagan Administration continuing high animosity towards the Soviet Union allowed the 1977 agreement for U.S.-Soviet space cooperation to lapse.

[3] The COSPAS-SARSAT negotiations resulted in signing of a COSPAS-SARSAT Memorandum of Understanding in late 1979 that laid out the foundation for a multilateral experimental work. The Soviet *Cospas 1* was launched in 1982 and the first rescue took place two months later when three men were rescued in the mountains of British Columbia in Canada after their single-engine plane crashed. The *Sarsat 1* was launched in 1983. On July 11, 1988, formal transition from experimental to operational status was codified in an intergovernmental agreement. Later the same year, the International Maritime Organization (IMO) incorporated COSPAS-SARSAT into plans for the Global Maritime Distress and Safety System (GMDSS) as an indication of greater commitment to the development of the system. See Richard J. H. Barnes and Jennifer Clapp, "COSPAS-SARSAT: A Quiet Success Story," *Space Policy* 11 (November 1995): 261-268. Over the years the COSPAS-SARSAT expanded the space segment to include instruments in geostationary orbits. It also expanded its membership to 34 countries in all regions of the world.

and the Soviet Union developed cooperation at the bilateral level in the security realm as well as in civil space activities.

As advances in space technology were revolutionizing space applications, above all in the military realm, the Cold War space security regime began to erode in the late 1970s-early 1980s. On May 11, 1978, President Carter signed the National Space Policy PD-37 that outlined the "two track" policy towards the use of space for national security.[4] The new policy indicated the U.S. intent to conduct further research and development of ASAT capabilities and initiate a long-term program to provide greater survivability of U.S. military space systems on the one hand, and on the other, to pursue cooperative approaches with respect to ASAT issues. The significance of PD-37 was that it contained the first sign of a shift in the national security establishment's view on outer space. Up until PD-37 the U.S. policy of keeping outer space peaceful and free of weapons reflected U.S. space security interests based on calculations regarding relative national security advantage.[5] The 1978 document alluded to the fact that space was beginning to be viewed as a potential medium for war-fighting.

The idea of negotiations on the ASAT arms control issues was suggested by President Carter to the Soviet Union earlier. During a press briefing in March 1977 he announced:

> I have proposed both directly and indirectly to the Soviet Union, publicly and privately, that we try to identify those items on which there is relatively close agreement—not completely yet, because details are very difficult on occasion.

Between1982 and 2002 the COSPAS-SARSAT assisted in the rescue of over 13,000 people. See Kenneth Hodgkins, "International Cooperation in the Peaceful Uses of Outer Space," Remarks on Agenda Item 75 "International Cooperation in the Peaceful Uses of Outer Space" in the Fourth Committee, the United Nations, New York, October 9, 2002, http://www.state.gov/g/oes/rls/rm/2002/14362.htm (accessed10.23.03).

[4] U.S. President, Presidential Directive 37, "National Space Policy," 1978.

[5] Handberg, *Seeking New World Vistas*, 2000, 21.

> But I have for instance, suggested we forgo the opportunity to arm satellite bodies, and also to forgo the opportunity to destroy observation satellites.[6]

In this concise form, President Carter captured the formula of a possible new security regime for outer space. The Soviet Union responded positively to President Carter's proposal on ASAT negotiations and in March 1978 the two sides reached an agreement to have an exploratory meeting on the issue. Three rounds of ASAT limitations talks were held between 1978 and 1979. After the Soviet Union's invasion of Afghanistan, the U.S. refusal to ratify the SALT II Treaty, and the end of the superpower détente, the U.S.-Soviet discussions that were temporarily adjourned never resumed. The ASAT issue remained unresolved between the two superpowers, indicating the increasing difficulty of reaching cooperation on space security issues.

By the mid-1980s, it became apparent that unresolved space security-related issues started to impede progress in negotiations on nuclear strategic forces reductions and became one of the main issues of contention between the United States and the Soviet Union. At the end of 1983, U.S.-Soviet START negotiations stalled. The Soviet Union declared suspension of its participation in the START talks due to "a change in the strategic environment," following President Reagan's March 1983 speech on SDI and NATO's deployment of intermediate-range nuclear missiles in Western Europe.[7] On September 24, 1984, President Reagan—in a speech, addressing the United Nations General Assembly—proposed to reinvent the U.S.-Soviet relationship and put forth a wide spectrum of measures: to upgrade the hotline communication facility, to redouble efforts for achieving real results in reducing stockpiles of conventional armaments and

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[6] Press Conference of Jimmy Carter, Washington D. C., 9 March 1977, quoted in Stares, *The Militarization of Space*, 1985, 181.
[7] See Federation of American Scientists, Strategic Arms Reduction Treaty (START I) Chronology, http://www.fas.org/nuke/control/start1/chron.htm (accessed 01.27.04).

chemical weapons, to embark on periodic consultations at all policy levels and regular meetings of experts and officials on a wide range of security issues, including issues related to the militarization of space.[8]

Following President Reagan's invitation to reinvent the U.S.-Soviet bilateral relationship and return to the negotiating table, U.S. Secretary of State George Shultz and Soviet Foreign Minister Andrei Gromyko met in early 1985 in Geneva in order to set an agenda for new Nuclear and Space Talks (NST). These talks were to be separate from the Conference on Disarmament negotiating body, and would cover strategic nuclear arms, intermediate-range nuclear forces, and defense and space security issues. The Nuclear and Space Talks, which commenced shortly after the initial meeting between Shultz and Gromyko, went in parallel to the discussions at the *Ad Hoc* Committee on the Prevention of an Arms Race in Outer Space (PAROS) established in 1985 at the Conference on Disarmament in Geneva, to which the Soviet Union submitted two draft treaties, trying to outlaw the weaponization of outer space and the use of force in outer space after the U.S.-Soviet negotiations failed to resume on the ASAT issues.[9]

During the NST talks, it became apparent that the U.S. and Soviet perceptions and goals differed significantly with respect to space security. The Soviet Union saw its security best served by preserving space free of weapons. It sought to stem the weaponization of outer space by not only preserving the 1972 ABM Treaty as it was, but

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[8] U.S. President, *President Reagan's Address to the 39th Session of the United Nations General Assembly in New York*, September 24, 1984, http://www.reagan.utexas.edu/resource/cpeeches/1984/92484a.htm (accessed 01.28.04).

[9] "Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space" (August 1981, A/36/192), and "Treaty on the Prohibition of the Use of Force in Outer Space and From Space Against the Earth" (August 1983, A/38/194) were submitted first to the United Nations, and then in 1982 and 1984, respectively, to the Geneva Conference on Disarmament. See U.S. Congress, Office of Technology Assessment, *Anti-Satellite Weapons, Countermeasures, and Arms Control*, OTA-1.S(;-281 (Washington, D. C.: U.S. Government Printing Office, September 1985), 96-99.

further strengthening it and putting in place a legal regime prohibiting the weaponization of outer space. The United States, on the other hand, pursued these talks in order to facilitate a cooperative transition towards more stable deterrence, which would increasingly rely on anti-ballistic missile defense, including its space-based components. The United States also sought to free some ABM components from the limitations imposed by the ABM Treaty in order to allow for testing and development that would ensure the future deployment of space weapons and components necessary for the strategic defense.[10] Therefore, the interests of the United States and the Soviet Union with respect to space issues diverged fundamentally in the closing years of the Cold War.

In October 1985, U.S. National Security Adviser Robert McFarlane introduced a new "broad" interpretation of the ABM Treaty on national television and a few days later President Reagan determined that the "broad" definition was justified.[11] At the Reykjavik summit a year later, the sharp division over SDI and the new interpretation of the ABM Treaty prevented an agreement between President Reagan and General Secretary Gorbachev on a significant reduction of offensive ballistic missiles. In conjunction with a 10-year commitment to the ABM Treaty, Gorbachev also sought to ban the testing of space-based "elements" of a missile defense system outside of laboratories. President Reagan rejected this proposal due to its impact on the SDI program.

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[10] Pericles Gasparini Alves, *Prevention of an Arms Race in Outer Space: A Guide to the Discussion in the Conference on Disarmament* (New York: United Nations, 1991), 50-51.

[11] The "broad" interpretation of the ABM Treaty would allow the United States to develop and test space-based and mobile ABM systems and components based on "other physical principles," such as lasers and piratical beams. See Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin's Press, Second Addition, 1997), 416. See also Walter Stutzle, Bhupendra Jasani and Regina Cowen, eds. *The ABM Treaty: To Defend or Not to Defend?* (Oxford: Oxford University Press, 1987), 6-8.

Despite this divergence of interests, the U.S.-Soviet interaction within the framework of the NST was productive. The United States was successful in the pursuit of its goals to the extent that, in May 1986, the Soviet Union abandoned its previous refusal to negotiate reductions in offensive strategic weapons until the United States would agree to renounce its SDI program. Instead, the Soviet Union introduced a new, two-part proposal, offering to reduce strategic offensive forces if both sides would agree not to withdraw from the 1972 ABM Treaty for 15-20 years. The renewed negotiations eventually led to the signing of the START Treaty in July 1991, after the George H. W. Bush Administration declared its plans to reformulate the SDI program and develop a system providing Global Protection Against Limited Strikes (GPALS) in March 1991.[12] To the extent that these changes in U.S. strategic plans were attributable to the Soviet actions within the NST framework, as well as outside of it, the Soviet Union was successful in slowing down the development of the SDI program, which it perceived as a threat to its own security, and as a threat to international stability via escalation of an arms race and its extension into outer space.

However, on the same day that the United States and the Soviet Union signed the START Treaty, the U.S. Senate adopted a plan, the Missile Defense Act of 1991, calling for the construction of a single treaty-compliant ABM site by 1996 as the initial step towards a nation-wide missile defense incorporating "one or an adequate additional number" of ABM sites and ABM interceptors, space-based sensors, ground-based anti-ballistic missile battle management radar, and a relaxation of the limits on ABM testing.

[12] White House, *National Security Strategy of the United States*, 1991, 26.

It was indicated that if the Soviet Union did not agree to amend the ABM Treaty, the United States could consider other options available under the 1972 ABM Treaty.[13]

As a result of the bilateral agreements reached with the United States on space security issues and reductions of strategic nuclear arsenals, the Soviet Union managed to buy itself time and free up resources for comprehensive reconstruction, or *perestroika*, of its political, economic, and social systems. The reforms started by the Soviet leader Michail Gorbachev went, however, much further than anyone expected. The Soviet Union dissolved in December 1991, and a new Russia emerged as its successor and a "strategic partner" of the United States in a new world order. Thus, space security issues occupied one of the central places in the U.S.-Soviet strategic relationship during the Cold War and were crucial for the reductions of strategic nuclear arsenals and the resolution of the Cold War conflict more broadly: the compromises that the two superpowers reached with respect to outer space security allowed them to agree on the reductions of the offensive nuclear arsenals and contributed to the peaceful end of the Cold War itself.

The Soviet Union achieved significant progress in space technology in the two initial decades of the Space Age, and by the early 1980s began exploring the possibilities of international "commercial" cooperation in outer space activities. In 1982, the Soviet Union carried out its first quasi-commercial launch by placing in orbit an Indian indigenously developed remote-sensing satellite *IRS-1*. In 1985, when Gorbachev's *perestroika* was just begun, the *Glavkosmos* agency was created with the task of coordinating space efforts and putting space technology in service of the Soviet economy.

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[13] See *National Missile Defense Act of 1991*, 102nd Cong, H.R. 2100, 1991, became Public Law No. 102-190, December 1991, http://www.missilethreat.com/law/federal/nmdact91.html (accessed 05.11.04).

A year later, the new agency started its marketing efforts in the West, just as the United States had begun to commercialize its space activities. But it was not until 1992 that a breakthrough in space commercial cooperation between the two spacepowers emerged. By this time a whole range of agreements had already been signed between the United States and the Soviet Union that laid to rest the Cold War and established a new relationship between the United States and Russia.

During the June 1992 summit in Washington, Presidents Bush and Yeltsin signed the Joint Understanding on further reductions in strategic offensive arms, the so-called De-MIRVing Agreement, according to which following the entry into force of the 1991 START Treaty, the two sides would within a seven-year period reduce their nuclear forces to an overall total of 3800-4250 warheads each and by the year 2003 all MIRVed ICBMs would be eliminated. The two presidents also made a joint statement on U.S.-Russian cooperation on a Global Protection System against ballistic missiles.[14] The list of the documents signed between the two countries also included those agreements that established the foundation for Russia's entrance in the Western space market.

During the 1992 Bush-Yeltsin summit, a new U.S.-Russian Space Cooperation Agreement was signed. The agreement called for: (1) going beyond the 1991 cosmonauts-astronauts exchange agreement; (2) conducting a technical study on the possibility of using Russian space technology for U.S. missions including the Space Station Freedom; (3) steps to encourage private companies to expend their search for new commercial space business; and (4) support for Russia's entrance into the international space launch market by allowing INMARSAT 3 satellite to be launched aboard the Russian *Proton*. Thus, in the U.S.-Soviet and then U.S.-Russian bilateral relations improvements resulted after years of negotiations that brought about in a complex significant reductions of strategic nuclear arsenals, rollback of the SDI program, preservation of the 1972 ABM Treaty, and cooperation in civil and commercial space activities.

The balance of compromises reached on the complex of nuclear arsenals, space security and commercial issues set the stage for the U.S.-Russian relations for remaining part of the 20th century and the early 21st century. The post-Cold War period saw unprecedented U.S.-Russian civil space cooperation within the world's most grandiose international cooperative scientific project—the International Space Station—and the U.S.-Russian military space cooperation. Throughout this transition decade, Russia collaborated with the United States on the Russian-American Observation Satellite (RAMOS) Project—a joint technology demonstration program that potentially could assist both states in developing effective early warning and missile defense technologies. The Ballistic Missile Defense Organization—transformed under the George W. Bush administration into the Missile Defense Agency (MDA)—began discussions on the subject with Russian officials in 1992, leading to the 1997 agreement between Presidents Clinton and Yeltsin on the Russian-American Observation Satellite Program. The original idea of cooperation on missile defense technology between the United States and the then Soviet Union was expressed by President Reagan after he unveiled his Strategic Defense Initiative. He pledged to share missile defense technology with the Soviet Union as a means of eliminating of threat of the nuclear ballistic missiles.[15] Russia responded positively to the U.S. invitation to take part in a cooperative project in the area of military

[14] See *U.S.-Russian Joint Statement on a Global Protection System*, June 1992.

space applications because, after the collapse of the Soviet Union, Russia realized it could no longer support the full burden of development of space military technology with its small market-oriented economy up to the world highest standards across the whole spectrum of military space activities without international cooperation. Thus, international cooperation in the area of military space activities became an integral part of Russia's plans to keep its position in military space technologies under the conditions of market competition. In addition, Russia had hopes that military space cooperation would contribute to further improvement of U.S.-Russian bilateral relations and facilitate international cooperation on space security issues.[16] The RAMOS project, however, despite early success led to rather more confusion and distrust in space military collaboration than mutual confidence, as the United States repeatedly changed plans, funds and schedules and marginalized Russian participation over the years.[17]

Throughout the 1990s, as the U.S.-Russian commercial cooperation emerged and gradually expanded, accompanied by their collaboration in civil and even military space activities, Russian and U.S. security interests continued to diverge. Even as the United States significantly reduced its efforts on the development of anti-ballistic missile defenses shortly following the end of the Cold War, it increasingly envisioned control and domination of outer space as a foundation—both in economic and military realms—of its dominant position as the sole superpower in the international system. The U.S.

[15] See, for example, Mark W. Davis, "Reagan's Real Reason For SDI," *Policy Review*, No. 103, October 2000, http://www.policyreview.org/oct00/davis_print.html (accessed. 05.10.04).

[16] Alexander Pikayev, "U.S.-Russian Missile Defense Cooperation: Limits and the Possibilities," PONARS Policy Memo 315, November 2003, http://www.csis.org/ruseura/ponars/policymemos/pm_0315.pdf (accessed 06.07.04).

[17] The Missile Defense Agency dropped the Russian-American Observation Satellite Program (RAMOS) in its Fiscal Year 2005 budget request. See Center for Defense Information, *CDI Missile Defense Update*, 2004. See also Pavel Podvig, "U.S.-Russian Cooperation in Missile Defense: Is it Really Possible?" PONARS Policy Memo, April 2003, http://www.russianforces.org/podvig/eng/publications/misc/

grand strategy evolved through the 1990s and early 2000s to an assertive primacy, with outer space occupying an increasingly important place in U.S. grand strategy.

Russia, in the meantime, undertook major efforts in a transition from a communist state with a centrally planned, closed and militarized economy to a liberal, democratic state via economic liberalization and political democratization. Throughout the 1990s and early 2000s, Russia looked for its new national identity and a place in the international system, trying to reformulate its national security interests and national strategy to be more in line with those of the liberal democracies of the West. However, despite this fundamental transformation, Russia's space security interests remained remarkably unchanged: Russia stayed opposed to space weaponization and considered the U.S. plans for NMD and space force applications as a threat to its security and global strategic stability. Russia continued to strive for the preservation of the ABM Treaty as the cornerstone of strategic stability in the world. She negotiated and finally agreed on modification of the 1972 ABM Treaty in order to preserve the treaty, while allowing the United States to continue its efforts to develop theater missile defenses.[18]

Security cooperation on outer space issues at the bilateral level between the United States and Russia continued in the post-Cold War era despite their differences. As the international legal regime governing space security deteriorated and as their security concerns with respect to outer space increased over the course of the post-Cold War transition era, the two spacepowers attempted to address some of their security

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[18] See *Joint Communique on the Signing of the ABM Treaty Documents*, New York, September 26, 1997, http://www.fas.org/nuke/control/abmt/text/commuuniq.htm (accessed 03.19.04). The list of documents signed modifying the 1972 ABM Treaty include: (1) Memorandum of Understanding on "multilateralization of the ABM Treaty; (2) a first agreed statement, or "low-speed agreement" covering theater defenses whose interceptors have speeds of 3 km/sec or lower; (3) a second agreed statement, or

concerns at the bilateral level. However, due to their fundamentally differing security interests and strategies regarding space security this cooperation was of a rather limited nature. In 1998, the United States and Russia signed an agreement on cooperative monitoring via the establishment of a mechanism permitting the exchange of data from national missile early warning systems on launches of ballistic missiles and space vehicles in order to "significantly reduce the danger that ballistic missiles could be launched inadvertently on the basis of false warning of attack."[19] In June 2000, the United States and Russia agreed to continue implementation of the measures agreed to in the Joint Statement of September 1998 and decided to establish a Joint Data Exchange Center (JDEC) in Moscow, thereby taking another step towards joint monitoring of space launches.[20]

Unsatisfied with the progressing deterioration of the international space security regime and in order to demonstrate a commitment to a cooperative security approach, Russia put forth a number of initiatives related to space security during the post-Cold War decade. In June 1999, Russia proposed the establishment of a Global Missile and Missile Technology Non-Proliferation Control System (GCS) under U.N. auspices. Russia outlined the regime's principal components at the G-8 meeting in Cologne, Germany. The concept originated from President Yeltsin's earlier proposal on Global

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"high-speed agreement," covering theater defenses with interceptors that have speed faster than 3 km/sec; and (4) an agreement on confidence-building measures.

[19] See USIS Washington File, *Exchange of Information on Missile Launches,* Fact Sheet, September 2, 1998, http://www.fas.org/news/russia/1998/98090208_tpo.html (accessed 05.11.04). This cooperation was prompted by a1995 accident when the Russians mistook the launch of a Norwegian meteorological rocket for a launch of a military missile, and for the first time after the end of the Cold War, the black case of the Russian President was activated. See Alexander Pikayev, "The Global Control System," 2001, 25.

[20] "Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data From Early Warning Systems and Notification of Missile Launches," June 4, 2000, http://www.fas.org/nuke/control/jdec/text/000604-warn-wh3.htm (accessed 05.12.04).

System for Protecting the International Community Against Missile Attack made in his speech given at the UN Security Council on January 29, 1992.[21] Russia held two international conferences in Moscow in March 2000 and February 2001 in order to further develop this international space security regime.[22] The United States, however, did not take part in either Moscow conferences.

In order to prevent the collapse of the ABM Treaty, Russia also made a determined effort, trying to cooperate with the United States and its European allies on the development of sub-strategic anti-missile defense. In February 2001, Russia submitted a proposal for a European anti-missile defense system (AMD) against non-strategic ballistic missiles to Lord Robertson, the then Secretary General of NATO. For the development of such a system Russia offered its anti-missile research and development facilities, test ranges, and the existing S-300 and S-400 surface-to-air missiles.[23] The Clinton Administration concluded that the idea proposed by Russia could not substitute for United States' National Missile Defense.[24]

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[21] Later, on June 17, 1992, President Bush and President Yeltsin issued a joint statement on a global protection system (GPS), in which they confirmed agreement "that their two nations should work together with allies and other interested states in developing a concept for such a system as part of an overall strategy regarding the proliferation of ballistic missiles and weapons of mass destruction." See *U.S.-Russian Joint Statement on A Global Protection System*, June 1992.

[22] The new regime was envisaged as consisting of two main components: (1) a missile non-proliferation component that included the MTCR, a Code of Conduct, incentive mechanisms, security assurances, national and multinational measures to enhance missile non-proliferation; and diplomatic and economic enforcement measures; and (2) a missile transparency regime, including pre- and post-launch notifications. See Pickayev, "The Global Control System," 2001, 22.

[23] Ibid., 21-27.

[24] See Woolf, 2002, CRS-16. On November 21, 2002, during the Prague Summit, NATO committed its member states to a NATO Missile Defense Feasibility Study in order to examine options for addressing an increasing missile threat to the alliance's territory, population and forces. A working group on missile defense was established under the auspices of the NATO-Russia Council, which will "focus initially on missile defense terminology, concepts, and system capabilities in order to develop procedures that could facilitate protection of forces in a joint, non-Article V crisis response operation." See Rebecca Johnson, 2003. On March 5, 2004, NATO Press Release informed that the Theater Missile Defense Ad Hoc Working Group created under the aegis of the NATO-Russia Council conducted the first joint NATO-Russia TMD Command Post Exercise (CPX) at the United States Joint National Integration Center in

In April 2001, Moscow hosted a conference "Space Without Weapons: An Arena for Peaceful Cooperation in the 21st Century" held in commemoration of the 40th anniversary of the first human space flight. The Conference consisted of five thematic symposia focusing on a number of space issues, including the prevention of an arms race in outer space.[25] Delegates from 105 countries joined the celebration of the 40th anniversary of the human flight in Moscow, while the United States and the United Kingdom boycotted the forum, indicating deep disagreement and disapproval of Russia's international initiatives with respect to space security issues.[26] Russia, on its part, did not feel constrained to displease its major commercial partner in space activities by hosting such international gathering aimed at rallying an international support for preservation of the ABM Treaty and non-weaponizaiton of outer space. The United States considered the conference to be a part of Russia's international public campaign against the U.S. plans to build a National Ballistic Missile Defense system and therefore found it necessary to boycott the event.

Symbolically, according to the original scenario, the Russian cosmonaut and two American astronauts aboard the International Space Station were supposed to welcome the Conference's participants via satellite connection, but Washington did not allow James Voss and Susan Helms to greet the delegates from orbit because of the U.S.

Colorado Springs, Colorado. See NATO Press Release (2004) 031, "NATO-Russia Council Theater Missile Defense Command Post Exercise (TMD CPX)."

[25] According to the April 22nd Russian Foreign Ministry special information bulletin, the symposium on the prevention of an arms race in outer space included the following issues: (1) implications of deploying weapons in outer space on strategic stability and international security; (2) political and legal aspects of the prevention of an arms race in outer space, including ways to improve and develop the international legal mechanisms for regulating military activities in outer space; (3) measures to build confidence and to ensure transparency and predictability in conducting outer space activities; (4) international cooperation to prevent an arms race in outer space, including cooperation within the framework of the UN General Assembly and the Conference on Disarmament; and (5) conversion of space technology. See Rogov, 2001, 8.

[26] Vinogradov, 2002.

boycott of this conference. Moreover, the Russian cosmonaut, the ISS crew commander Yurii Usachev, was also prevented from greeting the conference from aboard the station because the American side switched off the communication link.[27]

Despite the apparent disagreements on the vision of space security regime and ways of arriving at it, in November 2002, Russia did subscribe to the Hague Code of Conduct Against Ballistic Missile Proliferation (HCOC)—a U.S.-led initiative to strengthen missile non-proliferation regime in view of the erosion of the MTCR. The HCOC, which was joined by 111 states accepting politically binding commitments to curb the proliferation of WMD-capable ballistic missiles, introduced transparency measures such as annual declaration and pre-launch notification regarding ballistic missile and space launch programs—a confidence-building measure long-advocated by Russia—but fell far short of a security regime that Russia would like to see for outer space.

A few months prior to this, Russian President Putin and U.S. President Bush signed the Strategic Offensive Reduction Treaty (SORT), committing the two states to reduce the number of their operationally deployed strategic nuclear warheads to the total numbers of such warheads of 1,700-2,200 on each side by December 31, 2012.[28] The United States was initially reluctant to codify these reductions in a legally binding agreement but later went ahead with signing the accord with Russia, who favored the formal arms agreement. Although this was hailed as a beginning of a "new strategic

[27] Rogov, 2001, 5.

[28] Presidents Bush and Putin first pledged to carry out deep cuts of their strategic nuclear forces at a November 2001 summit meeting. The Moscow Treaty was then signed on May 24, 2002. See "U.S.-Russian Treaty on Nuclear Arms Reductions," May 2002, http://www.armscontrolcenter.org/2002summit/treaty.htm (accessed 07.10.04).

relationship" between the Untied States and Russia,[29] the treaty was perceived as implicitly confirming the notion that the United States' nuclear forces were still planned with the view of Russia as a potential adversary.[30] President Putin expressed his concerns with the emerging security relationship speaking in regard to the then just appeared U.S. Nuclear Posture Review at a press conference in April 2002, before President Bush's visit to Moscow for signing the treaty on the bilateral reductions of strategic nuclear forces in May:

> What you have mentioned [regarding the U.S. nuclear strategy] cannot but worry us for the following reason. ... [W]e hear statements and proposals for developing low-yield nuclear charges and their possible use in regional conflicts. This, to a very low bar, to a dangerous line, lowers the threshold of possible nuclear weapons use. The very approach to this problem may change, and then it will be possible to speak of a change of strategy. In this case nuclear weapons from weapons of nuclear deterrence go down to the level of weapons of operational use, and, in my opinion, this is very dangerous.[31]

This shows that Russia considered U.S. nuclear plans as being of concern to its security, particularly with respect to the potential shift of the strategic balance away from deterrence-dominance towards offense-dominance. Therefore, throughout the post-Cold War transition decade the United States and Russia managed to maintain some level of cooperation in security realm. The dynamics of the U.S.-Russian relationship in the early

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[29] *Joint Declaration by President George W. Bush and President Vladimir V. Putin on the New Strategic Relationship Between the United States of America and the Russian Federation*, May 2002, http://www.armscontrolcenter.org/2002summit/declaration.html (07.10.04).

[30] The new Nuclear Posture Review released by Pentagon to U.S. Congress on December 31, 2001, contained direct reference to Russia as a country of concern. Excerpts were leaked and published by Globalsecurity.org on January 8, 2002. According to Globalsecurity.org, the document stated: "Russia maintains the most formidable nuclear force, aside from the Untied States... Russia's nuclear forces and programs, nevertheless, remain a concern. Russia faces many strategic problems around its periphery and its future course cannot be charted with certainty. U.S. planning must take this into account." See "Excerpts from the Nuclear Posture Review," *Globalsecurity.org*, January 8, 2002, http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm (accessed 07.12.04).

[31] See Center for Arms Control and Non-Proliferation, "Bush-Putin Summit and the Nuclear Posture Review: What Russian Officials Are Saying," Briefing Book on the Push-Putin Summit and the U.S. Nuclear Posture Review, May 2002, http://www.armscontrolcenter.org/2002summit/chapter9/html (accessed 07.10.04).

2000s, however, continued to exhibit a close interconnection of the space security and nuclear issues.

All in all, as Russia continued to reform its political, social, and economic structures and its military, it became more dependent on its strategic nuclear arsenal and had not only abandoned its "no-first-use" nuclear policy, but also consistently lowered the threshold of the use of its nuclear weapons throughout the 1990s. As Russia became more dependent on its strategic nuclear forces, it became more dependent on its military space segment as well. Its economy, however, remained too weak to support a major overhaul of its space assets in order to prepare for the consequences of space weaponization, let alone to take an active part in a major space arms race. For the development of its economy, as well as for the development of its military space segment, Russia became dependent on space commerce. As the United States proceeded with its plans for ballistic missile defense and for developing a space war-fighting capabilities, Russia increasingly perceived these developments as a threat to global strategic stability, its own security, and the commercial order under which Russian space activities could thrive.[32]

As a result of the commercialization of its space activities, Russia grew to depend on the global space market, and therefore also on the United States, for the survival and revitalization of its space activities, yet Russia still chose to oppose the U.S. NMD and plans for extending war-fighting capabilities into outer space and to challenge the legitimacy of these plans through various international fora.

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[32] At a seminar organized by the Eisenhower Institute at the Space Research Institute (IKI) in Moscow on January 17, 2002, in order to gain a Russian perspective on the U.S. military plans for outer space, a Russian expert asserted that the U.S. plans would lead to destruction of the entire regulatory regime for international space activities and that the United Sates from its position of superiority would dictate to all

Thus, within this bilateral relationship, the commercialization of outer space did not lead to converging security interests. The peaceful resolution of the Cold War conflict laid the foundation for commercial cooperation between the United States and Russia and postponed American plans for the nation-wide anti-ballistic missile defenses originally envisioned by the Reagan Administration, and thereby deferred the resolution of U.S.-Russian conflictual security interests with respect to outer space. The bilateral security cooperation on space issues proved to be of a limited nature and did not address all space security concerns of the two spacepowers. The hope for space commercialization to bridge the gap in the diverging space security interests of the two states did not materialize.

Therefore, with regard to the U.S.-Russian space security relations, the proposition that asserts that the commercialization of outer space should lead to non-converging security interest in outer space is supported by the evidence provided within the timeframe of this study. The proposition that converging security interests should lead to greater commercial cooperation does not apply as the United States and Russia's security interests continued to diverge during the time period under consideration. However, the improved overall relations between the United States and Russia in the context of the ended East-West confrontation and the fragile balance that was reached in the U.S.-Soviet negotiations leading up to the end of the bipolar confrontation related to outer space issues did provide the foundation for the commercial cooperation between the two states. The U.S.-Russian commercial cooperation expanded over time despite continuous divergence of their space security interests. And finally, the proposition that

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others what types of satellites to launch and what frequencies to use. See Eisenhower Institute, "The Future of Space: the Next Strategic Frontier."

the commercialization and greater commercial cooperation would lead to converging security interests cannot be supported in this case.

U.S.-CHINA BILATERAL RELATIONS AND SPACE SECURITY INTERESTS

After 23 years of estrangement between the United States and Communist China,[33] progress in normalization of the bilateral relationship began with President Nixon's 8-day visit to Beijing in February 1972. The visit ended with the leaders of the two states singing the Shanghai Communiqué, pledging to work "to further the normalization of relations between the two countries."[34] This historic communiqué laid the roadmap for Sino-American cooperation: the two states agreed that neither the United States nor China would seek hegemony in the Asia-Pacific region, that neither China nor the United States would cooperate with the Soviet Union against each other,[35] and both would oppose any attempts to achieve domination in Asia-Pacific by any other country or a group of countries. The Shanghai Communiqué also provided the foundation for U.S.-China bilateral trade.

This document marked the beginning of a new era in the U.S.-China relations. The improved security environment after 1972 allowed China to undertake major economic and military reforms initiated by Deng Xiaoping in the late 1970s. Bilateral

[33] Between 1954 and 1972, Chinese and American representatives conducted negotiations at the ambassadorial level for 15 year meeting 136 times. On April 7, 1971, Chinese Chairman Mao Zedong made a decision to invite the United States table tennis team to visit China. On April 14, Premier Zhou Enlai met with the U.S. ping-pong players, the first visiting American guests since 1949. A few hours later after Zhou's welcome words to the American table tennis players, the U.S. President Richard Nixon announced initiatives for trade and travel between the U.S. and the People's Republic of China.

[34] *Joint Communiqué of the United States of America and the People's Republic of China*, February 28, 1972, http://www.china.org/cn/english/china-us/26012.htm (accessed 04.03.04).

[35] This was not stated directly in the communiqué. Instead it was put in more ambiguous terms: "Both sides are of the view that it would be against the interests of the people of the world for any major country to collude with another against other countries, or for major countries to divide up the world into spheres of interests." See Ibid.

trade between the United States and China flourished over time and military contacts and sales between the two countries followed.[36] Bilateral trade and opposition to the Soviet Union's influence in the Asia-Pacific region provided a foundation for Sino-American relations during the Cold War, despite the divergent interests with regard to Taiwan.

The progressive growth of U.S.-China bilateral relations, however, was interrupted in 1989 by the June 4th Tiananmen Square massacre. On June 5, 1989, the United States imposed sanctions on China that encompassed suspension of high-level exchanges between the two countries and the cessation of sales of all military equipment, weapons and some other items, including communications satellites—which were on the State Department's Munitions List—to China.[37]

Satellite export licenses became an important issue in U.S.-China bilateral relations with regard to outer space. The United States was interested in bringing China into the space launch market in the aftermath of the Challenger tragedy because of the shortage of space launchers,[38] and because the United States hoped that if China—who already emerged as a potential commercial player with the space capabilities to offer—were integrated into the international commercial space market it would make it a responsible member of the commercial space community playing by the rules of the West, rather than being unconstrained proliferator of missile technology. In 1988, when

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[36] On January 1, 1979, full diplomatic relations were finally reestablished between the United States and China. In January 1980, the U.S. Secretary of Defense Harold Brown visited China, becoming the first U.S. Secretary of Defense to visit China since 1949. Vice-Chief of the General Staff of the People's Liberation Army Liu Huaqing and Vice-Premier Geng Biao led a Chinese military delegation in a visit to the United States in 1981. This visit formally established U.S.-China military relations.

[37] Marcia S. Smith, "Space Launch Vehicles: Government Activities, Commercial Competition, and Satellite Exports, Issue Brief for Congress, IB93062, April 17, 2003.

[38] Another important aspect contributed to the U.S. decision to involve China in the space launch market: facing increasing competition from European satellite manufacturing firms, the United States hoped to improve its position by using China's cost-effective launch services. See van Fenema, *The International Trade in Launch Services*, 1999, 183, 188.

the issue was considered by the Reagan Administration, the United States also wanted to increase its influence in the Asia-Pacific to counter some advances of the Soviet Union in the region. In December 1988 and January 1989, the United States and the PRC signed a number of documents specifying China's participation in international commercial space activities: the "Memorandum of Agreement on Satellite Technology Safeguards, Memorandum of Agreement on Liability for Satellite Launches," and "Memorandum of Agreement Between the Government of the United States of America and the Government of the People's Republic of China Regarding Trade in Commercial Launch Services."[39]

Thus, shortly after suspending export licenses for the U.S.-built satellites and components in the wake of the Tiananmen massacre, Congress specified in the FY 1990 Commerce, Justice, State and Judiciary appropriations and the 1990-91 Foreign Relations Authorization Act that the export of U.S.-built satellites to China was prohibited unless the President reported to Congress that (1) China had achieved certain political and human rights reforms, or (2) it was in the national interests of the United States. In December 1989, President Bush reported to Congress that export of the satellites *AsiaSat-1* and two *Optus* communications satellites to China for launch was in the U.S. interests and the suspended licenses were reinstated for those satellites. *AsiaSat-1* was launched in 1990 and became China's first commercial satellite launch, formally marking the entrance of China into the international satellite launch market.[40] The two *Optus*

[39] Ibid., 198-212.

[40] Between 1987 and 1989, Chinese space industry provided its first commercial space launch services, flying microgravity experiments. China's first commercial contract for putting in orbit microgravity experiments utilizing a converted capsule from China's reconnaissance satellite FSW as a platform was with the French company Matra. See Lawrence Cooper and Corinne Contant, "The People's Republic of China—Consolidating its Space Power, Enhancing its Military Might," in Rebecca Jimerson and Ray A. Williamson eds., *Space and Military Power in East Asia*, 2000.

satellites were launched in 1992. The export control licenses, however, became an important tool for the United States to influence China's behavior. After these incidents, the United States started to use export licenses on its satellites and components for stimulating China's adherence to non-proliferation regimes.[41] In 1992, under U.S. pressure, China agreed to adhere to the Missile Technology Control Regime. Thus, by the early 1990s, China emerged as a U.S. commercial space partner and a missile technology proliferation concern.

For China, however, space security concerns were more extensive. In its official pronouncements during the Cold War, the Chinese government emphasized its opposition to arms races and condemned the two superpowers for engaging in all-out military build-ups. In contrast, against the backdrop of thousands and thousands of nuclear warheads in the two-superpowers' arsenals, China developed a small nuclear strategic force consisting of a few dozen missiles.[42] It obtained a strategic retaliatory force in accordance with "minimal deterrence" and adopted a "no-first-use" policy. The "minimal deterrence" concept, while supporting China's goal of achieving economic growth and development and providing for China's security, would leave China vulnerable to threats from a superpower possessing an operational anti-ballistic missile defense. The U.S. anti-ballistic missile defenses would probably neutralize China's small nuclear deterrent and thereby significantly circumscribe China's options in the resolution of the Taiwan issue, while stimulating Taiwan's move towards independence.

[41] On July 17, 1991, the U.S. State Department identified China Great Wall Industry Corporation (CGWIC) as one of the entities engaged in missile technology proliferation activities that required the imposition of the trade sanctions in accordance of the Arms Export Control Act, including rejection of license applications for items covered by the Missile Technology Control Regime (MTCR). See Marcia Smith, "Space Launch Vehicles," 2003.

[42] China obtained an operational nuclear retaliatory force of several dozens nuclear-armed medium-range rockets by 1970s. See Garver, 1986, 1222.

China recognized the potential threat posed by the U.S Strategic Defense Initiative in the mid-1980s, when Chinese analysts and media started to criticize Reagan's SDI as an attempt to take the arms race into outer space after the two superpowers had failed to achieve a decisive advantage over one another on the ground.[43] The Chinese perceived SDI as an attempt by the United States to use outer space to gain strategic superiority in outer space over the Soviet Union, meaning by that the achievement of the first strike capability with its implications for stability and peace in the international system. They also interpreted it as revived U.S. aggressiveness and hostility to socialism and to "communist-ruled countries," and as an attempt to dominate and control the Third World.[44] They recognized that development and deployment of space weapons would reshape the "international political map:" the weaponization of outer space was seen as profound a step as the beginning of the Nuclear Age itself.[45]

The Chinese top leaders began calling on the two superpowers to cease their military rivalry in outer space and sign an agreement prohibiting placing weapons in outer space in the fall of 1985.[46] The PRC believed that the emplacement of weapons in space would violate the status of outer space as a common heritage of all mankind.[47] More importantly, China saw a threat to its own security: with the deployment of missile defenses by the two superpowers, it would lose its credible retaliatory capability vis-à-vis both the Soviet Union and the United States. Furthermore, it was realized by the PRC

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[43] Ibid., 1229, 1230

[44] Ibid., 1228.

[45] Ibid., 1229-1230.

[46] Ibid., 1230, 1231.

[47] Beginning in 1984, China started to propose to the United Nations General Assembly draft resolutions on preventing an arms race in outer space. China maintained that outer space belonged to all mankind and should be used exclusively for peaceful purposes and should be kept free of weapons. See People's Republic of China, State Council, "China: Arms Control and Disarmament," Section VI "Actively Promoting International Arms Control and Disarmament,"1995.

leadership that attempts to compensate for this deteriorating security situation might undermine China's efforts in economic reforms and development.

Immediately after the end of the Cold War, China's concerns with space weaponization slightly diminished in parallel to the United States' reduction and reformulation of its ballistic missile defense program. However, the PRC leadership's concerns with further militarization of outer space increased in the aftermath of the 1991 Gulf War that provided the first glimpse of the military advantages that space capabilities offered apart of the BMD: China recognized that the swift U.S. victory in Iraq was due to U.S. superior command and control, intelligence, and communications systems relying largely on satellite networks.[48] China's concern with American plans for the military uses of space increased progressively, as China became more and more dependent on space for its economic well-being.

In 2000, China recognized space activities as one of its top national priorities. The State Council summarized China's guiding principle with respect to space in the following:

> Adhering to the principle of long-term, stable and sustainable development and making the development of space activities cater to and serve the state's comprehensive development strategy. The Chinese government attaches great importance to the significant role of space activities in implementing the strategy of revitalizing the country with science and education and that of sustainable development, as well as in economic construction, national security, science and technology development and social progress. The development of space activities is encouraged and supported by the government as an integral part of the state's comprehensive development strategy.[49]

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48 See Martel and Yoshihara, 2003, 22-23.

49 People's Republic of China, State Council, "China's Space Activities," Part I "Aims and Principles," 2000.

China had only begun to utilize domestic and foreign telecommunication satellites in the mid-1980s,[50] but by the early 2000s China's booming economic development of the past two decades led to steep demand for communications services that was increasingly met by communications satellites. In accordance with the PRC policy recognizing the importance of space activities as "an integral part of the state's comprehensive development strategy," the Chinese government encouraged investment in space activities and development of comprehensive scientific and industrial base capable of producing satellites and providing commercial space launches. Thus, not only did China's demand for space services grew but her space capabilities developed as well, and commercial cooperation, including with the West in general, and with the United States in particular, contributed significantly to China's progress in space technology of the past decade or so.

In the post-Cold War era, China formally restated its opposition to the extension of an arms race into outer space in the 1995 White Paper on Arms Control and returned to elaborate its position in the 2000 White Paper on "China's Space Activities." China's raised concerns with space security issues developed in response to a number of the U.S. publications, such as *Spacecast 2020* and *Vision 2010*,[51] envisioning outer space as a new crucial military high ground. Its concerns with space security continued to increase over the second half of the 1990s and early 2000s, when PRC called increasingly for a legally binding international agreement banning the weaponization of space.

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[50] Ibid., Part II "Space Applications."

[51] *Spacecast 2020* is a study produced by the Air University, AL, in compliance with the directive from the Air Force Chief of Staff. The study was presented in June 1994. See *Spacecast 2020*, Executive summary, June 1994, *Space Policy*, August 1995, 193-202.

China's concerns became particularly elevated in the context of the worsening situation with Taiwan and later after the bombing of the Chinese embassy in Belgrade in May 1999 that led to a significant deterioration of Sino-American relations. The situation with Taiwan remained the one bearing the greatest potential for a major confrontation between the United States and China.[52] The 1998 North Korean launch of its three-stage *Taepo Dong-1* missile that flew over Japan, further spurred the United States plans for a theater missile defense (TMD) in East Asia. China's Premier Zhu Rhongii expressed his opinion in no uncertain terms on this matter:

> We are against TMD.
> We are especially firm in our opposition to include Taiwan under TMD.
> TMD would constitute a violation against international agreements on missiles as well as an encroachment on China's sovereignty, territorial integrity and an interference in China's internal affairs.[53]

In a broader context, China condemned efforts of a "certain country" to develop and deploy a National Missile Defense (NMD), as well as Theater Missile Defense (TMD) systems, for they undermined the efforts of the international community "to stem the proliferation of weapons of mass destruction and to promote disarmament."[54] Moreover, in the U.S. handling of international affairs, China considered as representation of "hegemonism," power politics, and "neo-interventionism" negatively affecting security situation in the world and damaging national sovereignty, independence and developmental interests of "many countries."[55] China began attaching

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[52] Martel and Yoshihara, 2003, 24.
[53] Arms Control Association, *Chinese Views on Theater and National Missile Defense*, Fact Sheet, July 1999, http://www.armscontrol.org/factsheets/ch_tmd.asp (accessed 10.08.03).
[54] People's Republic of China, State Council, "China's National Defense in 2000," Section I "The Security Situation." See also Arms Control Association, *Chinese Views on Theater and National Missile Defense*, Fact Sheets, 1999.
[55] People's Republic of China, State Council, "China's National Defense in 2000," Section I "The Security Situation," 2000.

greater significance to the ABM Treaty and voicing its support for preservation of this "cornerstone of global strategic stability and international security."[56]

China became increasingly concerned with space security and warned of an emerging danger of a space arms race and placed prevention of such an arms race in space at the top of its priorities at the international arms control fora. The goal of the arms control process, according to China, was to maintain outer space free of weapons and its exclusively peaceful utilization for "the sole purpose of promoting economic, scientific and cultural development of all countries, and benefiting all mankind."[57] Calling on the international community to take active steps to stop further militarization of space in its official security pronouncements, China insisted not only on strict compliance with the then existing legal instruments such as the ABM Treaty, but also on urgent negotiations of a new legal instrument that would include a ban on testing, deployment and use of weapons, weapon systems or their components in outer space.

Thus, by the late 1990s, China increasingly considered the United State's plans for the deployment of National Missile Defense and further military space uses as a threat to its economic well-being, national security, and global stability and peace, despite its growing participation in commercial space activities, including within commercial joint projects and ventures with the Western and U.S. firms.

In reaction to the U.S. plans to withdraw from the 1972 ABM Treaty, China changed its rhetoric and emphases in its security strategy. The PRC leadership recognized that rapid and drastic changes in the military field fundamentally altered the global balance of military power. In its official pronouncements, China began to put

[56] Arms Control Association, *Chinese Views on Theater and National Missile Defense*, Fact Sheet, 1999.

more emphasis on the military aspects of security and on consolidation of national defense, gearing military modernization towards "winning local wars under modern, especially high-tech conditions... under most difficult complex circumstances" and putting even stronger stress on the importance of the goal of reunification of the country.[58]

China actively prepared for a potential confrontation in the Taiwan Strait.[59] Preparations for a possible conflict over Taiwan and efforts to adopt and, where necessary, to counter the effects of the Revolution in Military Affairs (RMA) were the primary drivers of China's military modernization in the second half of the 1990s and early 2000s. Adherence to the MTCR was a precondition to China's entrance into the West-dominated international space market. While China promised to adhere to the MTCR guidelines, Beijing continued to refuse a formal membership in the MTCR until its concerns regarding Taiwan and the U.S. national missile defense system were addressed.[60]

As China's space presence and capabilities increased and became technologically more sophisticated, the United States began to consider China as a potential rival in space, presenting certain security threats—security threats far beyond those of a missile technology proliferator, in contrast to the U.S. main concern of the early 1990s.[61] Growing U.S. security unease with regard to China materialized in the Pentagon's annual

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57 People's Republic of China, State Council, "China's National Defense in 2000," Section VI "Arms Control and Disarmament," 2000.
58 People's Republic of China, State Council, "China's National Defense in 2002," 2002.
59 McCabe argues that the status of Taiwan could lead to war between the United States and China and analyzes in detail how China prepared for such a war at the level of PRC's military doctrine that shaped China's objectives, strategy, force structure, procurement and training. See Thomas R. McCabe, "The Chinese Air Force and Air and Space Power," *Air and Space Power Journal*, fall 2003, http://www.airpower.maxwell.af.mil/airchrnicles/apj/apj03/fal03/mccabe.html (accessed 04.16.04).
60 See Sibing, 2003, 183-189.

reviews of China's military capabilities, which began in 1998. The 2003 *Annual Report on the Military Power of the People's Republic of China* indicated that China was improving its Command, Control, Communications, Computers, and Intelligence (C4I), even though China continued to lag behind the West and "did not adequately assimilate new C4I into the plans and operations required to train and fight in a modern battlespace." China pursued a robust research and development program for laser weapons and was believed to be developing its own and acquiring foreign technologies, including and perhaps overwhelmingly, through its commercial cooperation.[62] Some of the technology China acquired via commercial cooperation could be used for building anti-satellite capabilities—both ground-based and space-based.[63] Thus, while China called on the international community to prohibit the weaponization of space and outlaw the use of force in outer space, the United States increasingly saw China improving its military space capabilities, including the development of ASAT capabilities.

Increasingly concerned with the fact that China's military space program might have benefited from China's commercial joint ventures via technology transfers and espionage, the Cox Commission investigated the matter and issued its report concluding that China stole a number of key weapons designs, including those of ballistic missiles, as well as space technology, that could improve the PRC's intelligence capabilities and allow it to attack U.S. satellites.[64] The 2001 Rumsfeld Report specifically identified a

[61] Martel and Yoshihara, 2003, 24.

[62] See, for example, Richard D. Fisher, "Commercial Space Cooperation Should Not Harm National Security," The Heritage Foundation, Backgrounder, No. 1198, June 26, 1998, http://www.heritage.org/Research/ NationalSecurity/BG1198.cfm (accessed 05.21.04).

[63] U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China,* Section IV "PRC Military Modernization," 2003, 36.

[64] U.S. Congress, House, *U.S. National Security and Military/Commercial Concerns with the People's Republic of China* (Cox Committee Report on Chinese Espionage), Report by the Select Committee of the

conflict in the Taiwan Strait as a threat to U.S. space systems, as China was expected to try to launch a preemptive attack against U.S. space systems prior to the outbreak of a military conflict with Taiwan.[65] In the Nuclear Posture Review that was submitted to the U.S. Congress on December 31, 2001, the Pentagon identified military conflict with China over Taiwan as on of the "immediate contingencies" for which the United States should plan its nuclear strike capabilities.[66] It clearly follows from the DoD's annual reports, the 1999 Cox Report on China's Espionage, the 2001 Rumsfeld Report and the new Nuclear Posture Review that recent developments in China's space capabilities were considered progressively as a threat to the U.S. space assets and security, which potentially could merit a nuclear response.[67]

As both the United States and China increasingly considered each other's space activities as a threat and both moved towards adopting the doctrine of preemption,[68] security in space became increasingly fragile. With the old space security regime eroded, there seemed to be a serious lack of bilateral space security understanding between the United States and China that would allow the two countries to avoid a military clash in case of a serious conflict. Trying to restore their bilateral relations after the fallout from the Tiananmen massacre when high-level exchanges between the United States and China were suspended, the two spacepowers began their annual consultations between defense departments in 1997, and held arms control discussions, including on the issues

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United States House of Representatives, released on April 25, 1999, http://www.houswe.gov/coxreport/ (accessed 05.13.04).

[65] Commission to Assess United States National Security Space Management and Organization, Report, 2001, 22-24.

[66] "Excerpts from the Nuclear Posture Review," 2002. See also Dumbaugh, 2003, CRS-9.

[67] Dumbaugh, 2003, CRS-9.

[68] U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China,* Introduction, B. "Key Development," 2003, 4. The United States put forth its concept of preemption in the 2002 National Security Strategy of the United States.

of non-proliferation and anti-missile defenses.[69] However, unlike the relationship between the United States and the Soviet Union, and later Russia, who created quite extensive bilateral cooperative transparency regimes, the United States and China largely failed to put in place similar arrangements in the post-Cold War era. Both spacepowers tried to keep their military space programs under strict secrecy.[70] The disparity in the technological levels of their space capabilities made their cooperation on creating transparency regimes difficult: the United States was so far ahead in almost every area of space applications that its concerns with China's space capabilities were not strong enough to be willing to expose its military programs to China's scrutiny, while China was rather eager to conceal its relative inferiority in space capabilities.[71] In outer space, however, China does not necessarily need to match the U.S. space capabilities or reach parity with the United States to be able to significantly affect U.S. interests and operations in space. Instead, China may pursue asymmetric approaches.[72] Without a cooperative security framework this situation remains volatile.

The two spacepowers also did not have a chance to build mutual trust and confidence in space via cooperation in major civil space activities, such as the International Space Station, because China did not take part in this international project.[73]

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69 See People's Republic of China, Embassy of the People's Republic of China in the United States of America, "China, U.S. Hold Sixth Round of Defense Consultation (10.02.04)," http://www.china-embassy.org/eng/zmgx/zmgx/Military%20Relationship/t64217.htm (accessed 05.07.04).

70 Martel and Yoshihara, 2003, 29.

71 Martel and Yoshihara argue that China and the United States are on a threshold of a space race and that at the same time both spacepowers are not pursuing transparency in their space military programs. See Ibid.

72 See McCabe, 2003.

73 In 1992, China began to actively pursue a manned spaceflight program and in 1999 successfully launched its first unmanned experimental spacecraft, "Shenzhou." In October 2003, China finally launched its first man in orbit, thereby joining the exclusive club of the space-faring states. See State Council of the People's Republic of China, "China's Space Activities," Part II, Section "Space Technology," 2000. China expressed interest in the ISS project but pursued its interests by approaching individual ISS partners. See Sibing, 2003, 183-189.

At the same time, the U.S.-China commercial cooperation created frictions and raised security concerns on the part of the United States. The blurry line between China's commercial enterprises and the military, in the U.S. perception, allowed China to make significant improvements in China's military space technology. In the mid-1990s, for example, after a series of China's commercial launch failures, Loral Systems, a U.S. satellite company, lent technical assistance to the Chinese by releasing sensitive technical information that was judged in the subsequent investigation as potentially helping China to improve its guidance capabilities. The Cox Report and other investigations identified numerous other violations of the U.S. export restrictions by a number of U.S. space firms providing technical assistance to the Chinese that could potentially benefit China's military space program.[74]

Thus, China's security interests with respect to outer space continued to diverge from those of the United States. Despite this divergence of security interests with regard to outer space, the United States and China developed commercial cooperation. China benefited from international space commercial cooperation by expanding its space activities and benefiting from increasing access to space technology via the global space market. Commercial space activities helped China's economic development as well as its military space program. Over time, however, the two states increasingly perceived each other as potential adversaries in a space conflict in the post-Cold War era. They progressively considered each other's space activities as a threat to their interests in space and to their overall security and saw a conflict in the Taiwan Strait as an increasingly possible occurrence.

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[74] Martel and Yoshihara, 2003, 30.

All in all, the overall improvement of Sino-U.S. relations preceded commercialization of their space activities and provided favorable conditions for commercial cooperation in space. Some common security interests that existed with respect to outer space in the closing years of the Cold War and early in the aftermath of the bipolar confrontation did allow the United States and China to pursue commercialization of their space activities and commercial cooperation. However, within this bilateral relationship, commercialization of space activities did not lead to converging security interests in outer space. On the contrary, over time China and U.S. interests further diverged as the two spacepowers moved closer to the brink of a military space race, even though commercialization of space activities probably was not a leading factor in this development.

RUSSIA-CHINA BILATERAL RELATIONS AND SPACE SECURITY INTERESTS

The Sino-Russian relationship has a long history. There have been eras of cooperation and of confrontation with occasional militarized disputes along their long shared border, but in over 300 years there has never been an openly declared war between the two neighbors.[75] After a short period of extensive interstate cooperation between the Soviet Union and the newly established People's Republic of China in the 1950s when the Soviet Union made its contribution to the emerging Chinese space program, the Sino-Soviet split resulted in decades of confrontational relations accompanied by the border clashes between the two militaries.

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[75] Alexei D. Voskressenski, "Russia's Evolving Grand Strategy toward China," in Sherman W. Garnett ed., *Rapprochement or Rivalry? Russia-China Relations in a Changing Asia* (Washington D.C.: Carnegie Endowment for International Peace, 2000), 119.

Sino-Soviet relations began to show signs of improvement in 1982 when the negotiations on normalization of bilateral relations were initiated and China relaxed somewhat its demands to the Soviet Union.[76] The real improvements, however, in Sino-Soviet relations began under General Secretary Gorbachev who took an active course towards normalization of international relations on the Eastern border as he simultaneously set on improving relations with the West. The new line toward China and initiatives to address China's concerns with the "three obstacles" to normalization of the relationship were announced by Gorbachev in July 1986. The "three obstacles" that blocked normalization of the two Communist neighbors were: (1) the Soviet troops in Afghanistan; (2) Soviet support for the Vietnamese occupation of Cambodia; and (3) the massive Soviet build-up on the border with China. Gorbachev initiated a military détente with China a year earlier by beginning reductions in the Soviet Armed Forces in the border area and halting buildup of Soviet nuclear capabilities designated for a potential conflict with China. In his 1986 Vladivostok speech, Gorbachev announced a reduction in the Soviet military presence in Mongolia, a partial withdrawal of Soviet troops from Afghanistan, and expressed a favorable attitude towards normalization of Sino-Vietnamese relations. Gorbachev's line for a new relationship with China was a part of a Soviet leader's plan to create regional "collective security" arrangements in order to provide for security in East Asia.[77]

China, satisfied with the Soviet unilateral concessions, was willing to improve relations with the Soviet Union, for its leadership was wary of the improving U.S-Soviet relations and of the possibility that this would lead to the establishment of a U.S.-Soviet

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[76] Hung P. Nguyen, "Russia and China: The Genesis of an Eastern Rapallo," *Asian Survey* 33, (March 1993): 287.

condominium and the isolation of China, particularly after the Tiananmen crisis of 1989. China also saw improved relations with the Soviet Union as useful for countering "U.S. hegemonism." Thus, both the Soviet Union and China sought rapprochement based on their strategic calculations.[78]

The bilateral relations between China and Russia improved progressively from the late 1980s onward. Their security interests and vision of the post-Cold War world order converged over time. Both China and Russia saw multipolarity as a preferable structure of the international system in which each of them considered themselves as one of a number of poles.[79] Both became interested in participating in the expanding global commercial markets as a way of promoting development and modernization of their economies and societies, while both became increasingly concerned with U.S. economic domination and its overwhelming military power.[80] Both saw the gap in military capabilities between the United States and their own capabilities increased dramatically over time as the United States made a leap into the era of the Revolution in Military Affairs. They both grew increasingly concerned with geo-political developments. The United States enhanced its position vis-à-vis Russia with the eastward expansion of NATO. The United States also entered into bilateral anti-terrorist alliances with states all around Russia and China's peripheries, including the U.S. military presence in a number

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[77] Ibid., 289.

[78] If the August 1991 coup had succeeded, the establishment of a military alliance between China and the Soviet Union, according to Nguyen, would have been very likely. China saw the Soviet retreat from its position as a superpower leaving the United States as the sole superpower as detrimental to its interests. See Nguyen, 1993, 285-301.

[79] In their joint statement, Russia and China pledged to "strive to promote the multipolarization of the world and the new international order" that should be "just and equitable" and "based on peace and stability." See *Russian-Chinese Joint Declaration on a Multipolar World and the Establishment of a New International Order*, April 23, 1997, http://www.nti.org/db/china/engdocs/chru0497.htm (accessed 05.13.04).

of neighboring states. They also realized the extent to which potential U.S. military domination of outer space could threaten their security interests in space, their national security on Earth, and global stability more generally. Both states took active steps to cooperate and oppose the U.S. withdrawal from the ABM Treaty and plans to deploy a National Missile Defense and weaponize space.[81]

This growing convergence of security concerns, perceptions and interests led the two states to establish collective security-type arrangements to address their common security issues in the region, the so-called Shanghai-Five, consisting of China, Russia, Kyrgyzstan, Tajikistan, and Kazakhstan.[82] The goal of this forum was to collectively manage their border issues and build confidence in the region in the aftermath of the collapse of the Soviet Union. The role of this loose organization, however, increased over time, as it began to include humanitarian, educational, cultural, scientific missions and economic cooperation and trade. In June 2001, the Shanghai-Five was transformed into the Shanghai Cooperation Organization (SCO), with Uzbekistan joining the five as a co-founder of the new security organization with increased functions.[83]

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[80] The Joint Declaration stated: "No country should seek hegemony, practice power politics or monopolize international affairs." See *Russian-Chinese Joint Declaration on a Multipolar World and the Establishment of a New International Order*, 1997.

[81] In a joint statement, Russian President B. N. Yeltsin and Chinese President Jiang Zemin reemphasized that they consider the 1972 ABM Treaty a "cornerstone of strategic stability" which "must be strictly and fully implemented." According to their statement, creation of national anti-ballistic missile defense would violate this treaty. See *Joint Statement Made by President Jiang Zemin and President Boris Yeltsin on December 10, 1999*, http://www.nti.org/db/china/engdocs/chru1299.htm (accessed 05.13.04). Presidents Jiang Zemin, and Vladimir Putin reaffirmed their position on the importance of preservation of 1972 ABM Treaty. They warned that "any damage to the ABM Treaty could trigger a new round of arms race." See *Joint Statement Made by President Jiang Zemin and President Vladimir Putin on Anti-Missile System*, July 18, 2000, http://www.nti.org/db/china/engdocs/jpjac.htm (accessed 05.13.04).

[82] China initiated creation of the Shanghai-Five. The forum was established in Beijing in 1996. Members of this forum signed "Treaty on Deepening Military Trust in Border Regions and the Treaty on Reduction of Military Forces in Border Regions." The annual meetings of the member-states became a regular practice. See People's Republic of China, Ministry of Foreign Affairs, Official website, http://www.fmprc.gov.cn/eng/topics/sco/t57970.htm (accessed 05.13.04).

[83] Since the establishment of the Organization, the member states signed a number of documents, including the "Shanghai Convention on Combating Terrorism, Separatism and Extremism," the "Charter of

Moreover, this growing security cooperation between China and Russia finally culminated in an unprecedented Sino-Russian treaty—the Treaty of Good Neighborliness, Friendship, and Cooperation signed in Moscow on July 16, 2001.[84] This treaty covered nearly all areas of their bilateral interactions, above all their security issues. It contained such provisions as non-resort to the use of force or the threat of force, "no-first use" of nuclear weapons and non-targeting of strategic nuclear missiles against each other, support for each other's policies aimed at preserving the territorial integrity of their countries and others. It called for regular consultations and other confidence-building measures and committed the two states to "work together for the maintenance of global strategic balance and stability."[85] Thus, the treaty was envisioned as a pillar of the Sino-Russian "strategic cooperative partnership," and yet it fell short of actually establishing a Sino-Russian alliance, at least on paper.[86] Article VIII of the Treaty specified:

> The contracting parties shall not enter into any alliance or be a party to any bloc nor shall they embark on any such action, including the conclusion of such treaty with a third country which compromises the sovereignty, security and territorial integrity of the other contracting party.[87]

The progressively improving Sino-Russian relations in the post-Cold War era were accompanied by Russia's arms sales to China and the sharing of high technology

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the SCO," the "Agreement on Anti-Terrorist Agency and the Declaration of the Heads of States of the SCO Member Countries." The new organization was to promote a "new security concept," a "new pattern of regional cooperation," and state-to-state relations of a "new type," characterized by trust and cooperation in the military field and a commitment to fight terrorism, extremism and separatism, and to peaceful resolution of international conflicts. See Ministry of Foreign Affairs of the People's Republic of China.

84 "Treaty of Good-Neighborliness and Friendly Cooperation Between the People's Republic of China and the Russian Federation," July 16, 2001, http://www.fmprc.gov.cn/eng/wjdt/2649/t15771.htm (accessed 05.13.04).

85 Ibid., Article XII.

86 Article IX shows how close the two states came to establishing an alliance: "When a situation arises in which one of the contracting parties deems that peace is being threatened and undermined or its security interests are involved or when it is confronted with the threat of aggression, the contracting parties shall immediately hold contacts and consultations in order to eliminate such threats." See Ibid., Article 9.

with China, including in such fields as space technology.[88] The 1999 Cox Report identified Russia as China's main supplier of high technology and modern arms. Although the Selective Committee's main focus was on Chinese activities with regard to U.S. military and dual-use technology, it concluded that:

> Russia, for example, has provided the PRC with extensive military assistance and related technologies, including a number of complete military systems. The Select Committee has been advised that the sheer number of transfers of military equipment and technology to the PRC from Russia, most of which have been a product of dramatically increased PRC-Russian military cooperation since 1992, is vastly greater than the number of transfers from the United States, most of which are the result of PRC espionage.[89]

China and Russia reestablished their cooperation in the area of outer space in 1993. Over time this cooperation increased quite impressively—perhaps not so much in terms of the volume as in what they cooperated on. Most of this cooperation was on a commercial basis. A formal agreement on cooperation between the Russian Space Agency (RSA) and the Chinese National Space Administration (CNSA) was reached in May 1994. Later, Chinese taikonauts underwent training in the Russian Star City training center.[90] In March 1995, Chinese space experts return to Moscow for the first time since the Sino-Soviet split of 1960 in order to negotiate and sign a contract for purchasing Russian space products and technology. They were particularly interested in space systems for a manned flight, such as environmental control systems and docking and emergency systems. The Chinese also bought some Russian RD-120 rocket engines. After a reciprocal visit of the Russian delegation to China, the Chinese bought an entire

[87] Ibid., Article VIII.
[88] U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China.* July 2002, 5, http://defenselink.mil/news/Jul2002/d20020712.china.pdf (accessed 06.25.04).
[89] U.S. Congress, House, *U.S. National Security and Military/Commercial Concerns with the People's Republic of China* (Cox Committee Report on Chinese Espionage), Overview, 1999, xxxv.
[90] On August 20, 1996, a group of Chinese visitors—according to some estimates, from 20 to 50 taikonaut trainees and future instructors—arrived in Star City led by Shen Jungjun. See Harvey, *The Chinese Space Programme,* 1998, 147-148.

spacecraft life support system, an Energiya docking module and the Kurs rendezvous system, used to dock supply crafts with the *Mir* space station.

During Russian President Putin's visit to China in December 2002 the Chinese media reported that Russia had agreed to lease room on the ISS to China for a scientific experiment. At a meeting between Yurii Koptev, the director of the Russian Space Agency, who accompanied Putin to Beijing, and Zhan Qingwei, the general manager of China Aerospace Science and Technology Corporation, both parties expressed their intention to explore the opportunity to expand existing collaboration.[91]

Earlier trade relations between China and Russia already expanded from manned space flight into other areas of space activities. During an official visit of the then Russian head of the government, Michael Kasyanov, to China in early November 2000, the Chinese and Russians negotiated on the joint exploitation of the Russian satellite navigation system GLONASS.[92]

Over time, parallel to the development of their bilateral relationship, Sino-Russian space cooperation deepened. In July 2001, Moscow and Beijing signed a five-year space cooperation agreement, according to which China and Russia would establish special departments on joint development of a regional missile defense system. Furthermore, the 2002 DoD report on China's military capabilities alleged that this agreement envisaged Sino-Russian cooperation on the development of a new generation of high-tech weapons

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[91] Sibing, 2003, 183-189.

[92] Korotchenko, 2000. Before that, China was reported as expressing interests in acquiring GLONASS. See Cooper and Contant, "The People's Republic of China—Consolidating it Space Power, Enhancing its Military Might," in Rebecca Jimerson and Ray A. Williamson, *Space and Military Power in East Asia*, 2000. China plans to build and deploy its own regional satellite navigation system, the Beidou Navigation System. On October 31, 2000, China's Long March 3 rocket successfully put the first navigation satellite, the Beidou Navigation Testing Satellite, into orbit. See "China Puts 1st Navigation Positioning Satellite into Orbit," *SpaceRef.com*, 2000.

and equipment for space warfare.[93] Proliferation of Russian-Chinese cooperation in outer space raised a suspicion that Russia and China were planning to establish a "space alliance" not only for commercial development, but for strategic military purposes.[94]

In its interactions with Russia, China played the role of an active importer of Russian space technology, while Russia an eager exporter, as it sought opportunities to gain financial resources to keep its space industry alive.[95] Their commercial relationship was based on mutual benefit. China, benefiting from its soaring international trade, earned hard currency to become a large buyer of Russia's high technology, including space technology, and modern arms, as it embarked on a major modernization plan for its ballistic missiles and space forces.[96] By establishing commercial relations with China, including in the area of space technology and hardware, Russia found a large market for its space industry.

Even though the two states continued to compete on space launch market for Western customers, the China-Russia commercial relationship, showed a great potential for growth, particularly in light of their growing strategic cooperation and China's desire to obtain a whole spectrum of modern space capabilities. During his first visit to Russia,

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93 U.S. Department of Defense, *Annual Report on the Military Power of the People's Republic of China*, 2002, 5.

94 A spokesman for NASA confirmed to WorldNetDaily the ongoing Sino-Russian "cooperative space efforts." These cooperative efforts encompassed applied space research, long-term programs for manned flight research, fundamental research and development of spacecrafts. Greg May, assistant director for the Nixon Center, voiced concerns that Sino-Russian cooperation may include development of technology to defeat U.S. satellites in orbit. See Dougherty, 1999.

95 Mowthorpe asserts that Russia's assistance provides "the greatest source of space cooperation for China" and this is mostly because "Russia does not place significant restrictions on its cooperation." See Mowthorpe, *The Militarization and Weaponization of Space*, 2004, 97.

96 The 1999 Cox Committee Report on Chinese Espionage specifically stated: "The PRC has indeed used the profits from its burgeoning commercial economy to purchase a number of advanced weapons systems. The most notable of these include the purchase from Russia of 50 Sukhoi Su-27 jet fighters and the production rights for 200 more, two Kilo attack submarines, and two Sovremenniy missile destroyers." See The Cox Committee Report on Chinese Espionage, 1999. The report also alleged that China's military modernization program encompassed exploitation of space-based military reconnaissance and

the new President of the People's Republic of China, Hu Jintao, and Russian President Putin made a joint statement, in which they reaffirmed their commitment to expand further their bilateral relations, including in the area of trade and space cooperation:[97]

> Political trust between the two countries is increasing, practical interaction is constantly expanding, friendship and mutual understanding between the peoples of Russia and China are strengthening. ...
>
> Russia and China intend to continue to strengthen their partnership and strategic interaction and jointly solve practical questions of bilateral ties in the interests of national security of both states, the prosperity of the Russian and Chinese people, stability and calm in the neighboring regions.
>
> The Parties will strengthen existing structures, while expanding other conduits for exchanges and consultations at all levels and in all spheres [98]

The two leaders pledged to continue working towards the creation of a Russian-Chinese interstate mechanism of security consultations and, in order to further strengthen the material foundation of their relationship, to invigorate cooperation in the economic sphere in general, and in space industry, information technology, military-technical matters, among other areas. The joint statement declared that the relations of partnership and strategic interaction between Russia and China had a "key importance as a major factor of international relations for the future of world politics, preservation of peace, maintenance of global security and stability."[99] This statement indicated that after the transition to the new leadership, China remained committed to the already established

communication satellites and space-based weapons. Russia and China were said to cooperate on the developing of space- and ground-based lasers.

[97] *Joint Statement by Presidents of the Russian Federation, Vladimir Putin, and People's Republic of China, Hu Jintao*, May 27, 2003, Paragraph III, http://www.nti.org/db/china/engdocs/putinhu_03.htm (accessed 03.11.04). Chinese and Russian Presidents committed to increase overall trade from $12 billion in 2002 to $ 20 billion in the next four to five years. See also CNN report "China, Russia Pledge Trade Boost," May 27, 2003, http://edition.cnn.com/2003/BUSINESS/05/27/china.oil.biz/ (accessed 03.11.04).

[98] *Joint Statement of the President of the Russian Federation, Vladimir Putin, and the President of the People's Republic of China, Hu Jintao*, 2003.

[99] Ibid.

framework of the bilateral relationship—a relationship characterized as "strategic cooperative partnership."

All in all, in case of the Sino-Russian relationship, the two states began to improve their relations during the Cold War based on their strategic calculations. Their common security interests led China and Russia to resolve many contentious issues that were impeding their bilateral cooperation and establish vigorous commercial space cooperation across the spectrum of space activities. As their political relationship grew, their space cooperation expanded, including possibly into the realm of military space technology. Proliferation of Russian-Chinese cooperation in outer space raised concerns that Russia and China were establishing a "space alliance"—and not only for mutual commercial development, but for strategic military purposes as well.[100]

Thus, in this case, the proposition that commercialization of outer space would lead to non-converging security interests is not supported: commercialization of space activities in Russia and China did not lead to non-converging space security interests of the two states. At the same time, it cannot be confirmed that greater convergence of their security interests was primarily caused by commercialization of space activities and commercial cooperation. Their converging security interests led to commercial cooperation, rather than vice versa. The proposition that commercialization and commercial cooperation would lead to converging security interests cannot be rejected, for the evidence suggests that commercial cooperation did develop further for the most

[100] A spokesman for NASA confirmed to WorldNetDaily the ongoing Sino-Russian "cooperative space efforts". These cooperative efforts encompassed applied space research, long-term programs for manned flight research, fundamental research and development of spacecrafts. However, any military components of their cooperation cannot be said as being supported by any real evidence and remains more of a speculation. Greg May, assistant director for the Nixon Center, voiced concerns that Sino-Russian cooperation may include development of technology to defeat U.S. satellites in orbit. See Jon E.

part of the period under study in parallel with increasing convergence of the two states' security interests in space.

BILATERAL RELATIONS AND CONVERGING AND DIVERGING SECURITY INTERESTS IN OUTER SPACE

This analysis of the dynamics of bilateral interactions between the United States, Russia, and China indicated that, first, outer space occupied a significant place in bilateral relations, and its significance increased over time as the commercialization of space proceeded within the time period under the study; second, the improvement of overall relations was an important condition for the establishment of commercial space cooperation in all three dyads, but particularly so in the U.S.-Russia dyad; third, expanding commercial interactions did not bring closer the differing perceptions of security interests between the United States on the one hand, and Russia and China, on the other. While the United States and Russia managed to establish bilateral arrangements to address some of their security concerns despite the diverging security interests in space, the United States and China failed to put in place similar arrangements as their security concerns escalated over time.

With regard to the three hypotheses formulated in this study, the present analysis bears the following results. With regard to the U.S.-Russian space security relations, the proposition that commercialization of outer space leads to non-converging security interest in outer space should be considered as supported by the evidence provided within the timeframe of this study. The proposition maintaining that converging security interests lead to greater commercial cooperation does not apply in this case: the United

Dougherty, "Russia, China forming Space Alliance," *WorldNetDaily*, Wednesday, November 10, 1999, States and Russia's security interests continued to diverge in the post-Cold War era. However, the improved overall relations between the United States and Russia in the context of the ended East-West confrontation and the fragile balance that was reached in the U.S.-Soviet negotiations leading up to the end of the bipolar confrontation related to outer space issues did provide the necessary foundation for the commercial cooperation between the two states. U.S.-Russian commercial cooperation expanded over time despite continuous divergence of their space security interests. And finally, the proposition that commercialization and greater commercial cooperation would lead to converging security interests cannot be supported in this case.

The overall improvement of Sino-U.S. relations preceded commercialization of their space activities and provided favorable conditions for commercial cooperation in space. Some common security interests that existed in the closing years of the Cold War and early in the aftermath of the bipolar confrontation did allow the United States and China to pursue commercial space cooperation. China benefited from participation in international space commercial cooperation: she expanded its space activities into new areas and gained greater access to space technology via the global space market. Commercial space activities helped China's economic development and its military space program. However, within this bilateral relationship, the commercialization of space activities and commercial space cooperation did not lead to converging security interests in outer space. On the contrary, over time China and U.S. interests further diverged and their commercial cooperation began to create frictions and raise suspicions. They perceived each other's space activities as a threat to their interests in space and to their overall security. They both began to consider a potential conflict in the Taiwan Strait as

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http://www.worldnetdaily.com/news/article/asp?ARTICLE_ID=15230 (accessed 10.07.03).

an increasingly possible occurrence and as they did so, they also moved closer to the brink of a military space race. The commercialization of space activities probably was not a leading factor in this development.

In the case of the Sino-Russian relationship, the two states began to improve their relations amidst the Cold War based on their strategic calculations. Their common security interests led China and Russia to resolve many contentious issues that were hampering their bilateral cooperation. In the post-Cold War era, they established vigorous commercial space cooperation across the spectrum of space activities. As their political relationship grew, their space cooperation increased and expanded into new areas. In this case the proposition that commercialization of outer space would lead to non-converging security interests is not supported: the commercialization of space activities in Russia and China did not lead to non-converging security interests of the two states. At the same time, the greater convergence of their security interests was not primarily caused by commercialization and commercial cooperation. Based on temporal precedence it can be concluded that converging security interests led to commercial cooperation, rather than vice versa. The proposition that commercialization and commercial cooperation would lead to converging security interests cannot be rejected on the basis of the evidence provided: commercial cooperation did develop for the most part of the period under study in parallel with increasing convergence of the two states' security interests in space.

CHAPTER IX

INTERNATIONAL ORGANIZATION AND SPACE SECURITY COOPERATION IN THE POST COLD WAR ERA: THE UNITED STATES, RUSSIA, CHINA, AND THE CONFERENCE ON DISARMAMENT IN GENEVA

> Globalization may be an over-used and under-defined term but if ever there was an appropriate area for a global approach, it is surely in seeking to prevent outer space becoming humankind's next battlefield.
>
> Ambassador Anderson of Ireland
> 2001

The purpose of this chapter is to examine to what extent the United States, Russia, and China have been successful at the international arena within the framework of an international organization in bridging their differences and reaching compromises in order to achieve their common goal—secure free access and use of outer space for the purposes of national security and economic well-being in the post-Cold War era.[1] Although space-related issues are dealt with in a number of intergovernmental organizations (IGOs) such as, for example, the International Telecommunication Union (ITU); the United Nations Disarmament Commission and its First Committee, and the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS), the main focus of this chapter is on the Geneva Conference on Disarmament, the international body designated to conduct consultations and negotiations on arms control and disarmament issues, including in the area of outer space. As was shown in the previous

[1] At the same time as the U.S. plans for outer space include development of space and ASAT weapons, the U.S. national interest are also aimed at "peaceful uses of outer space." The Rumsfeld Report stated that in the U.S. interests is to "promote the peaceful uses of space, use the nation's potential in space to support domestic, economic, diplomatic and national security objectives; and develop and deploy the means to deter and defend against hostile acts directed at U.S. space assets and against the uses of space hostile to U.S. interests." See Commission to Assess United States National Security Space Management and Organization, Report, Executive Summary, 2001, 7.

chapters, although the three space powers commercialized their space activities and grew to depend on the global space market for their economic well-being, as well as their national security, their security interests with respect to outer space, as reflected in their official national security documents, did not universally converge. Moreover, U.S. interests, on the one hand, and China's and Russia's interests, on the other, continued to grow increasingly apart in the post Cold War era. The weaponization of outer space emerged as the real next step in progressive militarization of outer space in the light of the U.S. plans to develop and deploy a National Missile Defense system and to achieve "full spectrum dominance." Russia and China opposed space weaponization as a step undermining their security and economic well-being. As an issue of contention, space weaponization has been used as a litmus test for determining the extent to which the security interests converged or diverged with respect to security in outer space.

The Conference on Disarmament in Geneva became the international forum at the heart of the debate over weaponization of space and prevention of an arms race in outer space between the three main spacepowers – the United States, Russia and China. By following the CD discussions relating to the efforts aimed at prevention of an arms race in outer space, the present chapter tries to find answers to the following questions: (1) What were the United States, Russia and China's positions towards the existing regime regulating military uses of outer space shortly after the end of the Cold War and how did they change over time? (2) Did a consensus between the three spacepowers emerge concerning the expansion or strengthening of the existing regime or establishing a new one and, if not, where did the dividing lines lie? To what extent did the interests converge, if any? (3) What was the role of the CD in bringing about cooperation? It is argued that in the course of work of the Conference on Disarmament in the post-Cold War era, Russia and China's interests converged to such a degree that the two countries jointly produced and proposed to the Conference a draft treaty prohibiting the use of force in outer space and emplacement of weapons in space. The Conference on Disarmament provided the necessary venue for the discussion of the outer space security issues and facilitated convergence of their views with respect to the arrangements that would be necessary to provide security in space. The United States, on the other hand, continued to prefer the existing regime in outer space and no progress was made towards the beginning of negotiations on any change of this regime. The use of issue linkages not only failed to produce favorable results concerning issues of security in outer space, it paralyzed the work of the Conference on all other issues on its agenda.

DO INTERNATIONAL ORGANIZATIONS MATTER?

The debate on the role of international institutions has been one of the major debates in International Relations.[2] A number of definitions of institutions have been

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[2] In the course of this debate a vast literature on the subject has been produced. All major schools of thought have participated in the debate and advanced their own approaches to international institutions and to evaluating their role in international relations. On the history of the scholarly discourse see Lisa L. Martin and Beth A. Simmons, "Theories and Empirical Studies of International Institutions," *International Organization* 52 (autumn 1998): 729-757; see also Abbot and Snidal, 1998, 3-32; Vinod K Aggrawal, "Building International Institutions in Asia-Pacific," *Asian Survey* 33 (November 1993): 1029-1042; Axelrod and Keohane, 1985, 226-254; Michael N. Barnett and Martha Finnemore, "The Politics, Power, and Pathologies of International Organizations," *International Organization* 53 (autumn 1999): 699-732; Thomas Bernauer, "The Effect of International Environmental Institutions: How We Might Learn More," *International Organization* 49 (spring 1995): 351-377; Liliana Botcheva and Lisa L. Martin, "Institutional Effects on State Behavior: Convergence and Divergence," *International Studies Quarterly* 45 (2001):1-26; Hedley Bull, *The Anarchical Society: A Study of Order in World Politics*, London: Macmillan, 1977; Barry Buzan, "From International System to International Society: Structural Realism and Regime Theory Meet the English School," *International Organization* 47 (1993): 327-352; Andrew P. Cortell and James W. Davis, Jr., "How Do International Institutions Matter? The Domestic Impact of International Rules and Norms," *International Studies Quarterly* 40 (1996): 451-478; Martha Finnemore, "International Organizations as Teachers of Norms: the United Nations Educational, Scientific, and Cultural Organization and Science Policy," *International Organization* 47 (autumn 1993): 565-597; Martha Finnemore, "Norms, Culture, and World Politics: Insights from Sociology's Institutionalism," *International Organization* 50

used in this debate: from institutions being defined as a "general pattern or categorization of activity" to institutions as "particular human-constructed arrangements."[3] In this chapter, a narrow definition of international institutions is used: an international institution is a "formal, continuous institution established by treaty or other agreement between governments, long-range in nature, multilateral, with a secretariat and more-or-less regular meetings, and an 'international legal personality' with legal standing."[4]

Although the debate on international institutions has shifted since the 1980s from the polemic between adherents of neorealism and neoliberalism on whether international institutions "matter" to the discussion of how institutions exert their influence and what determines the main features of their designs, the question of whether international institutions significantly change states' behavior and promote more cooperative and peaceful relations between states continues to be raised.[5] The neorealist position in the debate has been that international institutions do not ameliorate the anarchy of the

(spring 1996): 325-347; Geoffrey Garrett, "International Cooperation and Institutional Choice: The European Community's Internal Market," *International Organization* 46 (spring 1992): 533-560; Geoffrey Garrett and Peter Lange, "Internationalization, Institutions, and Political Change," *International Organization* 49 (autumn 1995): 627-655; Peter J. Katzenstein, *The Culture of National Security: Norms and Identity in World Politics* (New York: Columbia University Press, 1996); Christian Reus-Smit, "The Constitutional Structure of International Society and the Nature of Fundamental Institutions," *International Organization* 51 (autumn 1997): 555-589; Charles A. Kupchan, and Clifford A. Kupchan, "The Promise of Collective Security," *International Security* 20 (summer 1995): 52-61; James Morrow, "Modeling the Forms of International Cooperation: Distribution versus Information," *International Organization* 48 (1994): 387-424; John G. Ruggie, "The False Promise of Realism," *International Security* 20 (summer 1995): 62-70; Wayne Sandholtz, "Institutions and Collective Action: The New Telecommunications in Western Europe," *World Politics* 45 (January 1993): 242-270; Cheryl Shanks, Harold K. Jacobson, Jeffrey H. Kaplan, "Inertia and Change in the Constellation of International Governmental Organizations, 1981-1992." *International Organization* 50 (autumn 1996): 593-627; Alexander Wendt, "Constructing International Politics," *International Security* 20 (summer, 1995): 71-81. See also Symposium on International Institutions, *International Organization* 55 (autumn 2001): 761-1103.

[3] Robert O. Keohane, "International Institutions: Two Approaches," *International Studies Quarterly* 32 (December 1988): 382.

[4] Russett, Oneal, and Davis, 1998, 441-467. Koremenos, Lipson, and Snidal suggest a similar definition: "explicit arrangements, negotiated among international actors, that prescribe, proscribe, and/or authorize behavior." See Barbara Koremenos, Charles Lipson, and Duncan Snidal, "The Rational Design of International Institutions," *International Organization* 55 (autumn 2001): 762.

[5] For example, Mearsheimer argues that "institutions have minimal influence on state behavior, and thus hold little promise for promoting stability in the post-Cold War world." See Mearsheimer, 1994/95, 7.

international system and are reflections of the distribution of power in the international system and, thus, have only marginal independent effect on state behavior and cannot "cause peace."[6] Neoliberals have posited that international institutions matter because they facilitate cooperation among states when they have mutual interests. International institutions promote cooperation by providing information, including information about the distribution of gains from cooperation; reducing transaction costs; making commitments more credible; creating issue linkages; establishing focal points for coordination; facilitating in general the operation of reciprocity; making cheating less appealing by making punishment more feasible and providing early warnings of cheating for the victims; and lessening the implications of cheating.[7]

Two important functional characteristics of international organizations—centralization and degree of autonomy and independence—set these vehicles of international cooperation apart from other forms of international institutions. Formal intergovernmental organizations provide stable negotiating fora that enhance iteration in interstate relations and reputational effects. They make cooperative responses to urgent developments easier and help to establish and reinforce norms, legitimize or de-legitimize certain activities, and shape the agenda of interstate discourse. These international bodies often provide information and expertise on the issues at hand and influence political context in which interstate interactions take place. They also strengthen issue linkages and stimulate trade-offs, monitor state activities and adherence to their commitments, thereby stimulating compliance with existing agreements. International organization can play the role of an arbiter and conduct interventions in interstate relations that help

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6 Ibid., 47.
7 Keohane and Martin, 1995, 42, 47.

overcome bargaining deadlocks and issue legally binding decisions with the consent of the parties involved. Operational organizations manage a variety of collective activities that influence states' capabilities, understandings, and interests via the pooling of resources and/or risks.

Institutionalists have argued that international organizations have grown remarkably in number and in the functions they perform in the post-World War II era. They now help to manage many important areas of interstate relations from international trade (WTO) and international monetary policy (IMF) to international security (UN Security Council), affecting performance and the nature of the international system by enabling states to achieve goals that they would not have achieved otherwise.[8] Performing these various functions international intergovernmental organizations make an important contribution to reducing the occurrence of interstate conflicts, including militarized conflicts.[9]

Russet, Oneal and Davis emphasize six functions that help reduce interstate conflict: (1) coercing norm-breakers, (2) mediating among conflicting parties, (3) reducing uncertainty by conveying information, (4) problem solving via creating conditions for diffuse reciprocity, issue linkages, permitting trade-offs and side payments to facilitate agreements, (5) socialization and shaping norms via serving as fora where interstate discourse and deliberations take place, which provide legitimacy for collective decisions and promote adherence to the collectively produced pronouncements and resolutions, and (6) generating narrative of mutual identification via building a shared sense of values and identities. Results of their study support the claim that international

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[8] Abbott and Snidal, 1998, 3-32.
[9] Russett, Oneal, and Davis, 1998, 445-449.

intergovernmental organizations, along with economic interdependence and democracy, reduce interstate militarized conflict. According to the study conducted by Russett, Oneal and Davis in which probit analysis of dyadic data for trade and interstate conflict is used for the period of 36 years (1950-85),[10] an increase in one standard deviation in the number of common IGO memberships cuts the probability of a dispute by 23 percent from the baseline rate for a typical dyad.[11] In a more recent study, Russett and Oneal analyze data for politically relevant dyads over the period of 1886-1992 and find that international intergovernmental organizations reduce the likelihood of a dispute by 24 percent.[12] International governmental organizations, both economic- and security-related ones, clearly matter and together with two other legs of the "Kantian tripod for peace"—economic interdependence and democracy—account for over 70 percent of the pacifying effect when all three are increased simultaneously by one standard deviation in Russett and Oneal's model.[13]

Although these findings and the logic behind them hold great hopes and raise expectations for more cooperative and peaceful interstate relations, as the number of intergovernmental organizations increases, the same expectations cannot be applied to any particular intergovernmental organization dealing with the particular issue under consideration. Thus, there is a need for a thorough examination of the extent to which the three space-faring states—the United States, Russia and China—succeeded in achieving cooperation on space security issues at the level of global governance within a framework of a major intergovernmental organization. This chapter is devoted to the test of the

[10] Probit analysis is a form of multiple regression that is used for dichotomized dependent variables. See Russett, Oneal, and Davis, 1998, 449.
[11] Russett, Oneal, and Davis, 1998, 457.
[12] Russett and Oneal, *Triangulating Peace*, 2001, 172.
[13] Ibid., 172.

neoliberal hypothesis formulated in this study. The hypothesis states that greater commercialization and commercial cooperation may not lead to converging security interests, but conflicting interests are reconciled via international institutions. The issue of space weaponization—one of the most debated issues within the Conference on Disarmament in Geneva in the post-Cold War era—is used as a point against which converging and non-converging security interests of the three spacepowers are evaluated.

THE CONFERENCE ON DISARMAMENT AND SPACE SECURITY ISSUES: THE STARTING POINT

Until the late 1950s, there was no international body specifically designated to cope with space security issues. Proposals related to outer space, including proposals for countering possible arms race in outer space, were dealt with by the United Nations General Assembly and the Disarmament Commission. The institutional framework for the discussion of space security issues emerged only by the early-1960s: the Committee on Peaceful Uses of Outer Space charged with fostering international cooperation in the peaceful uses of outer space and building legal framework for outer space was established in 1959,[14] and the Eighteen-Nation Conference on Disarmament (ENCD), was founded in 1962. The ENCD incorporated space security issues in its agenda when it received two proposals, one from the Soviet Union and another from the United States,

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[14] The *Ad Hoc* Committee on the Peaceful Uses of Outer Space was created in 1958 after the UNGA adopted Resolution 1348 (XIII) on December 13, 1958. The Committee on the Peaceful Uses of Outer Space was established a year later in accordance with UNGA Resolution 1472 (XIV). See United Nations, *International Agreements and Other Available Legal Documents Relevant to Space-Related Activities, A List of International Agreements and other Available Legal Documents relevant to Space-Related Activities (and Where They Might be Found)*, Prepared as a Reference Document for Member States of the United Nations (Vienna: United Nations, 1999), 2.

dealing with space security issues among other disarmament issues.[15] The ENCD also received the final draft of the tripartite treaty between the Soviet Union, the United Kingdom, and the United States limiting nuclear weapons testing that in 1963 became the first international legal instrument containing specific steps for arms limitations in outer space, the Partial Test Ban Treaty.[16]

Bilateral and multilateral efforts at managing space activities and producing arrangements to reduce the possibilities of interstate conflict in space also continued outside this institutional framework. But, until the early 1980s, there was no international consensus on whether space military security issues deserved the attention they were given and which forum was more appropriate for the discussion of these issues.[17] In 1981, two UNGA resolutions requested the Conference on Disarmament,[18] the successor of the ENCD, to embark on negotiations with the view to reach an agreement on the text of an international treaty preventing spread of the arms race to outer space, thereby confirming the importance and urgency of space security issues and establishing the CD as the main forum for this task.[19]

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[15] The Soviet Union submitted a document titled "Treaty on General and Complete Disarmament Under Strict International Control, and the United States submitted Declaration on Disarmament: Programme for General and Complete Disarmament in a Peaceful World." See Alves, *Prevention of an Arms Race in Outer Space*, 1991, 3.

[16] "Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water" was signed by the United States, the United Kingdom of Great Britain and Northern Ireland in Moscow on August 5, 1963. It entered into force on October 10, 1963. See "Treaty Banning Weapon Tests in the Atmosphere, in Outer Space and under Water," 1963. The Treaty was joined by other states with total membership reaching 131 countries. Although the People's Republic of China actively participated in deliberations and signed the Comprehensive Test Ban Treaty, it never joined the Partial Test Ban Treaty. See Status of Multilateral Arms Regulation and Disarmament Agreements available at http://disarmament2.un.org/TreatyStatus.nsf (accessed 01.26.04).

[17] Alves, *Prevention of an Arms Race in Outer Space*, 1991, 5.

[18] Then, the Conference on Disarmament (CD) was called the Committee on Disarmament (CD).

[19] United Nations, "Conclusion on a Treaty on the Prohibition of the Stationing of Weapons of any Kind in Outer Space," United Nations General Assembly Resolution A/RES/36/99, December 9, 1981, http://www.un.org/documents/ga/res/36/a36r099.htm (accessed 09.16.02), and "General and Complete Disarmament," United Nations General Assembly Resolution A/RES/36/97, December 9, 1981, http://www.un.org/documents/ga/res/36/a36r097.htm (accessed 01.26.04).

The Conference on Disarmament in Geneva was founded in 1979 as the single multilateral disarmament negotiating forum of the international community after Member States reached an agreement at the first special session of the United Nations General Assembly (UNGA) devoted to the disarmament issues in 1978.[20] The Conference was establish to deal with a number of arms control and disarmament issues and together with its predecessors successfully negotiated some crucial multilateral arms control and disarmament agreements: the Non-Proliferation Treaty (NPT), Environmental Modification and Seabed Treaties, the Biological and Toxic Weapons Convention (BTWC), the Chemical Weapons Convention (CWC), and the Comprehensive Nuclear-Test Ban Treaty (CTBT).

Prevention of an arms race in outer space became an agenda item of the Conference on Disarmament in 1982 but an agreement on the objectives and scope of the work of an *Ad Hoc* Working group was not reached until a few years later. The discussion on space security issues acquired an added urgency after President Reagan's speech on the Strategic Defense Initiative (SDI) in March 1983. Although matters relating to anti-ballistic missile systems were dealt with by the United States and the Soviet Union on a bilateral basis within the framework of the ABM regime, the SDI plan

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[20] The Conference on Disarmament (CD) in Geneva became a successor for a series of intergovernmental organizations dealing with disarmament issues: the Ten-Nation Committee on Disarmament (TNDC, 1960), the Eighteen-Nation Committee on Disarmament (ENDC, 1962-68), and the Conference of the Committee on Disarmament (CCD, 1969-78). See Conference on Disarmament, "History of the Conference on Disarmament," Official Website, http://disarmament.un.org:8080/cd/cd-backgnd.html (accessed 07.11.04). At its creation, the CD had 40 members. Until 1995, only 38 members took part in the sessions of the CD due to the reunification of Germany and the breakup of the Yugoslavia. On June 17, 1995, the CD admitted 23 new members. See Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1436, September 12, 1996, 6, http://disarmament.un.org8080/cd/cd-yrrep.html (accessed 01.24.04). Although the Conference has its own rules and procedures and adopts its own agenda, it has a special relationship with the United Nations: the CD takes into account recommendations made by the UNGA and the proposals presented by its members; it presents annual reports on its work to the UNGA; the budget of the CD is included into the budget of the United Nations; the CD is held on UN premises in Geneva and is served by the UN personnel.

caused a growing concern on the part of the international community due to its implications to the arms race in outer space and for international security more generally. There was an understanding that requirements for an effective strategic defense against ballistic missile would inevitably lead to the development, testing, and deployment of systems capable of disabling or destroying space objects. In other words, it would entail the development of ground, air, and space-based anti-satellite weapons as well.[21] Furthermore, it would lead not only to the development of new weapons and weapon systems, which would be directed against space objects from the surface and air or used in and from space, but also to a quantitative expansion of offensive missile forces in attempts to overcome opponent's BMD systems and to buildups of non-ballistic missiles.

In the light of these prospects, an agreement was finally reached on the mandate of the *Ad Hoc* Committee on the Prevention of an Arms Race in Outer Space (PAROS) in 1985 but the Committee was not made a permanent body of the Conference on Disarmament. The United Nations General Assembly requested the CD to establish, and later re-establish, the *Ad Hoc* PAROS Committee in its annual resolutions since 1984 "... with the view to undertaking negotiations for the conclusion of an agreement or agreements, as appropriate, to prevent an arms race in all its aspects in outer space."[22] Following the UNGA recommendations, the CD reestablished the *Ad Hoc* PAROS Committee at its plenary session each year between 1985-1994, with the mandate of the Committee falling short of the UNGA requests. The mandate of the *Ad Hoc* PAROS

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21 Alves, *Prevention of an Arms Race in Outer Space*, 1991, 5-6.

22 The first UNGA resolution calling on the Conference on Disarmament in Geneva to establish the *Ad Hoc* Committee on the Prevention of an Arms Race in Space at the beginning of its session in 1985 was adopted in 1984. See United Nations, "Prevention of an Arms Race in Outer Space," December 12, 1984, Paragraph 8, A/RES/39/59, http://www/un/org/documents/ga/res/39/a39r059.htm (accessed 01.26.04).

Committee encompassed identification of the issues relevant to the prevention of an arms race in outer space and involved no negotiations of any space-related agreements.

During the Cold War years, the work of the Committee was characterized by the significantly diverging assessments of the space-related issues by two large groupings of delegations at the CD. On the issue of the mandate of the *Ad Hoc* PAROS Committee, for example, there were differences between those delegations associated with the Group of Western countries, on the one hand, and those associated with the Group of 21 and the Group of Socialist countries, on the other, with the latter grouping favoring a negotiating mandate for the Committee, and the former generally opposing this change of status. The Group of the Western countries generally adhered to the view that the launching of negotiations on issues related to arms race in outer space was premature, as there were still problems with interpretations of basic concepts.[23] Characteristic of this position is a statement made by the delegation of the Federal Republic of Germany:

> As long as the prevailing substantive and methodological divergences prevail, it does not make sense to call for 'negotiations' without knowing with precision the real objective, need, purpose and prospect for any of the intended conventions, treaties, amendments or regulations that are being urged. Moreover, it would not make sense to hurry into regulations which could contain troublesome ambiguities generated by superficial compromises, unbalanced approaches, lack of technical and juridical precision and imprecise definitions.[24]

Most delegations associated with the Group of 21 or the Group of Socialist countries considered it important to make real steps in updating the space security regime with a legal and organizational framework that would allow the international community to deal with the developments in space technology and applications.

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[23] There were, for example, problems with defining outer space and its boundaries, "peaceful purposes," "space weapons," and the concept of "militarization of space." See Alves, *Prevention of an Arms Race in Outer Space*, 1991, 10-20.

[24] Conference on Disarmament, *Statement Submitted by the Federal Republic of Germany to the Conference on Disarmament*, CD/PV 502, April 11, 1989, 3, cited in Alves, *Prevention of an Arms Race in Outer Space*, 1991, 8.

Thus, by the time the Cold War came to its unexpected end in 1991, the Conference on Disarmament in Geneva had nearly a decade of dealing with military space security and a little over half a decade of working on the issues related to military space security under the agenda item titled "Prevention of an Arms Race in Outer Space" within the *Ad Hoc* PAROS Committee. Although the Committee's mandate did not allow for any negotiations on the military space issues, the *Ad Hoc* PAROS Committee made a significant contribution in laying the groundwork necessary for establishing a new security regime for outer space. Within its mandate the Committee tried to develop agreed definitions of a "space object," "peaceful uses of outer space," "militarization" of outer space, "space weapons," and "space weapon system." It argued for the importance of determining the boundaries of outer space and identification of deficiencies in the existing legal framework from the standpoint of prevention of an arms race in outer space. The Committee discussed a number of proposals for regulating military activities in space, for confidence-building measures, and institutional framework necessary for the task of preventing an arms race in outer space. It examined and discussed a number of working papers, drafts of new treaties and draft amendments to the Outer Space Treaty and the Registration Convention, as well as proposals for mulitlateralization of the ABM Treaty, submitted by a number of delegations in efforts to mend the eroding space security regime and covering issues from prohibition of placing any weapons in space and the use of force or a threat of the use of force in space to immunity of artificial satellites, "space code of conduct" and "rules of the road," to creation of international monitoring and verifications inspectorate to ensure compliance with non-weaponization of space. [25]

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[25] A French Working Paper, for example, proposed introduction of "rules of the road" that would

THE UNITED STATES, THE SOVIET UNION, CHINA, AND THE CONFERENCE ON DISARMAMENT BEFORE THE END OF THE COLD WAR

Among the three spacepowers—the United States, Soviet Union, and China—the Soviet Union seemed to be the most concerned with the issue of the further militarization of outer space, pressing for the multilateral discussion of arrangements for preventing a space arms race.[26] In 1981, the Soviet Union put forward a Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space to the General Assembly of the United Nations.[27] The main provision of the 1981 Draft Treaty was directed at prohibiting of placing objects with weapons of any kind into orbit and deployment of "weapons in outer space in any other way, including also on piloted space

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strengthen both the Registration Convention and the establishment of a trajectory center for monitoring flights of satellites. The delegations from Italy, Peru, and Venezuela submitted proposals at various times, suggesting amendments to the Outer Space Treaty. In 1990, the Argentine delegation submitted a comprehensive proposal for strengthening the Registration Convention with the purpose of making it an instrument in preventing an arms race in space. The Pakistani delegation proposed multilaterization of the ABM Treaty and called on the *Ad Hoc* PAROS Committee and the CD to start appropriate negotiations in order to achieve an early agreement on this measure. See Alves, *Prevention of an Arms Race in Outer Space*, 1991, 89-94, 104.

26 The Soviet Union conducted a series of ASAT tests in 1968-71 and 1976-78. In March 1978, the Soviet Union responded positively to the Carter Administration's proposal for ASAT negotiations. The two sides conducted three rounds of exploratory meetings in 1978-79. Although neither the Soviet Union nor the United States officially withdrew from the negotiations, after the Soviet invasion of Afghanistan in 1979 and the U.S. refusal to ratify the SALT II Treaty, the bilateral U.S.-Soviet relations deteriorated and discussions of the ASAT weapons did not result in any arms control agreement. Besides the political circumstances—the Soviet invasion of Afghanistan and the end of the superpowers' détente—the perceived by the U.S. unequal status of the U.S. and Soviet ASAT programs impeded the progress of bilateral negotiations. At that time the United States considered the Soviet ASAT system to be operational, while the U.S. ASAT system still needed testing. After the breakdown of the bilateral ASAT negotiations, the United Nations General Assembly and the Geneva Conference on Disarmament were the only two international bodies where the discussion of the space military security issues could be held and the Soviet Union considered the matter of military space developments to be important and the current situation favorable to pursue an international discussion within these fora. The U.S. experts did not agree on the interpretation of the steps undertaken by the Soviet Union in attempts to prevent further militarization of space. One of the theories posited that the Soviet Union decided to use this issue for propaganda purposes, trying to shift international discussions away from the Soviet invasion of Afghanistan and portray the United States as being responsible for the escalation of the arms race. Another theory suggested that the Soviet interest in limiting ASAT developments was genuine and originating from Soviet calculations that the U.S. would be able to outperform the Soviet Union in ASAT technology over time. The United States refused to participate in multilateral negotiations with the Soviet Union.

27 United Nations, *Letter dated 10 August 1981 from the Ministry for Foreign Affairs of the Union of Soviet Socialist Republics Addressed to the Secretary-General*, Official Records of the United Nations General Assembly, A/36/192, August 20, 1981.

vessels of multiple use."[28] It also sought to proscribe the destruction, damage or disturbance of the normal functioning of satellites and alteration of flight trajectories of satellites put in orbit by other states.[29] After consideration of this draft treaty, the United Nations General Assembly adopted a resolution that called on the CD to embark on the negotiation of an appropriate international treaty in order to prevent the spread of an arms race into outer space and announced its decision to include in its provisional agenda of the thirty-seventh session of the UNGA the item titled "Conclusion of a treaty on the prohibition of the stationing of weapons of any kind in outer space."[30] The United States was among the twenty-one countries of the Western bloc who abstained in voting on this resolution.[31]

Despite the lack of support on the part of the West, the issues of prevention of an arms race in outer space became an annual item at the United Nations General Assembly. The 1981 UNGA resolution also established the Conference on Disarmament as a multilateral negotiating body on the issue of preventing a space arms race. After consideration of the Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space at the UNGA, the Soviet Union presented its proposal to the Conference on Disarmament a year later.[32] At the Conference, the Soviet proposal was met favorably by delegations from the Group of the Socialist countries. This draft

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28 United Nations, "Draft Treaty on the Prohibition of the Stationing of Weapons of any Kind in Outer Space," Article I, A/36/192, August 20, 1981.

29 Ibid., Article III.

30 United Nations, "Conclusion on a Treaty on the Prohibition of the Stationing of Weapons of any Kind in Outer Space," 1981. Since 1982, United Nations General Assembly Resolutions on prevention of an arms race in outer space became annual.

31 United Nations, United Nations General Assembly, Thirty-Seventh Session, 91st Plenary Meeting, A/36/PV.91, December 9, 1981, 1627.

32 Conference on Disarmament, *Letter dated 6 April 1982 from the Representative of the Union of Soviet Socialist Republics Addressed to the Chairman of the Committee on Disarmament Transmitting the Draft Treaty on the Prohibition of the Stationing of Weapons of Any Kind in Outer Space Submitted to the Thirty-sixth Session of the General Assembly*, CD/274, 7 April, 1982, cited in Alves, *Prevention of an Arms Race in Outer Space*, 1991, 97.

addressed not only the issue of the prevention of an arms race in outer space but also the pressing issue of ASAT developments.[33] By contrast, the reaction of some delegations from the Group of Western countries was critical of the Soviet draft, particularly those aspects related to ASAT weapons.[34]

In 1983, the Soviet Union presented a new proposal entitled "A Draft Treaty on the Prohibition of the Use of Force in Outer Space and from Space Against the Earth" to both the United Nations General Assembly and the Conference on Disarmament.[35] In this document, after taking into account many criticisms expressed during the multilateral discussions of the 1981 draft, the Soviet Union suggested a ban on the use of force in outer space, the atmosphere, and on the Earth through the utilization of space objects as instruments of destruction and the use or threat of force against space objects.[36] Article 2 of the Draft Treaty prohibited development and testing of new ASAT systems and requested destruction of the existing ASAT systems.[37] It also proposed a prohibition on the testing and use of manned spacecraft for military purposes, including against satellites. If the Draft Treaty were to be made into the law, this provision would have

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33 Alves, *Prevention of an Arms Race in Outer Space*, 1991, 98.
34 Ibid., 98-99.
35 United Nations, *Letter dated 19 August 1983 from the First Vice-Chairman of the Council of Ministers of the Soviet Socialist Republics, Minster of Foreign Affairs of the USSR*, U.N. Document A/38/194, August 23, 1983, also available at http://www.nasda.gojp/lib/space-law/chapter_3/3-2-1-2_e.html (accessed 01.28.04); and Conference on Disarmament, *Letter Dated 20 March 1984 Addressed to the President of the Conference on Disarmament from the Representative of the Union of Soviet Socialist Republics, Transmitting the Text of a Draft Treaty on the Prohibition of the Use of Force in Outer Space and from Space Against the Earth*, CD/476, March 20, 1984, cited in Alves, *Prevention of an Arms Race in Outer Space*, 1991, 99.
36 Article 1 of the draft treaty states that (1) space objects are not to be used to threaten objects in outer space, the atmosphere, and on the surface of Earth, and (2) space objects themselves are not to be threatened. This article would outlaw threats from space-based capabilities, such as space-based ASAT and BMD systems. See United Nations, "Draft Treaty on the Prohibition of the Use of Force in Outer Space and from Space Against the Earth," Article 1, August 1983.
37 Ibid., Article 2.

directly affected the United States' Shuttle, which was designed to carry out civil as well as military mission and could be thought as having some ASAT capability.

In 1988, the Soviet Union put fourth a comprehensive proposal for establishing an International Space Monitoring Agency (ISMA) as a confidence-building measure for outer space, as well as for strengthening European and international security via monitoring compliance with a number of international treaties and for monitoring and providing warning of natural disasters.[38] Additionally, in March 1988, the Soviet Union proposed to establish an International Space Inspectorate (ISA) the main task of which would be to monitor states' compliance if a treaty on prohibition of weaponization of space was to be adopted by the Conference on Disarmament.[39] All in all, not only did the Soviet Union take an active part in the discussions of the military space security issues at the Conference on Disarmament but it also actively contributed to the work of the conference by providing its expertise and producing a number of comprehensive proposals, covering a wide spectrum of space security issues and aimed at the creation of a new security regime that would preserve space free of weapons.

The U.S. position on the matters of prevention of an arms race in outer space at the Geneva Conference throughout the 1980s was one of reservation. The U.S. delegation held the view that the existing space security regime was sufficient and did not require negotiations on new international agreements or amendments of the existing ones. For example, the United States expressed little support for the "Draft Treaty on the

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[38] Alves, *Prevention of an Arms Race in Outer Space*, 1991, 121-122.

[39] Conference on Disarmament, *Letter dated 17 March 1988 from the Representative of the Union of Soviet Socialist Republics addressed to the President of the Conference on Disarmament, transmitting the Text of a Document entitled "Establishment of an International System of Verification of the Non-Development of Weapons of Any Kind in Outer Space*, CD/817, March 17, 1988, cited in Alves, *Prevention of an Arms Race in Outer Space*, 1991, 122.

Prohibition of the Use of Force in Outer Space and from Space Against the Earth" submitted to the CD by the Soviet Union in 1984. Moreover, the U.S. delegation considered this treaty detrimental for the existing international law.[40] The United States did not support proposals to revision of the Registration Convention with the view of transforming it into an instrument of arms control, believing that such a step was outside the competence of the Geneva Conference on Disarmament.[41] The United States delegations also did not support proposals for comprehensive prohibition of ASAT weapons, explaining its position with difficulties of defining ASAT weapons:

> Another problem with a comprehensive ASAT ban concerns legal issue of how anti-satellite weapons are to be defined and categorized. In addition to systems that a State would choose to identify as an anti-satellite weapon, there are many different types of weapon systems that could be used to destroy, damage or disable satellites.[42]

In response to the 1988 Soviet proposal for the creation of an International Space Inspectorate (ISI) for verifying compliance with treaty obligations that included on-site inspections before the launch of space objects, the United States expressed its opinion that this proposal could be more destabilizing, than stabilizing.[43]

By the mid-1980s, unresolved space security-related issues began to hamper further progress in negotiations on nuclear strategic forces reductions between the United States and the Soviet Union. In 1984, President Reagan suggested to embark on periodic consultations at policy level and regular meetings of experts and officials on a wide range of security issues, including issues related to "militarization of space."[44] The Soviet Union responded positively to the U.S. proposal. However, instead of taking the issue to

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40 Alves, *Prevention of an Arms Race in Outer Space*, 1991, 100.
41 Ibid., 1991, 96.
42 See statement quoted in Alves, *Prevention of an Arms Race in Outer Space*, 1991, 103.
43 Ibid., 124.
44 U.S. President, *President Reagan's Address to the 39th Session of the United Nations General Assembly in New York*, 1984.

the Geneva Conference on Disarmament, the two held a bilateral organizational meeting in Geneva in early 1985 in order to set an agenda for new Nuclear and Space Talks (NST), a separate from the CD negotiating body, which was to cover strategic nuclear arms, intermediate-range nuclear forces, and defense and space security issues. The NST had a significant impact on the discussions at the *Ad Hoc* PAROS Committee in that most of the members of the letter acknowledged that any progress for multilateral negotiations on prohibitions or limitations of space weapons could be achieved only if the two superpowers agreed upon and supported these measures.

The NST negotiations demonstrated the necessity of discussing strategic offensive arms in connection with strategic defensive arms and space security issues. They also showed that the United States preferred to discuss space security matters on a bilateral rather than multilateral level. While taking part in the meetings of the *Ad Hoc* PAROS Committee, the U.S. placed its priority on the bilateral negotiations arguing that fundamental framework must be first established on a bilateral level before multilateral negotiations may begin. Until the end of the Cold War, the United States did not put forth any proposals in the multilateral forum in the area of space security, adhering to the view that the existing legal framework was sufficient.[45]

The Soviet position was, by contrast, that multilateral talks were important. This view came from the recognition that multilateral arrangements were necessary due to the rapid emergence of new space players. In its 1990 statement the Soviet Union suggested that the discussions at the *Ad Hoc* PAROS Committee could serve as a vehicle:

> ...[T]o build up experience with constructive multilateral work as regards the outer space dimension of security and stability. However important the bilateral

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45 Alves, *Prevention of an Arms Race in Outer Space*, 1991, 52.

> Soviet-American negotiations are, multilateral efforts are vital here, because an increasing number of States are becoming involved in space activities.[46]

As became apparent during the NST talks, the United States and Soviet Union pursued different goals with respect to space security: the Soviet Union sought to stem the weaponization of outer space by preserving and strengthening the 1972 ABM Treaty, and the United States pursued these talks in order to facilitate cooperative transition towards more stable deterrence that would increasingly rely on anti-ballistic missile defense, including its space-based components.[47]

China, who formally jointed the Conference on Disarmament in 1980, expressed its opposition to a possible extension of an arms race in outer space on numerous occasions throughout the 1980s. Since 1984, for example, China repeatedly proposed to the United Nations General Assembly draft resolutions on the prevention of an arms race in outer space. During a meeting in Beijing in 1985, Deng Xiaoping shared China's concern and clear opposition to an arms race in outer space with the former U.S. President Nixon. He stated:

> We are very concerned about the escalation of the nature of the arms race and are opposed to any arms race in outer space. We are against whoever goes in for the development of outer space weapons.[48]

Although the People's Republic of China became a member of the Conference on Disarmament and had great concerns with respect to military space developments and the prospect of an arms race in outer space, it played a limited role in the work of the conference on space security issues through the 1980s, seeing prevention of an arms race

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[46] Conference on Disarmament, *Statement submitted by the Union of the Soviet Socialist Republics to the Conference on Disarmament*, CD/PV 560, June 28 1990, 11-12. See Ibid., 1991, 52.
[47] Alves, *Prevention of an Arms Race in Outer Space*, 1991, 50-51.
[48] See Nuclear Threat Initiative, "China, Outer Space/Space Weapon-Related Statements and Development," NTI Official Website, http://www.nti.org/db/china/spacechr.htm (accessed 09.28.02).

in space as being mostly the responsibility of the two superpowers.[49] In 1990, assessing progress of work on prevention of an arms race in outer space, in a statement before the United Nations First Committee, Hou Zhitoung avowed:

> It is disappointing that the two superpowers, which possess the biggest space capabilities, have failed to make headway so far in prohibiting space weapons, and the research and development of space weapons have led to a qualitative escalation of the arms race.
>
> The complete prohibition and thorough destruction of space weapons represent the most fundamental and effective means of preventing an arms race in outer space. China shares with the world community a strong expectation for the countries with the greatest space capabilities to undertake fully their special responsibility for the prevention of an arms race in outer space, to speed up in earnest their bilateral negotiations to this end, and to conclude an agreement at an early date on halting the development and deployment of space weapons and destroying all such weapons.[50]

In the same statement, Hou Zhitong called on the Conference on Disarmament and the *Ad Hoc* PAROS Committee to start negotiations promptly on "an agreement to prevent an arms race in outer space in all its aspects, to prohibit and destroy all space weapons, and to ensure the de-weaponization of outer space."[51]

Thus, this was the distribution of interests within the Conference on Disarmament in Geneva by the end of the Cold War, with the Soviet Union trying to play a role of a leading player in a quest to prevent the weaponization of outer space, the United States staying aloof, and China keeping a distance and waiting for the superpowers to resolve their issues at a bilateral level, while in principal sympathizing with the Soviet Union's initiatives to prohibit the emplacement of weapons in space.

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[49] The Chinese delegation to the Geneva Conference submitted its position paper on the issue of prevention of an arms race in outer space (CD/579) in 1985. In this paper, China iterated its position on space security issues, reaffirmed its adherence to the concept of outer space as the common heritage of mankind. The paper emphasized China's view that exploration of outer space should serve economic, scientific and cultural development of all countries and benefit all mankind. The paper also expressed China's opposition to any kind of arms race in outer space.

[50] See Nuclear Threat Initiative, "China, Outer Space/Space Weapon-Related Statements and Development."

[51] Ibid.

THE UNITED STATES, RUSSIA, CHINA, AND THE CONFERENCE ON DISARMAMENT AFTER THE END OF THE COLD WAR

The end of the Cold War meant the end of the East-West confrontation that, on the one hand, opened new opportunities for cooperation and reaching unprecedented agreements, including on the space security issues, and on the other hand, let the urgency of such agreements decrease precipitously as the menace of nuclear Armageddon faded into historic background. For the Conference on Disarmament in Geneva, the end of the Cold War brought about a number of urgent tasks and opportunities for making a breakthrough in nuclear arms control and disarmament. Throughout the 1990s and early 2000s, the Conference's agenda included such items as cessation of the nuclear arms race and nuclear disarmament; prevention of nuclear war; effective international arrangements to assure non-nuclear weapons states against the use or threat of use of nuclear weapons; prohibition of the production of fissile material for nuclear weapons or other nuclear explosive devices; new types of weapons of mass destruction and new systems of such weapons; radiological weapons; a comprehensive program of disarmament; transparency of armaments; and prevention of an arms race in outer space.[52] With the significant modification of the U.S. plans for the development of anti-ballistic missile defense under the George H. W. Bush and Clinton Administrations the prevention of a space arms race further decreased in its urgency. At the same time, the commercialization of space activities that accelerated after the end of the Cold War blurred military and non-military space applications, further complicating the task of making multilateral arrangements for military space security. More and more countries became willing to join the ranks of the established spacepowers and also to have a say in the multilateral decision making with

[52] See the annual reports of the Conference on Disarmament in Geneva, Conference on Disarmament Official Website, http://disarmament.un.org8080/cd/cd-yrrep.html (accessed 01.24.04).

respect to space security arrangements. The CD increased its membership but decided to continue to operate under the principle of consensus.

As a result of these developments and despite the United Nations General Assembly annual calls to reestablish the *Ad Hoc* PAROS Committee, the Conference on Disarmament managed to follow the UN recommendations only up until 1994 when the *Ad Hoc* PAROS Committee was reestablished for the last time. In the early part of the 1990s, the Committee continued its substantive work on legal and terminological issues and on confidence-building measures in outer space. It also carried on its work trying to identify whether the existing outer space regime was sufficient to prevent an arms race in space and, if it was not, what measures would be needed to fill the gaps. It explored a number of options such as drafting new legal instruments, amendments, and additional protocols to the existing agreements. Considerable attention was devoted to the discussion of confidence-building measures (CBMs) in outer space, with Russia leading the efforts in this issue area. During the 1991-1994 sessions, the Chairman of the *Ad Hoc* Committee, for example, appointed Friends of the Chair to conduct open-ended consultations on this issue.[53] Proposal consisting of three clusters of CBMs—measures improving transparency of pre-launch activities, "rules of the road" measures, and measures required for monitoring purposes with the proposed Code of Conduct—were

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[53] The so-called "Friends of the Chair" was appointed during this time to deal with three issues: (1) terminological aspects related to prevention of an arms race in outer space, (2) issues related to verification of ASATs, and (3) confidence-building measures. In 1991, A. Artuykhin of the Delegation of the USSR was appointed a Friend of the Chair on confidence-building measures; from 1993-1994, Colonel G. Diachenko and then succeeded by Colonels Y. Novosadov and V. Sukharev, Mr. Alexander Vorobiev of the Russian Federation's delegation. See Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1111, September 4, 1991, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1173, September 3, 1992, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1222, September 3, 1993, and *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1281, September 13, 1994.

prepared and presented to the Committee over the years.[54] The 1994 "Draft Guidelines Regarding Measures on Confidence-Building and Predictability in Outer Space Activities," a consolidated document or a resume of the existing proposals on the CBMs and the previously held discussions on them prepared by the Friend of Chair, was discussed by the Committee members but no agreement was reached on whether to treat the document as the foundation of further considerations.[55] The Friend of the Chair appointed in 1994 suggested returning to the discussion of the issues of CBMs in outer space at a later time when a better understanding on the substance of the CBMs was reached. Apparently, the Friend of the Chair, the member of the Russian Federation's delegation, expected convergence of views to emerge with some passage of time and further work within the conference.

The overall focus of work within the *Ad Hoc* PAROS Committee in its last years of work shifted from attempts to draft and discuss international treaties prohibiting space weapons towards greater attention to the CBMs in outer space. However, consensus on the set of measures and their substance did not emerge, with a number of countries, including China, expressing their dissatisfaction with the emphasis on the CBMs at the expense of the work on the legal instruments prohibiting the weaponization of outer space. The 1993 Report stated:

> The delegation of China emphasized that while CBMs contributed to the positive development in international relations, their role was limited for the objective of this Committee. CBMs, on their own, could not eliminate the danger of

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[54] Over the years of work on the issue, a number of proposals on CBMs in outer space that were aimed at reinforcing the existing regime and putting in place new mechanisms encouraging peaceful uses of outer space were submitted by delegations from Argentina, Australia, Canada, France, Germany, and USSR/Russia. See Alves, *Building Confidence in Outer Space Activities*, 1996, 60.

[55] Conference on Disarmament, "Draft Guidelines Regarding Measures on Confidence-Building and Predictability in Outer Space Activities," CD/OS/WP.69, July 1, 1994, listed in the *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1281, September 13, 1994, 128.

> weaponization in outer space. Therefore, the discussions on CBMs should not obstruct or delay indefinitely the process of formulating an effective legal instrument banning all space weapons and preventing an arms race in outer space.[56]

Consensus was also unattainable on the long-discussed issues such as the adequacy of the existing legal regime for preventing space arms race. Members of the Group of 21 and China maintained that the existing legal instruments were "far from effective in preventing an arms race in outer space."[57] These delegations pointed out that the existing legal regime permitted launches into and testing of conventional weapons and weapons based on new physical principles in outer space. Moreover, not only did the delegations from the Group of 21 and China disagree with the opinion that the current legal regime for preventing space arms race was sufficient, they also expressed dissatisfaction with the existing space security situation more generally, calling on the *Ad Hoc* PAROS Committee to take steps towards demilitarization of outer space.[58] These delegations believed that the international political situation was favorable for concluding a universal, comprehensive, legally-binding, multilateral and effectively verifiable treaty banning an arms race in outer space. They insisted that legal foundation developed within the *Ad Hoc* PAROS Committee on the issue since the establishment of this body in 1985 was adequate as a basis for rapid elaboration of a new legal regime to prevent an arms race in outer space.[59] Some of the delegations called for amending Article IV of the 1967 Outer Space Treaty to include the prohibition of all types of space weapons. Some delegations suggested a ban on the testing, development and deployment of ASAT

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[56] Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, September 3,1993, 32.
[57] Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, September 13, 1994, 129.
[58] Ibid.
[59] Ibid.

systems. There was also a call for concrete steps to set up international agencies under the auspices of the United Nations for monitoring space activities, referring to proposals submitted by France, the former Soviet Union, and Canada.

An opposing view was expressed by some delegations of the Western Group who maintained that the Charter of the United Nations and existing multilateral and bilateral arms control agreements together with customary international law and national space laws provided a sufficient basis for peaceful uses of outer space.[60] They also held the opinion that there was no arms race in outer space or any significant developments of space weapons by any states and therefore there was no need to negotiate on any new legal instruments. This view also led them to conclude that there was no need for a negotiating mandate for the *Ad Hoc* PAROS Committee. Although numerous ideas and concepts of space arms control were brought to the discussion at the committee and some progress was achieved, after the 1994 session the CD failed to reestablish of the *Ad Hoc* PAROS Committee altogether, despite the annual UN resolutions calling on the CD to continue its work within the *Ad Hoc* PAROS Committee.

THE SPACE ARMS CONTROL DEBATE WITHOUT THE *AD HOC* PAROS COMMITTEE: THE UNITED STATES, RUSSIA, AND CHINA

Between 1994 and 1998 the work on the PAROS item of the CD agenda ceased and no new documents were submitted for consideration by the Conference, except for a working paper from the Canadian delegation entitled "Working Paper Concerning CD

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[60] The treaties related to space security often referred to in this context are the following: the 1963 Partial Test Ban Treaty, the 1972 ABM Treaty, the 1977 ENMOD Convention, the 1986 Convention on Assistance in Case if a Nuclear Accident or Radiological Emergency, the 1992 International Telecommunication Constitution and Convention, and the 1993 START II Treaty. See Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, September 13,1994, 129.

Action on Outer Space."[61] In 1998, however, the issue of prevention of an arms race in outer space began to be raised again in the light of the new developments: firstly, military plans and forecasts released by the U.S. Department of Defense; secondly, political momentum in the U.S. Congress in favor of the development and deployment of a ballistic missile defense; and thirdly, bilateral agreements signed by the United States and Russia that opened the door for the deployment of non-strategic ballistic missile defense systems.

In 1995, the U.S. Air Force Board published its vision of the military uses of space in a report titled *New World Vistas: Air and Space Power for the 21st Century* with a forecast envisioning the development and utilization of space weapons.[62] In 1996, the U.S. Department of Defense released its *Joint Vision 2010* with further plans for the weaponization of space.[63] In January 1997, U.S. Senate Majority Leader Trent Lott and 25 co-sponsors introduced the *National Missile Defense Act of 1997* requesting the deployment of a national missile defense system by the end of the year 2003.[64] In January 1997, Senator Richard Lugar introduced the *Defend the United States of America Act of 1997*, calling for the development of an NMD system capable of being deployed

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[61] Conference on Disarmament, "Working Paper Concerning CD Action on Outer Space," CD/1487, January 21, 1998, listed in the *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1557, September 8, 1998, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).

[62] U.S. Air Force Scientific Advisory Board, *New World Vistas: Air and Space Power for the 21st Century*, Summary Volume, Chapter II "Capabilities and Technologies," December 1995, http://www.au.af.mil/au/awc/awcgate/vistas/vistas/html (accessed 03.25.04).

[63] U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, *Joint Vision 2010*, 1996.

[64] *National Missile Defense Act of 1997*, introduced in the Senate on January 21, 1997, http://www.fas.org/spp/starwars/congress/1997/s7.htm (accessed 03.25.04). This Bill was approved by the Senate Armed Services Committee on April 24, 1997, but no further action was taken on it. See "National Missile Defense: An Overview of Alternative Plans," *Arms Control Today*, January/February 1998, http://www.armscontrol.org/act/1998_01-02/factnmd.asp (accessed 03.25.04).

by the end of 2003 with a congressional vote in 2000.[65] On September 26, 1997, the United States and Russia signed a range of documents modifying the ABM Treaty to allow the United States to develop and deploy "effective systems to counter ballistic missiles other than strategic ballistic missiles."[66]

In 1998, in response to these developments, China's Ambassador to the Conference on Disarmament in Geneva Mr. Li addressed the Conference after it established an *Ad Hoc* Committee on Fissile Material Cut-Off Treaty (FMCT) and expressed his regret for the failure of the CD to reestablish the *Ad Hoc* PAROS Committee. He criticized the opinion of "some delegations" that there was no arms race in space. He argued to the contrary that preventing an arms race in outer space had become a "present and pressing issue for the international community."[67] According to Li, the end of the Cold War, despite the significant relaxation of political tensions between the former Cold War rivals, did not result in the demise of the "Star Wars" plan and technologies developed within the SDI project has found their way into the current space weapons programs. Li asserted that the Theater Missile Defense (TMD) systems—the Navy Area Defense System and Theater High Altitude Area Defense System (THAAD)—represented reincarnations of the weapons programs of SDI and alleged that

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65 *Defend the United States of America Act of 1997*, 105th Cong., 1st sess., S. 64. Introduced by Senator Richard D. Lugar, January 21, 1997, http://www.fas.org/spp/starwars/congress/1997/lugar_1.htm (accessed 03.25.04).

66 These agreements include "Standing Consultative Commission First Agreed Statement Related to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972;" "Standing Consultative Commission Second Agreed Statement Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972;" "Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles;" "Standing Consultative Commission Joint Statement on the Annual Exchange of Information on the Status of Plans and Programs With Respect to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles." See Federation of American Scientists, List of ABM Treaty-related documents, http://www.fas.org/nuke/control/abmt/text/index.html (accessed 03.19.04).

67 See Conference on Disarmament, *Final Record of the Eight Hundred and Third Plenary Meeting*, CD/PV.803, August 13, 1998, http://www.unog.ch/disarm/pvs/pv803.htm (accessed 01.15.04).

these systems were capable of intercepting missiles not only within the atmosphere but also in outer space. He also expressed his concern with the accelerating development of space-based laser weapons capable not only of intercepting ballistic missiles but also attacking satellites in orbit. All these, in his view, constituted a solid ground for a serious concern with a space arms race:

> The weapons systems under development are of various types. Some are deployed entirely in outer space or targeted at objects in outer space; some are space-based but provide target information for ground-based weapon system. However, they all serve one purpose: They seek to procure absolute strategic military superiority and absolute security for the country concerned. There can be only one consequence: to turn outer space into a base for weapons and a battlefield. This prospect will upset regional and global strategic stability, trigger a new arms race and undermine international peace and security. The international community cannot but be deeply concerned and on its guard against this prospect.[68]

Li also argued that the existing legal regime governing military uses of space was "inadequate to prevent an arms race in outer space" and that the recently signed agreement by the United States and the Russian Federations on modifications of the ABM Treaty led to further serious deterioration of the existing regime, for now the United States could develop and deploy space-based TMD systems.[69] He called for an immediate action in order to prevent weaponization of outer space, to ban the testing, deployment and use of any weapon systems in outer space, and to prohibit the use of outer space for striking at targets on the ground.[70] The year 1998 marked the reopening of the debate on military aspects of space security when PAROS became again an important issue at the Conference on Disarmament in Geneva.

In January 1999, President Clinton approached Russian President Yeltsin with a request for further modification of the ABM Treaty in order to allow the United States to

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68 Ibid.
69 Ibid.
70 Ibid.

deploy a limited National Missile Defense. In July 1999, President Clinton signed the *Missile Defense Act of 1999*, setting out a course for the development and deployment of a missile defense system.[71] Against this background, the concern over the issue of a space arms race at the Conference on Disarmament continued to grow. Both China and Canada submitted proposals relating to the action of the CD on outer space under the PAROS agenda item, trying to restart multilateral discussions of the PAROS issues.[72] Furthermore, under the item of "Consideration of Other Areas Dealing with the Cessation of the Arms Race and Disarmament and other Relevant Measure," a number of space security-related papers were submitted to the Conference on Disarmament. Russia expressed its concerns in connection with the adoption by the Senate of the United States of the National Missile Defense Bill.[73] Russia's Permanent Representative at the CD and China's Acting Head of the Delegation sent a letter with their joint communiqué on the issue of the ABM Treaty.[74] The joint Russian-Chinese press release was a result of the

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[71] The *National Missile Defense Act of 1999* (Public Law 106-38) was signed into law on July 22, 1999. This law stated: "It is the policy of the United States to deploy as soon as is technologically possible and effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (when accidental, unauthorized, or deliberate) with funding subject to the annual authorization of appropriations and the annual appropriation of funds for National Missile Defense". See *National Missile Defense Act of 1999*, H.R.4/P.L. 106-38, 106th Congress, 1999, Section 2, http://missilethreat.com/law/federal/nmdact99.html (accessed 06.08.04).

[72] Canada submitted its paper entitled *Proposal concerning CD action on outer space*, CD/1569, February 4, 1999; and China submitted *Draft decision on the reestablishment of an Ad Hoc Committee on the prevention of an arms race in outer space and its mandate*, CD/1576, March 18, 1999, cited in Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1595, September 7, 1999, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).

[73] *Letter dated 25 March 1999 from the Permanent Representative of the Russian Federation addressed to the Secretary-General of the Conference transmitting the text of an official statement made by the representative of the Ministry of Foreign Affairs of the Russian Federation on 18 March 1999 in connection with the adoption by the Senate of the United States of America of a bill on deployment of a national missile defense system*, CD/1580, March 26, 1999, listed in Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, 1999.

[74] Conference on Disarmament, *Letter dated 28 April 1999 from the Permanent Representative of the Russian Federation and the Acting Head of Delegation of China to the Conference on Disarmament addressed to the Secretary-General of the Conference transmitting a joint press communiqué on issue related to the ABM Treaty*, CD/1584, April 28, 1999, listed in *Report of the Conference on Disarmament to the General Assembly of the United Nations*, 1999. See Conference on Disarmament Press Release

bilateral consultations conducted between the Russian Federation and People's Republic of China in Moscow on the issue of the ABM Treaty on April 14, 1999. At the Conference on Disarmament, Mr. Sidorov of the Russian delegation addressing the Conference drew attention to this Sino-Russian press communiqué. He emphasized that implementation of the existing plans for deployment of national anti-missile defense systems would constitute a violation of the ABM Treaty. Mr. Li of the Chinese delegation expressed his country's view on the recent NMD plans. He said that such a system would have a profound negative influence on global and regional strategic stability and would trigger an arms race in space.

These developments signified three important trends that gained further development. First, although the *Ad Hoc* Committee was not reestablished during the 1999 session of the CD, the debate on the space security issues acquired renewed attention. Second, China emerged as one of the major players in this debate. And third, signs of a forming "alliance" between China and Russia on the space security issue became apparent.[75] The 1999 National Missile Defense Bill prompted a change in Russia's approach to space security issues at the Conference on Disarmament when Russia started actively supporting China's calls for concrete steps towards prevention of an arms race in outer space. Russia finally came to the conclusion that it could no longer contain the U.S. development of anti-ballistic defenses and decided to side with China's position within the multilateral arms control body.

DCF/367, May 11, 1999, http://www.un.org/News/Press/docs/1999/19990511.DCF367.html (accessed 03.26.04).

[75] The term "alliance "is used here to indicate not a traditional alliance involving commitments of states' military capabilities to achieving a common goal, but coordinated or joint actions of states within an international organization in order to achieve a common goal within the framework of the organization.

The 2000 session of the Conference on Disarmament was the second deadlocked session in a row, during which member states did not reach a consensus on the program of work, with such major issues as the FMCT and PAROS being the stumbling blocks. The 2000 session became the arena for one of the most heated exchanges. It was reminiscent of the Cold War debates and indicative of the depth of disagreement between the delegations of the United States, on the one hand, and China and Russia, on the other, on the issues of outer space security. During the meeting at the beginning of the 2000 session, the Russian representative reaffirmed Russia's position on the ABM Treaty and emphasized that a reduction of strategic offensive arms would not be possible if the Treaty were not preserved and strengthened.[76] He also put forth Russia's position in favor of speedy negotiations and conclusion of agreements that would establish a new international legal regime, prohibiting the introduction of strike weapons in outer space and of reestablishing for this purpose of the *Ad Hoc* PAROS Committee with the negotiating mandate. This was also the position of the Chinese delegation. In a speech to the Conference, the Chinese Representative Hu Xiaodi argued that the U.S. plans to develop and deploy ballistic missile defense represented U.S. plans for strategic dominance in outer space and that this plan would inevitably lead to the introduction of weapons into space and to the transformation of outer space into a battlefield.[77]

Ambassador Robert Grey of the United States responded to these charges with a speech in which he restated the long-held American position on the current legal regime,

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[76] Conference on Disarmament, *Speech by Ambassador Sidorov of the Russian Federation at the Meeting on March 23, 2000*, CD/PV.847, March 23, 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).

[77] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the Meeting on June 22, 2000*, CD/PV.852, June 22, 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).

characterizing it as being sufficient. He argued that multilateral negotiations on any new legal instruments in the area of outer space would be premature and unnecessary. According to Grey, there was no arms race in space, rather an "unprecedented cooperation."[78] However, the situation in which the Conference failed to produce a program of work because the issue of negotiations on the Fissile Materials Cut-Off Treaty was linked to the progress on the issue of prevention of an arms race in outer space, Ambassador Grey characterized as a "crisis of credibility" for the 66-nation Conference.[79] As the United States held great interest in the Fissile Material Cutoff Treaty, he called on the CD to begin the FMCT negotiations immediately.[80]

In response, China's Representative Hu Xiaodi turned his attention back to the "dire consequences of NMD." In his view, China had all the reasons and the right to be concerned with the U.S. plans for the NMD. Firstly, the deployment of NMD would undermine global strategic balance and, as a result of this, the world could face "the blackmail of nuclear war."[81] Secondly, NMD would obstruct the arms control and disarmament process and trigger a new arms race. Thirdly, it would threaten international non-proliferation efforts. In China's view these reasons were sufficient for starting negotiations on legal instruments for preventing an arms race in space. Hu strongly defended his country's right to stand up for its interests by linking the negotiations on FMCT with PAROS negotiations.

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[78] Conference on Disarmament, *Speech by Ambassador Grey of the United States of America at the Meeting on August 31, 2000*, CD/PV.858, August 31 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).
[79] Ibid.
[80] Conference on Disarmament, *Speech by Ambassador Grey of the United States of America at the Meeting on September 5, 2000*, CD/PV.859, September 5, 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).
[81] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on September 14, 2000*, CD/PV.860, September 14, 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).

Ambassador Grey vehemently rejected China's allegations that actions or plans of the United States were based on a "desire for hegemony, of any intent to carry out nuclear blackmail, or any supposed quest for absolute freedom to use force or threaten to use force in international relations."[82] Thus, not only did the two positions diverge fundamentally, but the debate over time became highly charged and prospects for reaching compromises considerably deteriorated.

During the 2000 session of the Conference on Disarmament, China submitted a position paper, suggesting ways to address the issue of prevention of an arms race in outer space at the CD[83] and, together with Russia, presented the Sino-Russian joint statement made by the Presidents of the PRC and the Russian Federation in July 2000 concerning the development and deployment of an anti-missile defense system.[84] In the former paper entitled "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament," submitted on February 9, 2000, China argued that prevention of an arms race in space was an urgent and important matter that should be dealt with by the Geneva Conference on a priority basis. The document stated:

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[82] Conference on Disarmament, *Speech by Ambassador Grey of the United States of America at the Meeting on September 14, 2000*, CD/PV.860, September 14, 2000, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).

[83] Conference on Disarmament, *Letter dated 9 February 2000 from the Permanent Representative of China to the Conference on Disarmament addressed to the Secretary-General of the Conference transmitting a working paper entitled 'China's position on and suggestions for ways to dress the issue of prevention of an arms race in outer space at the Conference on Disarmament,'* CD/1606, February 9, 2000, listed in Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1627, September 22, 2000, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).

[84] Conference on Disarmament, *Letter dated 1 August 2000 from the Permanent Representative of China to the Conference on Disarmament and the Permanent Representative of the Russian Federation addressed to the Secretary-General of the Conference transmitting the Chinese and Russian texts of the Joint Statement made by the Presidents of the People's Republic of China and the Russian Federation on 18 July 2000 concerning anti-missile defense*, CD/1622, August 4, 2000, listed in Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1627, September 22, 2000, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).

> As the single multilateral disarmament negotiating forum, the Conference on Disarmament (Conference) should concentrate on the most pressing and prominent issues in international arms control and disarmament, the ones that have the greatest bearing on global peace and security in the twenty-first century. PAROS is one such important issue, and should therefore be a top priority at the Conference. The Conference should play a primary role in the negotiations to prevent any form of arms race in outer space.[85]

The urgency of the matter was dictated, according to the Chinese paper, by the "new developments"—developments that "if unchecked, may lead to the weaponization of outer space in the near future or even to a multilateral arms race in outer space."[86] At the same time, it was argued that the Conference on Disarmament, which had been conducting various discussions and consultations on the PAROS issues since 1982, accumulated considerable expertise and laid the necessary foundation for future work. The paper suggested, first, to reestablish the *Ad Hoc* PAROS Committee and to begin negotiations on the legal instrument prohibiting testing, deployment and use of weapons, weapon systems and components in outer space. Second, as the preparatory phase, the Committee should review present and future proposals on PAROS and current military activities in outer space. The paper also argued that the present legal regime was ineffective at preventing the weaponization of outer space, as it contained a number of loopholes and ambiguities, and no longer reflected the most recent developments in space technology. In conclusion, the paper put forth ideas for a new international legal instrument, including its main elements: purpose, basic obligations, definitions, verification, mechanism for consultations and resolving disputes. According to the paper,

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[85] See "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament," CD/1606, Working Paper contained in Conference on Disarmament, *Letter dated 9 February, 2000 From the Permanent Representative of China to the Conference on Disarmament Addressed to the Secretary-General of the Conference Transmitting a Working Paper Entitled "China's Position on and Suggestions for Ways to Address the Issue of Prevention of an Arms Race in Outer Space at the Conference on Disarmament,"* CD/1606, February 9, 2000.

[86] Ibid.

China would be open to suggestions and ideas, while "striving unremittingly to prevent the weaponization of and an arms race in outer space and to ensure the continued peaceful use of outer space for the benefit of all mankind."[87]

The second document, submitted by the representatives of China and Russia to the Conference on Disarmament in August 2000, transferred a joint statement by President Jiang Zemin and President Vladimir Putin made during their bilateral meeting in Moscow on July 18, 2000. The two leaders jointly reiterated that they continued to consider the ABM Treaty "the cornerstone of global strategic stability and international security," serving as the foundation for the key international arms control agreements designed to reduce and limit strategic offensive weapons and prevent proliferation of weapons of mass destruction.[88] Condemning further attempts to amend the ABM Treaty and placing "the full responsibility" for "the gravest adverse consequences for security" on "those countries pressing for an amendment," the statement outlined an alternative approach to dealing with the emerging security challenges:

> The proper response to the new challenges in the field of international security, the maintenance of world peace and the safeguarding of the legitimate security interests of all countries should not be to scrap the ABM Treaty, but instead to promote the establishment of a new, just and equitable international political order, to spurn the practice of power politics and the excessive use of military force in international affairs and further to strengthen regional and international security.[89]

This statement represented the growing convergence of the two countries' positions with respect to security issues in outer space. It drew upon a series of previous statements

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[87] Ibid.

[88] Conference on Disarmament, *Speech by Ambassador Hu*, CD/PV.860, September 14, 2000.

[89] Conference on Disarmament, *Letter dated 1 August 2000 from the Permanent Representative of China to the Conference on Disarmament and the Permanent Representative of the Russian Federation Addressed to the Secretary-General of the Conference Transmitting the Chinese and Russian Texts of the Joint Statement Made by the Presidents of the People's Republic of China and the Russian Federation on 18 July 2000 Concerning Anti-Missile Defense*, CD/1622, August 4, 2000, http://disarmament.un.org:8080/cd/cd-docs2000.html (accessed 03.26.04).

issued by the Russian Federation and People's Republic of China: the Sino-Russian joint statement made on November 23, 1998, the Chinese-Russian press communiqué of April 14, 1999, and the statement adopted at the summit meeting on December 10, 1999.

In the meantime, the United States made an effort to ensure Russia's cooperation on strategic issues at a bilateral level, trying to prevent an emerging political tandem between China and Russia. Following the meeting of President Clinton and President Putin in New York on September 6, 2000, the representatives of the United States and Russia at the CD sent the letter to the Conference with a joint statement on a "Strategic Stability Cooperation Initiative" made by the two presidents during this meeting.[90] In this statement, a whole range of measures and initiatives aimed at strengthening bilateral cooperation in the field of strategic security issues was delineated, including plans for further reduction of nuclear arsenals, establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notification of Missile Launches, strengthening the MTCR, and various confidence-building measures as "an element of facilitating compliance with, preservation and strengthening the ABM Treaty."[91]

On the same day as the U.S.-Russian joint statement, Russia's President Putin, addressing the opening session of the United Nations Millennium Summit of World's Leaders in New York, stated that plans for the militarization of outer space were "particularly alarming" and proposed an international conference on the prevention of militarization of outer space in Moscow to coincide with the 40th Anniversary of the first

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[90] Conference on Disarmament, *Letter dated 19 September 2000 from the Permanent Representative of the Russian Federation and the Permanent Representative of the United States of America to the Conference on Disarmament addressed to the Secretary-General of the Conference transmitting the English and Russian texts of the Joint Statement 'Strategic Stability Initiative' and Implementation Plan issued at the meeting in New York on 6 September 2000*, CD/1626, September 20, 2000, listed in Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1627, September 22, 2000, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).
[91] Ibid.

human space flight.[92] Strongly opposing U.S. plans for the development of a national ballistic missile defense, Russia attempted to bring new life to the discussion of the ways to prevent an arms race in space by launching it at a new forum and appealing to the wider international community.

During the 2001 session of the Conference on Disarmament, the member countries failed to make compromises and agree on the program of work. The Conference remained deadlocked.[93] At the heart of contention at the Conference lay the issue of the United States' national ballistic missile defense. At an opening plenary meeting, the Russian Foreign Minister Igor Ivanov addressed the Conference, reiterating Russia's vision of the new international security and the role of arms control and disarmament in general, and the Geneva Conference in particular, in international security. He stated that in the era of globalization, international security, as well as the arms control and disarmament process, had become global and indivisible. He also stressed that security must be equal for all states in the international community and that the key for global security was in "the collective upholding of strategic stability in the world."[94] In order for the arms control and disarmament process to succeed, he emphasized, each state needed to be confident that its security was "closely linked to that of the whole international community" and that this was "underpinned by political arrangements and international legal instruments." Furthermore, significant success of the arms control and disarmament process could only be achieved on the condition that

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[92] See United Nations Press Release, "Putin Comments on the Militarization of Space," September 6, 2002, http://www.fas.org/nuke/control/paros/news/treaty-paros-000906a.htm (accessed 01.29.04).
[93] Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1653, September 13, 2001, 6, http://disarmament.un.org8080/cd/cd-yrrp.html (accessed 01.25.04).
[94] Conference on Disarmament, *Speech by the Russian Foreign Minister Igor Ivanov at the opening plenary meeting on February 1, 2001*, CD/PV.864, February 1, 2001, http://disarmament.un.org:8080/cd/cd-mtngs2000.html, (accessed 01.29.04).

the 1972 ABM Treaty was not only preserved but strengthened. Ivanov said: "In our opinion, this treaty even now remains one of the pillars of today's architecture in the area of arms control and disarmament."[95] He called for the resumption of the ABM dialogue between the United States and Russia. In order to address "new missile threats" while still preserving the ABM Treaty, Ivanov recounted measures previously suggested by the Russian Federation, which included: (1) transparency and confidence building via the use on a multilateral basis of the Moscow-based missile launch data exchange center, established by the United States and Russia; (2) global missile and missile technology non-proliferation control system; and (3) broad international cooperation open to all states in the area of theater missile defense.

Echoing the themes of the Ivanov's address, Chinese representative Hu Xiaodi outlined the PRC's vision of a "new security concept" for the 21st century:

> The old security concept, which was based on military alliances, operated through the build-up of armaments and has as its aim the quest for one country's absolute security to the detriment of other countries' interests, should be discarded. The twenty-first century needs a new security concept which should be centered on mutual trust, mutual benefit, equality, cooperation and resolving disputes through dialogue.[96]

According to Hu, progress in nuclear disarmament could be achieved only if global strategic balance and stability were preserved and the security of all states ensured. He emphasized that "the most urgent and imperative task" facing the international community was to "preserve the ABM Treaty and check the trend of weaponization of outer space." Hu reiterated that China considered the ABM Treaty "the cornerstone of preserving global strategic stability," and as such, having significance beyond the U.S.-

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[95] Ibid.

[96] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on February 15, 2001*, CD/PV.866, February 15, 2001, http://disarmament.un.org:8080/cd/cd-mtngs2000.html (accessed 01.29.04).

Russian relations—that is, having "a direct bearing on the security of all countries." The missile defense system, then under development by the United States, posed a serious threat—a threat of space weaponization, triggering a space arms race. Hu also expressed China's great concerns with the space war game conducted in the United States and involving the use of anti-satellite weapons, strategic missile defense systems, land-based laser weapons attacking targets in space, and space weapons launching preemptive strikes. This was seen as evidence of an "imminent threat" of space weaponization. Based on this assessment, Hu called for urgent steps to prevent space weaponization and the outset of arms race. He called for an immediate re-establishment of the *Ad Hoc* PAROS Committee in order to negotiate and conclude a legal instrument preventing the weaponization of outer space and an arms race in space. He blamed the United States for the failure of the Conference on Disarmament to negotiate such a legal instrument. He also blamed the United States for the stalemate in the Conference on Disarmament for the America's refusal to agree to a negotiating mandate for the *Ad Hoc* PAROS Committee. Hu argued that objectives of disarmament and non-proliferation of weapons of mass destruction and prevention of weaponization of space were connected and required broad international cooperation within the framework of collective security, relying on the principle of equal security. Equality of security was a leitmotiv in the presentation of the China's representative. This principle was stressed as important for the process of disarmament and non-proliferation and as a foundation of collective security. Application of double standards with regard to security of states and fulfillment of their commitments in the field of arms control and disarmament would undermine the arms control and disarmament process and contribute to the proliferation of weapons of mass destruction.[97]

Taking the podium right after Hu, Ambassador Grey, the U.S. representative at the Conference on Disarmament, put forth the U.S. vision of the work of the CD. He urged a start on negotiations on the Fissile Material Cut-Off Treaty, a treaty whose conclusion the United States considered to be its priority. Grey blamed both Russia and China for linking negotiations on the FMCT with negotiations on a legal instrument preventing an arms race in space.[98] The American position was to agree on the program of work for the Conference on Disarmament that would include reestablishment of the *Ad Hoc* Committees on PAROS and nuclear disarmament in the context "of active and ongoing negotiations on a fissile material cut-off treaty."[99] The United States agreed to make this concession—to agree to reestablish an *Ad Hoc* PAROS Committee for discussing the issues related to outer space—with "great reluctance."[100] Grey emphasized the difference that the United States saw in the situation with the FMCT and PAROS. He restated the U.S. position that there was neither an arms race in outer space at the moment, nor "any prospect of an arms race for as far down the road as anyone can see."[101] According to this vision, the 1967 Outer Space Treaty, in conjuncture with other legal instruments, effectively prevented an arms race in outer space, and therefore, there was no need to enhance international peace and security in outer space. Grey argued that, in contrast to what was alleged by Russia and China, the United States' plans to develop

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[97] Conference on Disarmament, *Speech by Ambassador Hu*, CD/PV.866, February 15, 2001.
[98] Conference on Disarmament, *Speech by Ambassador Grey of the United States of America at the meeting on February 15, 2001*, CD/PV.866, February 15, 2001, 18, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).
[99] Ibid., 19.
[100] Ibid., 21.
[101] Ibid., 19.

and deploy national ballistic missile defense system were aimed at enhancing strategic stability and further reduction of the danger of the use of nuclear weapons.

The representative of the Russian Federation, taking the floor at the Conference on Disarmament, explained Russia's top diplomatic priorities: "The issue of the prevention of an arms race in outer space has been for many years and remains one of the top priorities for Russian diplomacy."[102] He pointed out that the significance Russia attached to the prevention of an arms race in outer space has led Russian President Putin to propose an international conference devoted to the issues of preserving outer space free of weapons. By holding this conference, Russia hoped to achieve two goals: firstly, prevention of the introduction of weapons in outer space, and secondly, promotion of international cooperation on the peaceful uses of outer space—in scientific, environmental, and commercial activities in space. The idea was not to make this conference a negotiating exercise or an academic occasion commemorating the first human space flight, but to make it a "brainstorming session" where representatives of national space agencies, foreign and defense ministries, academies, leading scientific and industrial space centers, international non-governmental organizations, universities, businesses and financial organizations could exchange opinions and explore ways of approaching the issues of outer space. Sidorov emphasized that Russia took into account that security related activities in outer space could have two different objectives and two different consequences: on the one hand, space activities related to monitoring compliance with arms control agreements could significantly contribute to international security and stability, on the other, placing military systems in outer space could deeply

[102] Conference on Disarmament, *Speech by Ambassador Sidorov of the Russian Federation at the meeting on March 22, 2001*, CD/PV.871, March 22, 2001, 5, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).

undermine global strategic stability. By taking steps towards prohibiting the introduction of weapons in outer space and the use of force, the international community could and should prevent the weaponization of space and obviate its future disarmament. In Russia's view, a prohibition on the placing of weapons in outer space and renunciation of the use or threat of the use of force in, from or towards outer space could be used as an approach aimed at preventing an arms race in outer space and precluding degeneration of outer space into a battlefield.

Submitting a new working paper on the prevention of an arms race in outer space, China's Ambassador Hu demonstrated that China was not just willing to express its concern with security in outer space but that his country was prepared to lead in the efforts to prevent the weaponization of space at the highest international arms control forum. The document reaffirmed China's commitment to promote negotiations on a legally binding international instrument on the prevention of an arms race in outer space.[103] This paper represented a follow-up to China's 2000 position paper addressing possible ways to prevent an arms race in outer space. According to the new paper entitled "Possible Elements of the Future Legal Instrument on the Prevention of the Weaponization of Outer Space," a legal instrument should contain four main components: (1) "not to test, deploy or use in outer space any weapons, weapon systems or their components;" (2) "not to test, deploy or use on land, at sea or in the atmosphere any weapons, weapon systems or their components designed for the conduct of warfare in

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[103] China's new working paper entitled "Possible Elements of Future International Legal Instrument on the Prevention of the Weaponization of Outer Space" was circulated at the Conference on Disarmament as an official document CD/1645. See Conference on Disarmament, *Letter dated 5 June 2001 from the Permanent Representative of China addressed to the Secretary-General of the Conference on Disarmament transmitting a working paper entitled "Possible Elements of the Future International Legal Instrument on the Prevention of the Weaponization of Outer Space,"* CD/1645, June 6, 2001.

outer space;" (3) "not to make direct use of any objects launched into orbit for the purpose of combat operations;" and (4) "not to assist or encourage other countries, regions, international organizations or entities to participate in activities prohibited by this legal instrument."[104] As a result, this proposed treaty could outlaw all space-based weapons and all weapons attacking outer space targets from the Earth. However, the paper contained no specific suggestions for a verification mechanism. Ambassador Hu, in his speech introducing the paper, stressed that "negotiating such an international legal instrument is not merely a necessity, but an urgent necessity in the field of multilateral arms control and disarmament."[105] He further reinforced China's call for the commencement of the negotiations on the PAROS issues by adding the argument that in the Information Age nations of the world increasingly depended on outer space for their economic development and well-being:

> Whether or not outer space can be used in a rational manner that safeguards its peace and stability will have an important bearing on world peace and the future of all humankind. It is common knowledge, however, that outer space now faces the danger of weaponization. This danger is manifested in two main aspects, namely, the development of the missile defense system and planned domination of outer space.[106]

The U.S. plans for NMD involved developments that would necessitate the abrogation of the ABM Treaty and would eventually lead to the introduction of space weapons. The Chinese representative expressed his country's concern not only with space-based weapons, but also with space-based components that would provide information and guidance for weapons systems on the ground or attacking ground targets from space, thus effectively transforming space into a battlefield. China was also

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[104] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on June 7, 2001*, CD/PV.876, June 7, 2001, 2, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).
[105] Ibid., 2.
[106] Ibid., 3.

concerned with the very concept of progressive reliance of military on outer space—with transforming space capabilities into "the main force in implementing national security policy and military strategy," whose main purpose would be achieving "space superiority."[107] China considered the 2001 Rumsfeld Report that warned against a "space Pearl Harbor" and called for the development of capabilities for deterring and defending against hostile acts in and from space, including those operating in outer space, deeply troublesome.

In a later speech, Ambassador Hu reiterated that prevention of an arms race in outer space was the most pressing priority in the work of the Conference in the light of the possible abrogation of the ABM Treaty, which along with some other negative developments in international security, was bound to have a "profound negative impact on the international security of the twenty-first century and to jeopardize the interests of all states in the world."[108] The ABM Treaty continued to be, in China's view, a "cornerstone of strategic stability and the basis for efforts to ensure the reduction of offensive strategic weapons" and non-proliferation of WMD and means of their delivery.[109] Hu warned that unilateralism in security matters would fail at the end, firstly, because it was not conducive to international peace, and secondly, because it was not helpful in resolving security challenges confronting international community in the 21st century.

According to China's vision, the world peace, stability and prosperity could be built by the international community via adopting a "new security concept" based on

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107 Ibid.

108 Conference on Disarmament, *Speech of Ambassador Hu of the People's Republic of China at the meeting on August 30, 2001*, CD/PV.885, August 30, 2001, 2, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).

109 Ibid., 3.

international cooperation and collective security—the concept that would be conducive to "the process of multipolarization of the world."[110] Hu used the recently established Shanghai Cooperative Organization as an example of the new approach to security.[111] He also expressed his support for the Russian proposal on the program of work submitted to the Conference in August 2001.[112]

The Russian proposal provided for the reestablishment of the *Ad Hoc* Committees on two issues: an *Ad Hoc* Committee on nuclear disarmament that would deal with the issues on nuclear disarmament, "take into consideration all relevant views and proposals," and "address questions related to its mandate;" and an *Ad Hoc* Committee on PAROS that would negotiate with a view of reaching agreement on a legally binding instrument capable of preventing an arms race in outer space. The significance of this proposal was that Russia, for the first time, expressed its support for the establishment of an *Ad Hoc* Committee on nuclear disarmament, with nuclear disarmament being one of the issues that hindered the work at the Conference on Disarmament. It could be seen as

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110 Ibid., 4.

111 China, Kazakhstan, Kyrgystan, Tajikistan, Uzbekistan, and Russia announced the establishment of the Shanghai Cooperative Organization on June 16, 2001. It replaced the Shanghai Five Organization established in 1996. In comparison with its predecessor, the Shanghai Cooperative Organization has a greater scope of functions. The new organization is to serve regional security via consultation and coordination of policies, and via promotion of economic cooperation, trade and cultural exchanges. This organization stands as a materialization of China's "new security concept"—an organization based on the concept of non-alignment, non-confrontation with any other countries and openness to the world. It is also based on the concept of mutual trust, mutual benefit, equality, consultation, respect for the diversity of civilizations and the quest for common development—features that China promotes in interstate relations. See Conference on Disarmament, *Speech of Ambassador Hu,* CD/PV.885, August 30, 2001, 4.

112 The increased cooperation and coordination between China and Russia culminated in signing the *Treaty of Good-Neighborliness and Friendly Cooperation between the Russian Federation and the People's Republic of China* on July 16, 2001. This treaty was submitted to the Conference on Disarmament as an official document. See Conference on Disarmament, *Letter dated 14 August 2001 from the Permanent Representative of the Russian Federation and the Permanent Representative of China to the Conference on Disarmament addressed to the Secretary-General of the Conference on Disarmament Transmitting the Russian and Chinese texts of the Treaty of Good-Neighborliness and Friendly Cooperation Between the Russian Federation and the People's Republic of China as well as the Moscow Joint Statement of the Heads of State of the Russian Federation and China on 16 July 2001*, CD/1649, July 16, 2001, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).

one of the concessions that Russia was willing to make in order to push for achieving progress on the issues of its high priority—that is, on the issue of PAROS.

Responding to Hu's speech at the following meeting at the CD, Ambassador Grey of the United States defended the U.S. plans for development and deployment of national ballistic missile defense system and offered a reassurance that U.S. strategic missile defenses were not aimed at Russia or China.[113] He furthermore said: "The United States would like to build affirmative and forward-looking relations with Russia and China on political, economic and cultural levels. The issue of missile defense should not stand in the way, and in practice we do not believe that it does."[114] He condemned using the issue of U.S. plans for a future missile defense system for procedural maneuvering that blocked the work of the Conference on any other issues, effectively paralyzing the Conference altogether. He restated again the U.S. position on negotiations of the legal instruments for outer space:

> Proposals to negotiate a new outer space treaty cannot possibly bear fruit unless and until there is a convincing demonstration that collective security and mutual restraint in outer space can best be achieved by seeking to negotiate some new legal instrument. Such conclusion would not even be plausible unless and until there were convincing reasons to believe that possible prohibition or restrictions to be embedded in some new treaty would actually prove effective in practice. That in turn, would have to be based on the conviction that there would be reliable and efficient ways to verify compliance with new obligations.
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> ...[T]he United States continues to have profound doubts that discussion in any *ad hoc* committee with an exploratory mandate on outer space really would lead to the conclusion I have just summarized.[115]

The 2001 session of the Conference on Disarmament closed without any consensus on a program of work in general or any convergence on the issue of the

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[113] Conference on Disarmament, *Speech by Ambassador Grey of the United States of America at the meeting on September 4, 2001*, CD/PV.886, September 4, 2001, 4, http://disarmament.un.org:8080/cd/cd-mtngs2001.html (accessed 01.29.04).
[114] Ibid.
[115] Ibid.

prevention of space weaponization, in particular, with the United States opposing reestablishment of the *Ad Hoc* PAROS Committee with a negotiating mandate and with Russia and China linking the beginning on negotiations of the FMCT with the negotiations on PAROS.

Thus, China emerged as one of the major players in this debate that was not just willing to express its concerns with security in outer space but as a country that was prepared to lead in the efforts to prevent the weaponization of space at the highest international arms control forum. Russia became China's staunch ally on the space security issues and their cooperation proliferated within the CD.

GROWING RUSSIAN-CHINESE COOPERATION AT THE CONFERENCE ON DISARMAMENT: A JOINT DRAFT TREATY FOR OUTER SPACE SECURITY

At the 2002 session of the Conference on Disarmament, the member states failed again to reach a consensus on a program of work and to engage in discussions on substantive issues.[116] With the Bush Administration's December 2001 announcement that the U.S. withdrawal from the ABM Treaty as of June 13, 2002, the issues of PAROS received prominent attention in the CD discussions. At the beginning of the 2002 session, Ambassador Skotnikov of the Russian Federation expressed Russia's position on the matter in the following manner:

> With regard to the decision taken by the United States to withdraw from the ABM Treaty, we are extremely concerned at what is probably the most negative of all the possible consequences of such a step, namely, the spread of the arms

[116] At the first part of the 2002 session of the Conference on Disarmament, an important procedural decision was made to appoint Special Coordinators to review of the agenda of the Conference, expansion of its membership, and improved and effective functioning. In the course of the consultations conducted by the Special Coordinators, the most discussed issues were a possible limitation to the rule of consensus, modalities for the participation of civil society and intergovernmental organizations in the work of the Conference, and the regional grouping system. These discussions and consultations were designed to find ways out of the stalemate at the Conference.

> race in outer space. Prevention of that scenario remains one of our main priorities and represents an issue of concern to the entire international community.[117]

Skotnikov stated that Russia was convinced that there were ways to deal with missile proliferation short of demolition of the existing arms control body and the whole strategic stability architecture. He confirmed Russia's commitment to negotiate and conclude a legally binding agreement or agreements that would prevent an arms race in space. He later emphasized again: "...PAROS negotiations are, without any question, among Russia's priorities in the Conference on Disarmament."[118] He reiterated the proposal made at the UNGA by Igor Ivanov, the then Russian Minister of Foreign Affairs, on possible elements of a future comprehensive agreement on the non-deployment of weapons in outer space. One of the key components of Russia's new proposal was a suggestion "to place a moratorium on the deployment in space of any means of warfare" until an international agreement would be achieved on the matter.

Following Skotnikov's presentation, Ambassador Bolton of the United States recapitulated the U.S. position and the new U.S. security concept, which was envisioned as having three components regarding the threat of missile proliferation: (1) strengthening of non-proliferation measures; (2) robust counter-proliferation capabilities; and (3) a new concept of deterrence that relies more on missile defense and less on offensive nuclear arsenals. U.S. security, as well as its well-being, depended on its ability to operate in outer space. While the United States needed to strengthen its military space capabilities in order to defend against ballistic missiles, it saw no need for any new

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[117] Conference on Disarmament, *Speech by Ambassador Skotnikov of the Russian Federation at the meeting on January 22, 2002*, CD/PV.889, January 22, 2002, 5, http://disarmament.un.org:8080/cd/cd-metngs2002.html (accessed 02.01.04).

[118] Conference on Disarmament, *Speech by Ambassador Skotnikov of the Russian Federation at the meeting on March 28, 2002*, CD/PV.900, March 28, 2002,16, http://disarmament.un.org:8080/cd/cd-metngs2002html (accessed 02.01.04).

agreement on outer space, arguing that the existing regime sufficiently regulated the outer space activities, including military activities.[119]

In response to recent development and the U.S. position on the issue of PAROS, Ambassador Hu of the PRC expressed concern with the urgent threat of space weaponization and put forth a list of objectives to be pursued within the international arms control and disarmament process: (1) preservation of global strategic stability; (2) consolidation, development and promotion of the existing arms control and disarmament legal regime; (3) prevention of the introduction of weapons or weapon systems in outer space; (4) complete prohibition and total destruction of all nuclear weapons and other weapons of mass destruction; and (5) non-proliferation of such weapons and means of their delivery.[120] In order for these objectives to be met, he argued, the international community needed to adopt a new security concept long-advocated by China and based on four cornerstones: mutual trust, mutual benefit, equality and cooperation. Security must be for all and that is incompatible with the policy of overwhelming unilateral superiority ensuring "absolute security" for a single country. According to Ambassador Hu, international efforts should be put into strengthening of the arms control and disarmament process in order to maintain strategic stability in the absence of the ABM Treaty: Russia and the United States must start negotiations on a new strategic framework, they also should further cut their nuclear arsenals, the CTBT should be ratified and put to work, the "first-use-policy" should be abandoned, and measures must

[119] Conference on Disarmament, *Speech by Ambassador Bolton of the United States of America at the meeting on January 24, 2002*, CD/PV.890, January 24, 2002, http://disarmament.un.org:8080/cd/cd-mtngs2002.html, (accessed 02.01.04).

[120] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on February 7, 2002*, CD/PV.892, February 7, 2002 4, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 02.01.04).

be taken to prevent weaponization of outer space. Later on, Hu expressed support for the 2001 Russian proposal to the UNGA to impose a moratorium on placing weapons in space until international agreement could be reached.[121] Thus, the U.S. decision to withdraw from the ABM Treaty prompted China to harden its position and increase its demands to the international community in the area of arms control. Putting forth a list of steps to be taken by the international community, China clearly presented itself as a player who wanted to lead and who had a vision—a vision that was, however, quite different from that of the sole superpower of the post-Cold War era.

In May 2002, in a spirit of making compromises for the sake of achieving any progress, China submitted an informal proposal on a program of work, according to which it would agree to the program of work suggested by Ambassador Amorim of Brazil. The three main issues causing the deadlock of the Conference were: (1) adopting a subsidiary body on nuclear disarmament, (2) negotiating a fissile material cut-off treaty (FMCT), and (3) negotiating a treaty to prevent the weaponization of space. The CD had agreed to a fissile cut-off negotiating mandate but was unable to establish an *ad hoc* committee needed to carry talks forward. There was a linkage of issues made by the Russian Federation and China between beginning negotiations on FMCT and establishing an *Ad Hoc* Committee on PAROS. An attempt to break this impasse was made with the so-called Amorim proposal put forward by the then CD President, Ambassador Amorim, on August 24, 2000. The Amorim proposal recommended to establish *ad hoc* committees on the issues of contention, namely: (1) an *ad hoc* committee to deal with nuclear disarmament, a committee with a broader mandate to negotiate on negative security

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[121] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on March 28, 2002*, CD/PV.900, March 28, 2002, 20, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 02.01.04).

assurances (NSA), (2) a committee to negotiate a ban on the production of fissile materials based on a specific mandate agreed to in 1995, and (3) an *ad hoc* committee on the prevention of an arms race in outer space which "shall examine and identify specific topics or proposals, which could include confidence-building or transparency measures, general principles, treaty commitments and the elaboration of a regime capable of preventing an arms race in outer space."[122] A draft presidential declaration was attached to this proposal which emphasized that the Conference was a disarmament negotiating forum and that the relevant mandates of *ad hoc* committees should be viewed in this light and noted that the CD continues "to be influenced by and responsive to developments in the international strategic scene which affected the security interests of its individual members."[123] The Brazilian proposal attempted to take into account China's demand for comprehensive and balanced treatment of different countries security priorities by proposing three *ad hoc* committees. From China's point of view, however, it failed because the proposed mandates were differently weighted: Amorim's proposal would mean treaty negotiations 'only' on FMCT and 'just' discussions on PAROS and nuclear disarmament. The United States, which was eager to get FMCT negotiations commenced as soon as possible, seemed to regard the proposal as generally good with a few words that "remain to be worked out" on nuclear disarmament.[124]

In its 2002 informal proposal, China suggested adding the following worlds to the final paragraph of the Amorim proposal, dealing with the mandate of the *Ad Hoc* PAROS

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[122] Conference on Disarmament, *Proposal by the President on the Programme of Work for the 2000 Session of the Conference on Disarmament*, CD/1624, August 24, 2000, 1, http://disarmament.un.org:8080/cd/cd-docs2000.html (accessed 06.29.04).

[123] Ibid., 3.

[124] Jenni Rissanen, "Silence and Stagnation as the CD Concludes Fruitless Year," *Disarmament Diplomacy* 50, September 2000, http://www.acronym.org.uk/dd/dd50/50geneva.htm (accessed 02.09.04).

Committee in order to make it acceptable to China: "with a view of reaching an international legally binding instrument."[125] This amendment marked China's "renewed flexibility" that was meant to bring the Conference closer to a consensus on the Program of Work and thereby move it to substantive discussions and negotiations.[126] However, the United States' representative stated that this amendment of the Amorim proposal was unacceptable and stressed that any proposal on PAROS would be unacceptable as long as it prejudiced where the discussion should lead.[127]

Ambassador Javits further elaborated the American position on space security and arms control issues at an international conference on "Future Security in Space: Commercial, Military, and Arms Control Trade-Offs" organized by the Monterey Institute's Center for Non-proliferation Studies at Southampton's Mountbatten Center in England on May 29, 2002. His speech was subsequently submitted to the Geneva Conference on Disarmament as an official document. In this speech, Ambassador Javits reaffirmed the U.S. commitment to the peaceful uses of outer space, which did not exclude the use of space for national security purposes. Appealing to Article 51 of the UN Charter that granted the right of individual or collective self-defense to all states subscribing to the UN Charter, he argued that the global responsibilities of the United States and the new threats that the United States was to face in the 21st century

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125 Conference on Disarmament, *Letter dated 28 August 2002 from the Head of the Delegation of the People's Republic of China to the Conference on Disarmament Addressed to the Secretary-General of the Conference transmitting the Chinese and English Texts of a Document entitled 'Draft Decision on the Establishment of an Ad Hoc Committee on the Prevention of an Arms Race in Outer Space and its Mandate,'* CD/1682, August 30, 2002, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 01.29.04).

126 Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on June 27, 2002*, CD/PV.907, June 27, 2002, 19, http://disarmament.un.org:8080/cd/cd-metngs2002html (accessed 02.01.04).

127 Conference on Disarmament, *Speech by Ambassador Javits of the United States of America at the meeting on August 29, 2002*, CD/PV.912, August 29, 2002, 21, http://disarmament.un.org:8080/cd/cd-mtngs2002html, (accessed 02.01.04).

necessitated extension of this right to outer space.[128] U.S. security in the new conditions of the 21st century depended on the ability of the United States to operate in outer space—that is, "to support military operations worldwide, monitor and respond to military threats, and monitor arms control and non-proliferation agreements."[129] He stated the U.S. priorities and position with respect to outer space, peace and stability, and arms control:

> We fully understand that maintaining international peace and security is an overarching purpose that guides activities on Earth as well as in outer space, but, in the final analysis, preserving national security is likewise necessary and essential. For these reasons, the United States sees no need for new outer space arms control agreement and opposes negotiation of a treaty on outer space arms control.[130]

According to the U.S. vision, the existing legal instruments and mechanisms—that is, the 1963 Partial Test Ban Treaty, the 1967 Outer Space Treaty, the work of the UN Committee on Peaceful Uses of Outer Space (UNCOPUOS) that facilitates peaceful exploration and exploitation of outer space—already provided an extensive and comprehensive system limiting the uses of outer space to those that were peaceful and provided legal foundation for "the legitimate military uses of outer space."[131] He said: "There is simply no problem in outer space for arms control to solve."[132] Concerns of the international community that the planned U.S. missile defense system would upset strategic stability and lead to an arms race on the Earth, or that it would cause a disruption of the arms control process and lead to the extension of an arms race into outer

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[128] Eric M. Javits, "A U.S. Perspective on Space," in James C. Moltz, ed., *Future Security in Space*, 2002, 51.
[129] Ibid., 52.
[130] Ibid., 51.
[131] Ibid., 52.
[132] Ibid.

space were groundless.[133] The Moscow Treaty signed by the United States and Russia in May 2002 that was to reduce dramatically strategic arsenals of the two countries[134] served as proof that the U.S. withdrawal from the ABM Treaty and plans for the NMD did not undermine strategic stability and did not preclude further reductions of nuclear weapons. Contrary to the concerns expressed by China and Russia, the U.S. national ballistic missile defense would promote world peace and stability by significantly diminishing incentives for acquiring weapons of mass destruction and the means of their delivery. The U.S. withdrawal from the ABM Treaty simply put an end to the Cold War and marked a new era in U.S.-Russian relations, characterized now by strategic cooperation that allowed for some small disagreements, such as the merit of the ABM Treaty.

At the Conference on Disarmament, the U.S. Ambassador continued to argue that the U.S. remained willing to support the establishment of an *Ad Hoc* Committee on outer space but only with a mandate short of negotiations—that is, a committee that would carry out "broad-ranging discussions" on the issues of outer space—and only under the conditions of ongoing active negotiations on a fissile cut-off treaty at the Conference.[135]

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[133] Ibid.

[134] During the Russian-American Summit in May 2002 in Moscow, the Treaty on Strategic Offensive Reductions was signed, which provided for the reduction of the aggregate number of strategic nuclear warheads down to an agreed level of 1,700-2,200 unites for each of the parties. The text of the Treaty was passed to the Conference on Disarmament and circulated as a Conference's official document. See Conference on Disarmament, *Letter dated 31 May 2002 form the Permanent Representative of the Russian Federation and the Permanent Representative of the United States of America to the Conference on Disarmament addressed to the Secretary-General of the Conference transmitting the English and Russian Texts of the Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions and the Joint Declaration by President George W. Bush and President Vladimir V. Putin on the New Strategic Relationship Between the United States and the Russian Federation signed on 24 May 2002 in Moscow*, CD/1674, June 5, 2002, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (01.29.04)

[135] Conference on Disarmament, *Speech by Ambassador Javits of the United States of America at the meeting on June 27, 2002*, CD/PV.907, June 27, 2002, 16, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 01.29.04).

He confirmed that the negotiations on the FMCT was the U.S. priority goal at the Conference on Disarmament and for this reason the U.S. was prepared to make concessions and "to participate in good faith in the work of the other *Ad Hoc* Committees that would foster serious and thoughtful discussion of topics related to nuclear disarmament and outer space."[136] He clarified that it was "a major concession" and "should be recognized as such."[137]

Facing the unresponsive reaction of the United States to their concerns with space security, Russia and China put forth further efforts to coordinate their activities at the CD. At the plenary meeting of the Conference in June 2002, China and Russia submitted a joint working paper entitled "Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat or Use of Force Against space Objects."[138] This proposal was a further development of the main themes put forth by China in its earlier papers and had all the components of a draft treaty. The Preamble stated:

> Outer space is the common heritage of mankind and plays an ever-increasing role in its future development. There exists a potential danger of an armed confrontation and combatant activities being extended to outer space. The prevention of the deployment of weapons and an arms race in outer space becomes a pressing task facing the international community. ... For the benefit of mankind, outer space shall be used for peaceful purposes, and it shall never be allowed to become a sphere of military confrontation.
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> Only a treaty-based prohibition of the deployment of weapons in outer space and the prevention of the threat or use of force against outer space objects can

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136 Conference on Disarmament, *Speech by Ambassador Javits*, CD/PV.907, 17, June 27, 2002, 17.

137 Conference on Disarmament, *Speech by Ambassador Javits*, CD/PV.912, August 29, 2002, 21.

138 Conference on Disarmament, *Letter dated 27 June 2002 from the Permanent Representative of the People's Republic of China and the Permanent Representative of the Russian Federation to the Conference on Disarmament Addressed to the Secretary-General of the Conference, Transmitting the Chinese, English and Russian texts of a working paper entitled 'Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat of Use of Force Against Outer Space Objects.'* CD/1679, June 27, 2002, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 01.29.04).

> eliminate the emerging threat of an arms race in outer space and ensure the security for outer space.[139]

The basic obligations suggested in the paper included: (1) "not to place in orbit around the earth any objects carrying any kinds of weapons, not to install such weapons on celestial bodies, or not to station such weapons in outer space in any other manner;" (2) "not to resort to the threat or use of force against outer space objects; and (3) not to assist or encourage other States, groups of States, international organizations to participate in activities prohibited by this Treaty."[140]

This proposal could be seen as a further concession from China, for it did not suggest banning the use of outer space for all the weapons-related purposes as China's previous proposal did. Paragraph V of the working paper directly stated: "This Treaty shall not be construed as impeding the research and use of outer space for peaceful purposes or other military uses not prohibited by this Treaty."[141] The paragraph containing confidence-building measures was further developed to include suggestions for the states to make their space programs and activities more transparent. Importantly, the document also elaborated on the mechanism of settlement of international disputes. It specified that every party to this treaty would have the right to request clarifications from any other party to the treaty whose activities gave rise to suspicion, and the suspected party would be required to provide clarification on its activities in outer space. The document envisaged that, in situations when clarification would fail to resolve the issue, the cases would be handled by an executive organization of the treaty. Each party to this

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[139] Joint Working Paper, "Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Treat or Use of Force Against Outer Space Objects," Paper submitted by the Delegations of China and the Russian Federation to the Conference on Disarmament in Geneva on June 27, 2002, http://www.china-un.ch/eng/30622.html (accessed 09.27.02).
[140] Ibid.
[141] Ibid.

treaty would be required to cooperate on the matters that caused the dispute. A separate paragraph elaborated on the proposed executive organization of the treaty. The treaty was envisaged to be of unlimited duration.

The joint Russian-Chinese paper marked a new unprecedented level of cooperation between Russia and China at the international fora on the issue of PAROS and a remarkable degree of convergence of the two countries' security interests in the area. In the course of preparation and discussions of their joint working paper "Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, the Threat of Use of Force Against Outer Space Objects" the two states held several rounds of open-ended consultations and briefings, with more and more CD delegations joining in over time to take part in the discussions. China expressed hope that all these contributions would become a part of the future substantive work of the Conference on the issue of PAROS, leading to negotiations on and conclusion of a treaty preventing the weaponization of outer space. In order to make this hope a reality, Ambassador Hu announced: "Henceforth we stand ready to draw further, in a flexible and open-minded spirit, on the reasonable views and suggestions put forward by all sides and encourage more delegations to play an active part in the process."[142] Speaking later, he added more urgency to the necessity of launching a substantive work on PAROS:

> If we are to prevent an arms race in outer space and its weaponization, we cannot wait until outer space weapons have been put in place and started causing damage, we cannot wait until one country takes the lead in introducing weapons into outer space, with other countries following the suit, we simply cannot wait for the proliferation of space weapons before we take any measures to prevent

[142] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on March 6, 2003*, CD/PV.922, March 6, 2003, 14, http://disarmament.un.org:8080/cd/cd-mtngs2003.html (accessed 02.01.04).

> them. The key is to take preventive action, otherwise the right of all countries to the peaceful uses of outer space and the very security of the assets of outer space will be placed in jeopardy. The ideal option would be, without further delay, to conclude an international legal agreement to prevent the deployment of weapons in outer space.[143]

At the 2002 session, the joint China-Russia proposal found support from a wide group of countries: Algeria, Belorus, Cuba, Iran, Iraq, Kenya, Pakistan, Sri Lanka, Syria, Venezuela, Vietnam, and Zimbabwe made statements welcoming the joint document on PAROS. However, the overall situation on reaching consensus on the work towards the prevention of space weaponization proved to be grave. Ambassador Salander of Sweden summed up the work of the Conference on PAROS by saying that "the issue of outer space is the part of the program of work where consensus seems most difficult to reach."[144] On a more pessimistic note, Salander went on to give his evaluation of the situation with PAROS:

> I would go as far as to say that, in all other contested areas, there seem to exist good possibilities of arriving at formulations which will be acceptable to all delegations of the Conference. But on PAROS it is not certain that we can find such a solution.[145]

Further attempts to revive the work of the Conference on Disarmament proved to be futile in the following year.[146] Instead of discussing the new draft treaty proposed by

[143] Conference on Disarmament, *Speech by Ambassador Hu of the People's Republic of China at the meeting on July 31, 2003*, CD/PV.933, July 31, 2003, 7-8, http://disarmament.un.org:8080/cd/cd-mtngs2003.html (accessed 02.01.04).

[144] Conference on Disarmament, *Speech by Ambassador Salander of Sweden at the meeting on August 22, 2002*, CD/PV.911, August 22, 2002, 10, http://disarmament.un.org:8080/cd/cd-mtngs2002.html (accessed 02.01.04).

[145] Ibid.

[146] The 2003 session of the Conference on Disarmament opened with a message from Secretary-General of the United Nations, Kofi Annan, in which he urged the Conference to overcome the deadlock and return to work in order to deal with the urgent security challenges, such as the proliferation of weapons of mass destruction and the means for their delivery, rising military expenditures, and the prospects of an arms race in outer space. The message of the Secretary-General of the United Nations, Kofi Annan, on the occasion of the commencement of the 25th Session of the Conference on Disarmament in Geneva was delivered by Sergei Ordzhonikidze, Director-General of the UN Office in Geneva, on January 21, 2003. See United Nations, *Statement by Secretary-General of the United Nations on the occasion of the Commencement of the 25th Session of the Conference on Disarmament*, January 21, 2003, http://www.un.org/apps/

Russia and China, the attention of the Conference was distracted by the events in Iraq and North Korea.[147] The Russian Federation, in an attempt to keep the attention of the Conference on the issues of outer space security, submitted three papers related to the issues of outer space security. One of the papers conveyed a statement from the Ministry of Foreign Affairs of the Russian Federation. This document stated Russia's growing concerns with the U.S. NMD plans:

> Moscow is watching with dismay as the United States of America steps up its attempts to set in place its so-called "global missile defense system." With the political decision to deploy by 2004 several strategic interceptors with "support" from outer space, a new destabilizing phase has now been reached in the implementation of these plans.[148]

Russia warned that this new phase might lead to "weakening of strategic stability, a senseless arms race in the world, including the proliferation of weapons of mass destruction and their missile delivery systems, and the diversion of resources from efforts to combat the real challenges and threats of the present day – above all, international terrorism."[149]

The second paper contained a text of the response by the Minister of Foreign Affairs of the Russian Federation, Igor Ivanov, to a question in the Russian media regarding the prevention of the deployment of weapons in outer space. In his answer to

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sg/printsgstats.asp?nid=231 (accessed 01.29.04).

[147] The Conference did not manage to agree on the Program of Work and did not re-establish any mechanism on any of its specific agenda items. In the course of the session, discussions were dominated by the situation with Iraq and the withdrawal of North Korea from the Non-Proliferation Treaty. The issues of PAROS received, as a result, less attention at the Conference during the 2003 session. See Conference on Disarmament, *Report of the Conference on Disarmament to the General Assembly of the United Nations*, CD/1718, September 10, 2003, 5, http://disarmament.un.org:8080/cd/cd-yrrep.html (accessed 25, 2004).

[148] Conference on Disarmament, *Letter dated 23 December 2002 From the Permanent Representative of the Russian Federation to the Conference on Disarmament Addressed to the Secretary-General of the Conference Transmitting the Text of a Statement by the Ministry of Foreign Affairs of the Russian Federation Regarding the Stepping up of Attempts by the United States of America to set in Place a Global Missile Defense System*, CD/1690, January 6, 2003, http://disarmament.un.org:8080/cd/cd-docs.html (accessed 02.10.04).

[149] Ibid.

the question whether there were any new developments in the Russian position on the issue of preserving space free of weapons of any kind and a comprehensive agreement designed to prevent space weaponization, Ivanov recapped Russia's recent initiatives in this area. Ivanov further said that Russia was now "prepared to accept a new mechanism to ensure openness and to build confidence in the domain of outer space: the advance notification of planned launches of space objects, their purpose and their basic parameters." The significance of this paper was not only in the attention that it drew to the issue of outer space security, but also in the demonstration of growing concern with the issue among the Russian public. The third Russian paper officially notified the Conference on disarmament about the development of an initiative to promote openness and build confidence in outer space via transparency in the use of outer space. This document stated Russia's willingness to provide advance notification of forthcoming spacecraft launches and their purpose and main parameters. Furthermore, it claimed that concerted steps were taken in the unilateral implementation of this initiative and gave a website address on which information on launches provided by the Russian Ministry of Defense and Russian Aerospace Agency would be posted in advance of launches. In this document Russia called on other spacepowers to join this initiative: "By doing so they will help build confidence in the domain of outer space activities and set the stage for further joint efforts to reinforce the peaceful status of space." This appeal was also conveyed orally by Russia's Ambassador Vasiliev during his speech at the meeting of the Conference on Disarmament on June 5, 2003.[150] Thus, in its official documents

[150] Conference on Disarmament, *Speech by Ambassador Vasiliev of the Russian Federation at the meeting on June 5, 2003*, CD/PV.929, June 5, 2003, 9, http://disarmament.un.org:8080/cd/cd-mtngs2003.html (accessed 02.01.04). See also Conference on Disarmament, *Letter Dated 11 June 2003 From the Permanent Representative of the Russian Federation to the Conference on Disarmament Addressed to the*

submitted to the Conference on Disarmament, as well as in the speeches delivered during the 2003 session, Russia made it clear that keeping outer space peaceful and free of weapons was a "matter of priority."

All in all, the three spacepowers' positions on space arms control issues remained unchanged and the chance of consensus emerging on the issues of space arms control and negotiations on any legal instruments in a short-term future continued to be rather minuscule. While Russia and China continued their cooperation on space security-related issues and achieved a remarkable convergence of their interests in this area, the United States did not take part in the PAROS discussions during the 2003 session. Due to diverging interests on the key security issues the Geneva Conference concluded the work of its 2003 session failing for a fifth year in a row to adopt a work program.

SECURITY INTERESTS AND INTERNATIONAL ORGANIZATION

In the post-Cold War era, Russia and China, whose security interests with respect to outer space largely converged at the fundamental level but diverged on the concrete steps that were needed to achieve their objectives shortly after the end of the East-West confrontation, managed to effectively narrow down their differences and interact productively at the chief international forum on the arms control and disarmament issues. Their interests had converged to such a degree that the two countries jointly produced and proposed to the Conference a draft treaty prohibiting the use of force in outer space and emplacement of weapons in space. They used the Conference on Disarmament not only

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Secretary-General of the Conference Notifying on the Development of an Initiative to Promote Openness and to Build Confidence in the Domain of Outer Space Activities, CD/1718, June 26, 2003, http://disarmament.un.org:8080/cd/cd-docs.html (accessed 02.10.04). As the first step in this initiative, the Annex of this document contained a table entitled "Schedule of Spacecraft Launched for June 2003" with the relevant information.

for voicing their opinions and raising their concerns in pursuit of their national interests but also for holding bilateral consultations and meetings in the course of the work on the joint proposals. Thus, the Conference facilitated convergence of their views with respect to the arrangements that would be necessary to provide security in space.

The United States, on the other hand, continued to prefer the existing regime in outer space, insisting that the existing regime fulfilled the necessary functions. No progress was made towards the beginning of negotiations on any change in the eroded Cold-War security regime governing the military uses of space. The use of issue linkages not only failed to produce favorable results concerning issues of security in outer space, it paralyzed the work of the Conference on all other issues on the CD agenda.

Thus, the neoliberal hypothesis formulated in this study, maintaining that greater commercialization and commercial cooperation in outer space may not lead to converging security interests, but conflictual interests would be reconciled via international institutions, is not supported for the U.S.-Russian and U.S.-Chinese dyads. It is supported only weakly for the Russian-Chinese dyad.

All in all, the neoliberal expectation that international organizations could significantly contribute to the amelioration of conflictual interests failed to materialize, as the U.S. position on space security issues continued to diverge from those of Russia and China in the post-Cold War era and no new regime has emerged to regulate proliferating military uses of space.

CHAPTER X

CONCLUSIONS: SPACE COOPERATION UNDER ANARCHY

'It is quite clear that I must eat you, or you must eat me. Let us come to a friendly agreement about it.' Obviously, international order based on such logic is unthinkable: 'Security for one has to be purchased at the insecurity of the other.' This can have only one result: war.
Jaap de Wilde
1989

... [N]o technical solution;
it requires a fundamental extension of morality.
Garrett Hardin
1968

The main question that this study attempted to answer was whether the commercialization of outer space made international space security cooperation easier for the three major spacepowers—the United States, Russia and China. In order to answer this question, the study tried to place the discussion of outer space issues in the context of one of the central debates in international relations—the realist-liberal debate on economic interdependence and conflict and cooperation. In so doing, this study showed that, first, the commercialization of space activities that started amidst the Cold War and then accelerated after the end of the bipolar confrontation was undertaken by all three main space-faring states and that commercial activities in space became a mainstream development, rather than a marginal phenomenon, as the three spacepowers pursued a wide range of policies in order to reshape their space activities and adapt them to market conditions.[1]

Second, it analyzed the evolution of security strategies and space security interests as they were formulated at the domestic level, the bilateral relations of the three states, and their interaction at the international level within the framework of a major international organization charged with global security issues, including space security issues, in order to evaluate the influence of the commercialization of space on space security relations.

THE COMMERCIALIZATION OF OUTER SPACE: THE GREAT PROMISE

The commercialization of space activities in the three spacepowers—the United States, Russia and China—was accompanied by changes in the domestic legal foundations on which space activities rested, policies that provided an encouraging economic environment, restructuring of space industries of the three space-faring states, and by the emergence of commercial actors engaged in the development of space. Commercialization of outer space activities required major efforts on the part of the three spacepowers, though the distance that they had to go setting up market relations differed significantly: in the United States the space industry, being a part of the aerospace and telecommunications industries, was already a market participant in a global arena, whereas in Russia and China space industries were largely integral parts of military-industrial sectors in non-market, centrally planned economies, operating under the conditions of strict political control and high secrecy. What all three spacepowers had in common was that with the commercialization of their space activities they had to take steps towards "civilianization," deregulation, and liberalization of major space sectors.

As a result of the commercialization of space activities, accompanied by liberalization and deregulation, a global space market emerged. All three spacepowers became dependent on the global space market: China became dependant on the global space market for space technology, trying to take shortcuts to full-fledged modern space capabilities that the PRC leadership considered as a key to China's development; Russia grew to depend on the global space market for the survival of its space industry, as its small domestic market and post-Cold

[1] The commercialization of space, as Pasco argues, has been mostly a top-down process. It resulted from governments' reevaluation of their needs and efforts to rationalize public costs. See Xavier Pasco, "A New Role

War state funding could support only a fraction of its previous space activities; the United States, the spacepower with largest space assets, relied on the global space market both as a supplier and consumer of space services and products, as its interests were global.

The formation of the global space market was a response to the demands of a globalizing world economy that required reliable and affordable communication lines across the globe. The satellite networks and services provided by the global space market—communication, satellite TV and radio broadcasting, GPS, Earth observation and remote sensing—represent a vital infrastructure for a truly global economy.[2] In its turn, the level of interconnectedness achieved via satellite networks represents a qualitatively new phase of globalization. Thus, commercial satellite networks propel overall economic interdependence to unprecedented levels.

The commercialization of outer space is one of the most significant developments of our time. It has given hope for the betterment of human conditions on Earth on an increasingly widening scale. The commercialization of outer space is instrumental in translating the great economic potential of outer space and the advances of space technology into real economic gains. Services that commercial space activities provided have transformed major sectors of the modern economy, government and military: banks use satellite links to make their transactions around the world, ATM machines and private communication networks that are used to process credit cards rely on satellite systems, tracking the location of parcels, ground transportation, air traffic and ships rely on satellites for navigation across the land, air and sea, farmers use satellite imaging for improving crop yields, management of natural resources relies on data from satellites, weather forecasting, monitoring of the environment and climate changes, gathering information for news, direct-to-home TV and satellite radio depend on satellites, education in "virtual classrooms," "telemedicine," "videoconferencing" and business

for a New Millennium? The Changing Nature of Space Activities," *Space Policy* 19 (February 2003): 15-22.

[2] See Pandozy, 1998, 148.

private communication networks are made possible by satellites, satellites supply links in electronic voting systems, they provide mobile telephony and access to the Internet as well as many other services. The developed countries became dependent on the services provided by satellites for every-day life and business, governance and security, while many developing countries pinned their hopes for economic development to space technology that can help them leapfrog several stages of economic development, facilitate better use of their national resources, improve living conditions, and promote their nation-building.

The great promise of outer space commercialization is not, however, in merely improving human conditions on Earth. Ever since the time of Adam Smith and Immanuel Kant, liberal thinkers associated free international commerce with more cooperative and peaceful interstate relations. Therefore, according to a liberal perspective, the great promise of space commercialization is that it should lead to more cooperative and peaceful relations between states.

The commercialization of outer space activities was begun nearly simultaneously in the three major spacepowers and marked the next step in the evolution of space utilization. This transition was influenced by a number of factors: firstly, the progress in space and information technologies of the past two decades, secondly, the ideological revolution of neo-conservatism; thirdly, economic globalization; and fourthly, political changes brought about, first, by the superpower détente of the mid-1980s and later by the end of the Cold War. As a result of space commercialization, outer space started to play an increasingly important role in both the security and economic realms.

THE COMMERCIALIZATION OF OUTER SPACE AND SPACE SECURITY: A TROJAN HORSE

The commercialization of outer space also affected the security environment by creating a new set of factors, which had not existed during the previous space era. On the one hand, the commercialization of space allowed those states who invested in space technology in order to serve their security needs now to turn space activities, at least in part, to the private sector and place space technology in the service of an ever-increasing number of consumers in their countries and around the world. Not only did they make some returns on their investment but also promoted technological progress and the economic well-being of their societies. Throughout the 1990s, the global space industry was one of the world's vital economic engines that accelerated the growth of such high-tech sectors of the world economy as software and hardware development, sophisticated electronics, telecommunications, advanced materials research, which in their turn contributed to a whole range of other industries. Those states that took part in commercial space activities benefited from technological advances in the space sector and those spilling over into other sectors. The commercialization of space meant that there were greater incentives for various non-space-faring states—and non-state actors—to obtain their own space capabilities, firstly, because of the benefits that space activities could bring to their economy, society, and military, and secondly, because it became easier, as some technological components could be acquired in a global space market or through participation in commercial joint ventures. Given the inherently dual-use nature of space technology, this proliferation of space technology and capabilities raised serious security concerns.[3] Furthermore, security concerns also arose with commercial space services, such as, for example, accurate timing and navigation data, imaging data and other critical information that were generated by satellites. These services were provided by an increasing number of commercial players and distributed to customers around the world, potentially including those who could use them towards hostile ends. There was also a realization that vertical

[3] Pericles Gaspirini Alves, *Access to Outer Space Technology: Implications for International Security*, UNIDIR, Research Paper No. 15, (New York: United Nations, 1992), xv-xvi. Proliferation of missile technology does occur outside the market as well. On January 5, 2004, the Iranian defense minister Ali Shakhani announced that his country would launch its own satellite on its own rocket and from its own launch pad within an 18-month period. When an Iranian satellite is launched into orbit, Iran will join the club of space-capable states. Experts

proliferation of commercial space technology due to technology-led competition could result in an incidental development of space weapon-related technology by commercial actors or that horizontal proliferation could result in the use of dual-use technology for hostile purposes.[4]

The commercialization of space activities contributed significantly to the creation of global networks of communication supporting global economic activities and to dramatically increased dependence of the countries around the world on satellite communications, and on space activities in general. The more societies depend on space services, however, the more they become vulnerable to threats from hostile acts against space assets. The commercialization of outer space activities coupled with the reduction of military budgets in the 1990s led to a significant reliance of the military on commercial space service providers.[5] As a result, commercial constellations appeared as "soft" targets for hostile acts. The commercialization of outer space created added incentives to defend space assets not only because the world economy became depended on them, but also because the military grew to depend on them as well.[6]

On the other hand, plans for placing weapons in space to defend space assets—or for any other purpose—created security concerns not only for those space commercial actors who operated satellite constellations in space but for all countries around the world. Weapons in space would not be welcomed by commercial actors because most commercial systems, including those that are used for communications, neither carry extra fuel for maneuvering against kinetic energy weapons nor are they hardened enough—against jamming or nuclear explosions, for example—to share space with weapons. Hardening commercial satellites and

believe that the launch vehicle was developed from technology obtained from North Korea and Pakistan. See I. Chernyi, "Again in Space under the Banner of Islam?" *Novosti Kosmonavtiki* 14 (254), March 2004, 52.

[4] For example, experts conclude that commercial reusable space systems could be potentially used by terrorists as weapons: "If incidental development via commercial, reusable space systems is taken into account, the difference between a truck bomb and a space cargo recovery module bomb might be only a question of time and selection of suitable ordinance." See Preston, Johnson, Edwards, Miller and Shipbaugh, *Space Weapons Earth Wars*, 2002, 98.

[5] See, for example, Todd, 2002.

providing them with extra fuel would inevitably raise the cost of operating in space, making commercial space services less affordable, thereby undercutting the market. This would impede further technological and economic progress, particularly among the developing countries, and the development of space sector itself.[7] Moreover, space weapons, whether used for protecting commercial space assets or any other purpose, would exacerbate the space debris problem, leading to greater hazards for operations in space and potentially even to catastrophic consequences, making significant parts of space unusable altogether.[8]

The idea of introducing weapons in space raised serious security concerns, as space weapons would not only be capable of defending commercial space assets, but could be also used to destroy targets on the ground, under the ground, on the water surface, in mid-air or in orbit. The greatest concern about space weapons arise from their potential to transform the deterrence dominance into offense dominance by minimizing the deterrent effect of offensive nuclear forces, thereby changing fundamentally the strategic balance.

Although the option of placing weapons in outer space could have been realized during the Cold War, as the development of these capabilities was thoroughly considered and at times pursued quite vigorously by the two superpowers, space remained free of weapons and force was never used in outer space in a conflict at any time during the Cold War. The first legally binding multilateral treaty outlawing nuclear explosions in space emerged a mere six years after the start of the Space Age. A multifaceted outer space security regime was gradually built to support the peaceful exploration and utilization of outer space and to minimize incentives for the extension of militarized conflict in outer space. Moreover, as a result of decades of peaceful exploitation of this global commons, a tacit norm of the non-use of force in outer space emerged even amidst the intense superpower confrontation of the Cold War.

[6] Haller and Sakazaki, *Commercial Space and United States National Security*, 2001. See also Tom Wilson, *Threats to United States Space Capabilities*, 2001.
[7] Hitchens, 2003.
[8] Primack, 2002, 18-22.

Unlike the legally established norm of "peaceful use" of outer space that received rather loose interpretations over the years to include the possibility of space-based weapons, the tacit norm of non-use of force in outer space underscores the taboo on the placement and use of weapons in outer space.

On the one hand, the commercialization of space meant that space activities were increasingly undertaken by commercial actors based on their commercial calculations, rather than exclusively on political calculations of the governments. On the other, as commercialization proceeded, space activities became more influenced by market forces. As space competition became tougher in the international space market, the desire to survive in such an environment led commercial actors to turn back to the states for help in developing new generations of space systems and launch vehicles, including within military programs, thereby further fueling the militarization of commercial space activities.[9]

The commercialization of outer space that led to the reliance of the military on commercial space providers, also made the military dependent for their technological edge upon the success of their national space firms in international competition. Therefore it made the state eager to help these firms under conditions of high international competition in order to prevent the loss of technological edge to foreign competitors.[10] In the meantime, the reality of technology-based competition also led many space firms to form multiple, complex international strategic alliances with foreign firms, and therefore raise concerns with technology transfers and more generally with diffusion of space technology.[11] All in all, the commercialization of outer space that had led to space technology proliferation, increased

[9] Commercial space activities remain highly dependent on various forms of government assistance, including subsidies. WTO rules restrict subsidies, leaving states with just a few options to help out its national firms. See Hansson and McGuire, 1999, 199-205. See also Haller and Sakazaki, 2001.

[10] Crawford, 1992; and Doerer, 2000. The story of the commercial failure of Iridium, the first satellite communication system serving mobile telephony, is instructive. Creation of Iridium was financed partially by the U.S. government with the view that the Pentagon would be one of its main customers. From 1996, the Iridium system was considered as an integral part of the military communications architecture plans of the U.S. Department of Defense. After Iridium announced its bankruptcy, the company was bought at a favorable price to and the DoD became its main consumer. See more about the close state-industry relations in Pasco, 2003, 15-22.

accessibility to outer space, globalization and privatization of space industries created a qualitatively new space security environment, in which concerns with space security and, particularly with space weaponization, became more pronounced. The commercialization of space and the growing economic and military dependence on space seem to have contributed to creating greater incentives for space weaponization.

OUTER SPACE AND THE INTERNATIONAL RELATIONS DEBATE

With regard to International Relations studies, the commercialization of outer space has transformed outer space from being the almost exclusive province of strategic studies into a subject that lends itself to a broader analysis. This study tried to place the discussion of outer space issues in the context of realist-liberal debate on economic interdependence and international cooperation/conflict and answer the question whether commercialization had a positive contribution to international space security cooperation during the post-Cold War decade.

The realist-liberal debate on the relationship between economic interdependence, and international institutions, on the one hand, and security relations between states, on the other, provides an intellectually attractive and methodologically appropriate approach for the discussion of the relationship between space commercialization and space security cooperation. This debate tries to analyze and explain the relationship between the economic and political realms, specifically the relationship between economic interdependence and international conflict and cooperation, war and peace. It is one of the central debates in international relations that deals with fundamental issues: Does greater international trade bring about more cooperative interstate relations or greater conflict? Is a globalizing economy under the conditions of unipolarity leading the world to more prosperous and peaceful relations

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[11] Haller and Sakazaki, 2001.

or to more conflict? On a philosophic level, it addresses the questions: Do we, as a human civilization, have a choice or are our actions determined by the unchanging nature of anarchy of the international system? Do we have a hope for progress and peace, for betterment of human lives, or we are compelled to repeat in vicious circles our history of violence on ever-increasing scale as our technological capabilities grow? On a more pragmatic level, with respect to outer space, the realist-liberal debate can help answer the question whether it would make interstate security cooperation more likely if states further commercialize their space activities and take part in commercial cooperation in space or whether commercialization of outer space would lead to more competitive security environment.

Based on the assumptions that the international system is anarchic, realists predict that economic interdependence is likely to lead to a greater conflict between states. They also argue that international cooperation, particularly in the security realm, is problematic because of high concerns with relative gains and the high price of a failure in this arena. Balancing should be expected in the anarchic international system. Since economic cooperation affects state capabilities, it is also rather difficult. Realist, thus, argue that it is common security interests that are likely to lead to economic cooperation when security externalities of economic cooperation are positive, and not vice versa.

Liberals, who agree with the realists that the international system is anarchic, nonetheless, argue that the relationship between the state and its domestic and transnational societies critically shapes state behavior in the international arena. They predict that the economic interdependence arising from international trade will lead to greater international cooperation and more peaceful relations—so much so that democratic economically interdependent states form a special community, in which relations between states are characterized as a Kantian "perpetual peace." While from a liberal perspective, greater economic interdependence is likely to lead to greater security cooperation directly via the evolution of the structure of domestic preferences, from a neo-liberal perspective, international institutions have an important role to play in bringing about more peaceful and cooperative inter-state relations.

The recent quantitative studies within the "liberal peace" debate have lent overall more support to the liberal proposition: states who trade more are less likely to be engaged in a interstate militarized conflict. These findings have created great hope that economic globalization would lead to more peaceful world. With respect to outer space, the hope inspired by liberal ideas has been that commercialization of outer space would bring about more cooperative interstate relations, that the norm of non-use of force in outer space would be strengthened by legally binding international instruments, and that measures aimed at preventing an arms race and conflict in space would lay the foundation of a new space security regime in place of the eroding old one, preserving thereby outer space as a weapons free sanctuary for the exploration and exploitation of the fourth medium for the betterment of human conditions on Earth.

In order to test realist and liberal propositions with respect to outer space, this study suggested to substitute the concept of "militarized interstate dispute"[12]— the concept most often used in the "liberal peace" literature as a dependent variable—with the concepts of "converging security interests" and "non-converging security interests." "Militarized interstate disputes" were not an observable occurrence in outer space within the timeframe of the study, and, therefore, were not an applicable operationalization. This modification was made relying on two main suppositions. First, based on the recent IR research on international rivalries, an assumption was made that militarized conflicts between states take place in a context of rivalries that have temporal continuity and a pattern of development. They are most likely

[12] Many studies adopted the definition of "militarized interstate disputes" or MIDs as the concept was developed within the Correlates of War (COW) Project and used COW data in the analysis. According to this definition, a militarized interstate dispute involves a set of interactions between or among the states involving threats of use of

between the so-called enduring rivals. War or militarized conflicts between states are usually preceded not only by a political crisis—a sequence of symbolic words and acts that communicate a threat—but also by a historical period characterized by conflictual relations. Second, it was assumed that interstate militarized conflicts are less likely when states have converging security interests. Converging security interests were defined as security interests that became more compatible over time, and non-converging security interests as security interests that either did not significantly change over time or diverged – that is, became less compatible.

This approach to the analysis of the space security cooperation is useful for two reasons. First, the argument of commercial liberalism that maintains that states who trade more are less likely to be engaged in a militarized interstate conflict relies on a cost-benefit logic. The argument asserts that when states are faced with the dilemma of war and peace they compare the expected benefits of militarized conflict or war with the benefits of the *status quo*, which are significantly shaped by international trade. When economic interdependence is high, states are more likely to prefer peaceful economic exchange to interstate violence because the gains from trade critically shift the balance towards a peaceful trading option.

Realists disagree with the liberal proposition that economic interdependence leads to more peaceful interstate relations. According to offense-defense balance theory, the occurrence of war varies depending on the relative efficiency of offense versus defense, with technological progress seen as one of the important factors of change. Thus states make cost-benefit calculations with the primary attention on the costs of war and occupation rather than the opportunity costs of war, as argued by the liberal school. The importance of cost-benefit analysis, therefore, serves as a point of convergence between liberal and realist perspectives:

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military force, display of military force, or actual uses of force that are explicit, non-accidental, and government sanctioned.

both assume that it plays a significant role when issues of war and peace are decided. The two diverge in the relative importance of the different components of the cost-benefit calculations.

It has been shown in the recent international relations literature that the empirical observation of cost-benefit analysis of war-versus-trade that states are assumed to make while making decision on war and peace is problematic. Ripsman and Blanchard, for example, trying to investigate the link between economic interdependence and conflict, explicitly focus on the decision-making process during major international crises in order to determine whether the systemic constraints of interdependence exert any influence on state behavior.[13] This is translated into the question whether any cost-benefit calculations are made and acted upon by the relevant actors during interstate crises. For the purposes of their analysis, they choose two case-studies: (1) the July crisis of 1914, and (2) the Rhineland crisis of 1936. Their findings demonstrate that during these crises, as realists would expect, leaders were more concerned with military-strategic factors than with economic considerations. Thus, the liberal pacification argument is rejected on the grounds that if leaders do not feel constrained by economic interdependence when they make a decision on war, then economic interdependence cannot bring about peace, as predicted by commercial liberalism.

Even though this conclusion seems to be reasonable, its foundation is not sound. While it is logical to assume that short of a major international crisis the cost-benefit analysis of war-vs.-trade options can not be directly observed, during major interstate crises when prospects of war are pondered, including its potential costs, such as the loss of life, the extension of destruction and losses in case of defeat, the discussion should be expected to be biased unfavorably—that is, it is biased against an influence of commercial interests. Thus, if economic interdependence is to contribute towards more peaceful international relations, it must make the largest contribution in the period before conflictual security interests escalate

13 Ripsman and Blanchard, 1996/97, 4-50.

into an international crisis. If economic interdependence does influence interstate relations towards more peaceful interactions, such influence has to be reflected in converging security interests. If states increasingly come to share or complement their security interests, so that the use of force against each other is not at issue, then conflicts that do arise will not escalate. It would mean that cost-benefit calculations of states should converge—that is, all states concerned should perceive resort to violence as less cost-effective than peaceful trading option and it should be reflected in their security interests. Furthermore, based on their interests states establish and maintain their relations with other states and build international institutions that help them to settle their differences, find peaceful solutions, or defuse conflictual situations.

With regard to outer space, states that perceive space conflict as a cost-effective option are likely to pursue weaponization of space and unlikely to pursue international regimes banning such weapons or the use of force, while states that perceive space conflict as cost-ineffective would be more inclined to seek an international regime prohibiting emplacement of weapons in space and the extension of the use of force into this medium. This proposition allowed this study to evaluate whether security interests of the three major spacepowers converged as commercialization progressed in the post-Cold War era.

Furthermore, the analysis of evolving security interests is useful as it has been established in the IR literature that a degree of convergence of security interests is necessary, although not sufficient, in order for any cooperation to take place in the security realm—whether such cooperation is aimed at creation of alliances against a common threat or at establishing an international regime regulating security relations between states. Thus, by studying evolving security interests of states we can analyze patterns of cooperation. However, it should not be inferred from such an analysis that predictions could be made concerning peace and war. An analysis of the evolution of security interests, nonetheless, may shed light on the influences of economic interdependence on interstate relations.

Based on this approach and the results of the contemporary realist-liberal debate on economic interdependence and cooperation and conflict, this study put forth four hypotheses for testing in the issue area of outer space:

> Realist hypothesis No. 1: the commercialization of outer space leads to non-converging security interests
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> Realist hypothesis No. 2: converging security interests lead to greater commercial cooperation
>
> Liberal hypothesis: commercialization and greater commercial cooperation leads to converging security interests
>
> Neo-liberal hypothesis: greater commercialization and commercial cooperation may not lead to converging security interests, but conflicting interests are reconciled via international institutions.

SECURITY STRATEGIES AND SPACE INTERESTS IN THE POST-COLD WAR ERA

In order to test these hypotheses, security strategies and space interests of the three spacepowers—the United States, Russia, and China—were analyzed based on officially promulgated security strategies of these states. It was shown that in the post-Cold War decade, American security strategy evolved in response to dramatic and sometimes tragic events from a hesitating primacy to an assertive primacy, with the balance between economic and security priorities changing from the Clinton Administration's security through economic strength to the George W. Bush Administration's economic strength through security and introduction of the preemptive war and decisive transition to the policy aimed at weakening multilateral arms control process, withdrawal from the 1972 ABM Treaty, and deployment of ballistic missile defense system. U.S. space interests also transformed from President Reagan's SDI to President George W. Bush's NMD and plans for space control and development of space war-fighting capabilities. The U.S. commercial space systems became a part of the U.S. vital infrastructure, on which the U.S. economy, government and military grew to depend. The

United States began to increasingly consider the command of outer space as a foundation of its dominant position in the world.

In the post-Cold War era, Russia underwent a fundamental transformation— its political system, economy, society, and military were reformed— and continued to evolve from a communist state towards a liberal democracy.[14] Throughout this period of transformation Russia reinvented its national security interests and reformulated its security concept to put it more in line with those of the liberal democracies of the West, placing the individual, at least on paper, on top of its security priorities. As Russia's internal, above all economic, conditions deteriorated, Russia became more and more dependent on its nuclear arsenal and progressively lowered its nuclear threshold in its official security pronouncements.

Despite the new security vision, Russia's security interests with respect to outer space remained remarkably unchanged since the Cold War. In the new international environment and with its new security approach, Russia continued to disagree with the idea of weaponization of space in any form and consistently opposed the U.S. plans to deploy a national missile defense and develop space war-fighting capabilities. Even though Russia grew to depend on commercial space activities and on cooperation with the United States, it nonetheless conducted an active international public campaign to rally international support behind its opposition to U.S. plans for outer space. Russia considered the weaponization of outer space a serious threat not only to the strategic balance and international peace, its national security and its position in the international system, but also to the global space market and the international regime under which its commercial space activities thrived.

Despite the revolutionary changes in the international system associated with the end of the Cold War and changes in China's internal situation brought about by two decades of uninterrupted astonishing economic growth, China's security strategy continued to be based on

[14] This transformation is likely to carry on beyond the post-Cold War transition period and will encompass a few decades.

a non-liberal concept of security—a communist concept of "peaceful coexistence," emphasizing the survival of the existing regime as its priority. The chief goal of China's security strategy in the post-Cold War era was to provide a favorable, peaceful international environment for the country's economic and social development and ascendance as a major player in the international system. China's space activities, including its commercial space activities, became an integral part of a comprehensive development strategy and military modernization. The military aspects of space security became of a particular concern in the context of China's plans for reunification with Taiwan—a long-standing national goal of the PRC. China expressed strong opposition to weaponization of space and the extension of an arms race in outer space. Unlike Russia, however, China made it clear that it would be more prepared to take up military challenges in space via asymmetric approaches. This is because, unlike Russia, for China it is not merely a matter of economic development, technological progress, integration into the global economy and free access to space, at stake in space security there is a matter of China's ability to reestablish sovereignty over its own national territory.

From the perspective of bilateral U.S.-Russia, U.S.-China and Russia-China relations, the analysis bore the following results. In the case of the U.S.-Russia dyad, the commercialization of outer space has not led to converging security interests. Peaceful resolution of the Cold War conflict laid the foundation for commercial cooperation between the United States and Russia and postponed U.S. plans for a nation-wide anti-ballistic missile defenses, and thereby deferred the resolution of U.S.-Russian conflictual security interests with respect to outer space. The hope for space commercialization to bridge the gap in the diverging space security interests of the two states did not materialize. Therefore, with regard to the U.S.-Russian space security relations, the realist hypothesis No. 1 that asserts that commercialization of outer space leads to non-converging security interest in outer space is supported by the evidence provided within the timeframe of this study. Realist hypothesis No. 2 that maintains that converging security interests lead to greater commercial cooperation is not applicable, as it was shown that the United States' and Russia's security interests continued to diverge during the time period under consideration. However, the improved general relations between the United States and Russia in the context of the ended East-West confrontation and the fragile balance that was reached in the U.S.-Soviet negotiations leading up to the end of the bipolar confrontation related to outer space issues did provide the foundation for the commercial cooperation between the two states. U.S.-Russian commercial cooperation expanded over this time period despite continuous divergence of their space security interests. The liberal hypothesis stating that commercialization and greater commercial cooperation leads to converging security interests cannot be confirmed based on the evidence brought in this study. The "democratic" liberal hypothesis that asserts that security interests between liberal democracies are more likely to converge than between non-democracies cannot be supported in this study as well.

In the post-Cold War period, China's security interests with respect to space continued to diverge from those of the United States. Despite this divergence, China developed extensive commercial cooperation that it used not only to serve its economic development but also to further its technological progress in military space technology. Within this bilateral relationship, the realist hypothesis No. 1, stating that commercialization would lead to non-converging security interests is supported by the evidence within the time period under the study. The realist hypothesis No. 2 maintaining that converging security interests lead to greater commercial cooperation in outer space is not relevant in this case, as the security interests of the United States and China continued to diverge, as they commercialized their space activities and developed commercial space cooperation. The liberal hypothesis, asserting that commercialization of space activities and commercial cooperation should lead to converging security interests, is not supported by the evidence provided in this case.

In the case of Russia-China bilateral relations, the first realist hypothesis, predicting that commercialization of outer space would lead to non-converging security interests is not supported: the commercialization of outer space did not lead to non-converging security interests of the two states. At the same time, in this case, it seems unlikely that convergence in their security interests was primarily caused by commercialization and commercial cooperation. The second realist hypothesis stating that converging security interests lead to greater commercial cooperation can be supported with the evidence in this case to the extent that converging security interests clearly took temporal precedence to commercial cooperation in the issue area of outer space. Russia and China's space security interests had started to converge long before the two spacepowers reestablished their space cooperation after the decades of alienation. The liberal hypothesis that commercialization and commercial cooperation would lead to converging security interests cannot be rejected on the basis of the evidence provided: commercial cooperation developed for the most part of the period under study in parallel with increasing convergence of the two states' security interests in space.

In order to test the neoliberal hypotheses, this study analyzed the interaction of the three space powers within the Conference on Disarmament—the chief international organization for negotiations on security issues, including space security issues. In the course of work of the Conference on Disarmament in the post-Cold War era, Russian and Chinese interests converged to such a degree that the two countries jointly produced and submitted to the Conference a number of joint statements and a draft treaty prohibiting the use of force in outer space and emplacement of weapons in space. The Conference on Disarmament provided the necessary venue for the discussion of the outer space security issues and facilitated convergence of their views with respect to the arrangements that would be necessary to provide security in space. It stimulated extensive informal consultations between the Chinese and Russian delegation on the issues of outer space security. The United States, on the other hand, continued to prefer the existing regime in outer space and no progress was made towards the beginning of negotiations on any change of this regime or on establishing a new one. The use of issue linkages not only failed to produce favorable results concerning issues of security in outer space, it paralyzed the work of the Conference on all other issues on its agenda. Thus, the neoliberal hypothesis maintaining that when commercialization and commercial cooperation do not lead to converging security interests conflictual security interests can be reconciled within international organizations cannot be supported with regard to U.S.-China and U.S.-Russia dyads, while with regard to the China-Russia dyad the evidence supports this hypothesis to the extent that even though Russia and China's security interests converged at the fundamental level, at the beginning of the time period of this study, their positions differed with regards to the steps that were necessary to achieve their commonly shared goal and began to converge as cooperation within the CD developed over time.

Table 1 sums up the results on all four hypotheses in this study:

TABLE 1
SUMMARY OF THE RESULTS

	U.S.-Russia	U.S.-China	Russia-China
Realist hypothesis No. 1: commercialization of outer space leads to non-converging security interests	supported	supported	not supported
Realist hypothesis No. 2: converging security interests lead to greater commercial cooperation in space	not applicable	not applicable	supported
Liberal hypothesis: commercialization and greater commercial cooperation leads to converging security interests in space	not supported	not supported	cannot be rejected
Neo-liberal hypothesis: greater commercialization and commercial cooperation may not lead to converging security interests and conflicting interests are reconciled via international institutions.	not supported	not supported	supported (weakly)

As can be derived from Table 1, the scores for the liberal and realist hypotheses are as follows: for the realist hypotheses—three "supported," two "not applicable," and one "not supported;" and for the liberal hypotheses—one "supported," one "cannot be rejected," and four "not supported." From these results, the conclusion can be drawn that the realist perspective seems to provide a better overall depiction of interstate interactions between these three spacepowers in the area of outer space security: strategic calculations of states exert a stronger influence on interstate relations than commercial liberalism predicts. The United States' cost-benefit calculations, as reflected in its security interests and strategies, so far led the United States to pursue more unilateral security objectives than collective security solutions to the emerging space security threats.

In the light of these conclusions, the Russia-China dyad attracts a particular attention: the first realist hypothesis is not supported while two liberal hypotheses scored "cannot be rejected" and "weakly supported." It suggests that the two states have probably positioned themselves for balancing. In this case, the interstate relations are accompanied by commercial and security cooperation, as liberal propositions would predict. In spite of liberal expectations, however, this relationship developed not between liberal democracies but between a non-democratic and democratizing states. Furthermore, concerning the overall findings, in spite of liberal expectations, the liberal hegemon did not support a security regime that would prohibit or restrict the use of force in outer space.

A security regime regulating military uses of outer space may still emerge among the great powers in the short-or medium-term future but it is not likely to take place via liberal mechanism—that is, the role of commercial factors is likely to be relatively unimportant in comparison with strategic factors.

SPACE COOPERATION UNDER ANARCHY: REALISM VERSUS LIBERALISM IN OUTER SPACE

The recent international relations research inspired by liberal ideas, and particularly the quantitative analyses within the so-called "democratic peace" and "liberal peace" research agenda of the past twenty or so years, put realism—the oldest and most prominent theoretical paradigm in international relations—on the defensive. The sudden and peaceful end of the Cold War also dealt the greatest blow to realism among all international relations schools of thought.[15] Democratization and liberalization of the countries from the former Soviet bloc and integration of the Western European countries gathered many scholars under the umbrella of

[15] See, for example, Kegley, "The Neoidealist Moment," 1993, 131-147; Lebow, 1994, 249-277; Kratochwil, 1993, 63-80; Gaddis, "International Relations Theory," 1992/93, 5-58. See also responses in Wohlforth, 1994/95, 91-129; and Kapstein, 1995, 751-774.

liberal research. So much so, that by the close of the 20th century adherents to the liberal perspective began to wonder whether there were any realists left at all.[16]

The realist vision of the anarchic world of states being caught in vicious circles of interstate power competitions, violence and war is rather appalling. In contrast to this realist vision of the omnipresence of war, liberal thought put forth the idea of the progressive evolution of international relations towards peace, justice and welfare. Increasing economic interdependence together with nuclear and highly destructive conventional weapons, it is often argued, have made the costs of war among the great powers prohibitively high, while the acquisition of territory by force has become neither meaningful under the conditions of global knowledge- and technology-based economy nor legitimate in the eyes of the international community. The optimistic world vision and academic advances of the liberal school, however, do not mean that the triumph of liberalism is carved in stone.

The present study has shown that there is a large and increasingly important area of international relations that seems to defy liberal expectations. Almost half a century ago, human activities expanded from land, sea and atmosphere into outer space—the fourth medium. Although the vast economic potential of outer space was recognized even before the dramatic opening of the Space Age, the use of space during the Cold War was overwhelmingly for military purposes of the two superpowers. Nonetheless, a multifaceted space security regime emerged that gradually restricted the use of force in outer space and led to the establishment of a tacit norm of non-use of force in outer space. The technological and political foundations of this regime eroded by the late 1970s and early 1980s, while its norms endured beyond the era that brought them about. Outer space remained free of weapons, and ground-based weapons were not used against space objects in any conflict during the Cold War.

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[16] Jeffrey W. Legro and Andrew Moravcsik, "Is Anybody Still a Realist?" *International Security* 24 (Fall 1999): 5-55.

The end of the superpower confrontation brought widespread expectations for more cooperative interstate relations in general, and in the area of outer space in particular. The commercialization of outer space, which received an added impetus after the end of the Cold War, promised to realize the economic potential of this vast global commons and raised further hopes that this vitally important medium—both militarily and now economically—would be preserved as a peaceful sanctuary, serving for the betterment of human conditions on Earth. This is because, according to the liberal perspective, international economic exchange should lead to more cooperative and peaceful relations between states. As the commercialization of outer space advanced and space activities became an integral part of the economic mainstream, transforming the world economy into a truly global economy, space activities became increasingly influenced by commercial interests. The main space-faring states engaged in commercial space activities became more interdependent, as the global space market emerged.

Progress in space and information technologies of the past two decades made commercialization of space economically viable. It also significantly advanced the military usefulness and with it the strategic importance of outer space. So much so, that the increasing military uses of space have started to revolutionize and transform the military itself. The weaponization of outer space has emerged as a real next step in the advancement of military uses of space. All in all, this transformation is likely to revolutionize not only the way modern wars are fought, which it has already started to do, as evidenced first by the 1991 Gulf War and then by the wars in the Balkans, Afghanistan, and again in Iraq in 2003, but also the cost-benefit calculations by which states decide on the issues of war and peace. This transformation may lead to a perception that war has become less costly and thus, all else equal, more likely.[17] The introduction of weapons and other war-fighting capabilities in space would mean that militarized conflict is likely to be extended to outer space too.

[17] Preston, Johnson, Edwards, Miller, and Shipbaugh, *Space Weapons Earth Wars*, 2002, 105.

The commercialization of space—the argument of liberal pacification would lead us to expect—should promote converging interests among the major space-faring states with regard to outer space security and should lead to the creation of a security regime regulating military uses of space so as to make war in space less likely. However, the presented analysis of the evolution of strategies and security interests with regard to outer space of the main spacepowers—the United States, Russia, and China—and their interaction within the main international organization charged with the military issues of outer space security—the Conference on Disarmament in Geneva—brings about a conclusion that the expectation of more cooperative security relations in outer space is not supported by the post-Cold War evidence. The emerging patterns of security interests in the issue area of outer space lend more support to the realist propositions. The United States increasingly considers domination of outer space as the strategic foundation of its hegemonic position in the world,[18] while Russia and China's security interests increasingly converge in opposition to the U.S. plans concerning military issues of space security. The converging security interests of Russia and China promote a closer cooperation between the two so as to suggest that they may be positioning themselves to balance the United States' attempts to militarily dominate the fourth medium.[19] Russia and China have invested their political capital and diplomatic efforts in the international political arena in order to oppose the U.S. plans for outer space.

The weaponization of outer space has emerged as one of the most important and contested issues in interstate relations in the post-Cold War era. The way this issue is resolved will determine, to a large degree, the world order that is to come and whether it will be more cooperative and peaceful or more conflict- and war- prone. A trend since the end of the Cold

[18] See, for example, Barry R. Posen, "Command of the Commons: The Military Foundation of U.S. Hegemony," *International Security* 28 (summer 2003): 5-46.

[19] The term "balancing" is taken to mean a policy aimed at limiting a state's behavior either via internal military buildups or alignments with other states, or a combination of the two. This is in agreement with the use of term by Waltz, who distinguishes external balancing—that is, building coalitions intended to prevent anyone from

War towards the erosion of the norm of non-use of force in outer space suggests that we may be going back to a realist world where "war is always in the background."[20] Opening up a whole new medium to the exercise of state violence, if it comes to it, during perhaps the most liberal era ever that we now enjoy would greatly undermine the liberal idea. This is, fortunately, is not a foregone conclusion, as weapons are not yet put in outer space. However, the lack of cooperation between the three main spacepowers during the post-Cold War decade in establishing a regime regulating further militarization of outer space is a serious reason for concern.

SPACE POLICY IMPLICATIONS: THE CROSSROADS

At the dawn of the third millennium, we are at a critical crossroads. The choices that now are being made will shape the emerging world order—whether it will continue to be unipolar or it will become multipolar, whether it will be more cooperative and peaceful or fraught with conflict and possibly war—and with it the future of human civilization in the long-run. The realist and liberal perspectives suggest the possibility of two different scenarios. Following the realist vision, the first scenario predicts that the United States would continue to pursue security strategy aimed at ensuring the U.S. preeminence in the international system in accordance with the space-age Mackinderian dictum: "Who controls low-Earth orbit controls near-Earth space. Who controls near-Earth space dominates Terra. Who dominates Terra determines the destiny of humankind."[21] A strategy aimed at preeminence would require the command of outer space—the ability to dominate space and to deny its use to others. Under these conditions, Russia and China would find themselves increasingly under the pressure to try to check U.S. power by balancing—internally via arms build-ups and/or externally via

becoming a hegemon, and internal balancing via "moves to increase economic capability, to increase military strength, to develop clever strategies." See Waltz, *Theory of International Politics*, 1979, 118.

[20] Mearsheimer, 1994/95, 9.

[21] Dolman, *Astropolitik*, 2002, 8.

alliance-building. A space arms race will likely result from this, while arms control—a security regime stabilizing balancing—may or may not follow. In this scenario, outer space is likely to be weaponized and become a precinct of interstate violence.

In accordance with the liberal perspective, the second scenario envisions that expanding commercial space activities would lead to more cooperative interstate relations: the three major spacepowers—the United States, Russia, and China—would manage to reach compromises and negotiate a new security regime for outer space based on a consensus. Because such a regime would be based on a consensus, all three states will have incentives to cooperate: to follow the rules and uphold norms, while enjoying gains from space commerce. This new security regime may or may not preserve outer space as a weapon-free sanctuary but, at a minimum, it leaves room for hope. While space systems made significant contribution to arms control during the Cold War, space arms control itself represents one of the most challenging areas of arms control due to the nature of space technology. The commercialization of space creates added material incentives for arms control in outer space. It also makes it more difficult, as it blurs the line between military and commercial systems. One of the implications of this is that commercial actors, on the one hand, are concerned with the possibility that arms control may ban or significantly constrain commercial activities in space, and on the other, they are able to find ways to benefit from further military uses of space. Thus, they are discouraged from asserting a more active role in promoting space arms control and security cooperation between states.[22]

The choice between the two scenarios largely depends on choices of the three spacepowers—the United States, Russia, and China. The United States is the dominant space player both in the commercial and military realms. And being the dominant spacepower, it has

[22] See, for example, Jonathan Dean, "Future Security in Space: Conference Report," Report on a Conference in Southampton on May 28-29, 2002, International Network of Engineers and Scientists Against Proliferation, Prevention of an Arms Race in Outer Space, Bulletin 20, http://www.inesap.org/bulletin20/bul20art04.htm (accessed 07.06.04).

the greatest freedom of choice. The United States has three options. First, it can choose to follow the realist prescriptions as described above and pursue preeminence, facing in the near- to medium-term future a potential hostile bloc, a space arms race and the possibility of a conflict in space. Second, the United States may choose to follow the liberal vision and pursue a multilateral security regime requiring U.S. leadership and self-restraint. This option presents complex challenges for space arms control and the potential for a breakout. Third, the United States can choose to avoid multilateral negotiations and try to prevent the formation of a Sino-Russian alliance by fostering close commercial and security cooperation with Russia and driving an edge between Russia and China. The present study suggests that in the post-Cold War transition decade, the United States tried to engage this option but so far has been unsuccessful.

In this trio, Russia may become the pivotal player and exert a significant influence on the shape of the emerging world order. Russia has two basic options. First, it can choose to cooperate with the United States, whether the United States chooses to follow the liberal or realist prescriptions, and enjoy economic benefits that are likely to accrue from such cooperation. Under the liberal scenario, Russia would enjoy both economic benefits and security, while under the realist scenario, it would have to tolerate a subordinate position in the international system and constrained sovereignty. Second, Russia may choose to balance the United States in cooperation with China. In this case, Russia would need to sacrifice its economic goals and prepare for a space arms race and a potential conflict in space. Given the observed trend towards the convergence of Russian and Chinese security interests in outer space and their preference for a multipolar world order, the second option seems to be a more likely development. By opting for cooperation with the United States or China, under certain conditions, Russia may influence whether the liberal or realist scenario would be realized.

China also has two options. First, it may choose to cooperate with the United States and accept U.S. preeminence in order to continue reaping economic benefits from its integration into the global economy and commercial space activities. In this case, China should be prepared to sacrifice its goal of reunification with Taiwan or its communist regime, or both. Second, China can choose to pursue a closer cooperation with Russia and try to build an alliance in order to balance the United States with a hope that it would allow China to achieve both the reunification with Taiwan and the perpetuation of the communist regime. It will probably require China to forgo some of its economic and social goals as it engages in a space arms race and faces the possibility of a space conflict. Thus, for China the choice of the first option— cooperation with the United States—is much more problematic than it is for Russia.

Given the observed trends in the evolution of security strategies and space interests of the three spacepowers in the post-Cold War transition decade, the prospects of a liberal scenario are not promising, unless strategic calculations are changed. Short of this, the full weight of the responsibility for realization of a liberal scenario falls on international organizations. Under the present conditions of an impasse at the sole intergovernmental organization charged with negotiations on space arms control, the hope seems to rest largely with the non-governmental organizations who might mobilize world public opinion, reinvent the space arms control process and bring new life to space security cooperation.[23]

All in all, this study suggests that complacency on the part of the policy-makers with either the liberal or realist schools' propositions is not warranted. The liberal perspective creates an expectation that greater commercialization of outer space would lead, by itself, to

[23] The option of Ottawa-type process for space arms control has been suggested and discussed in the literature. See, for example, Axworthy and Datan, 2002; Robert E. White, "Space Weapons Ban: Thoughts on a New Treaty," International Network of Engineers and Scientists, Prevention of an Arms Race in Outer Space, Bulletin 20, 2002, http://www.inesap.org/bulletin20/bul20art08.htm (accessed 07.06.04). "Ottawa process" refers to the arms control initiative that led to a successful conclusion of a landmine ban in 1997. The driving force behind this 1997 treaty was the International Campaign to Ban Landmines (ICBL)—a broad coalition of over 1500 non-

converging security interests and more cooperative interstate relations. This study suggests, however, that this is unlikely to materialize. Neoliberal predictions may also fail, as international organizations may become paralyzed under the weight of complex challenges and diverging security interests. As a result, the outcome is likely to be similar to the one predicted by realism.

According to the realist perspective, under the conditions of anarchy of the international system greater conflict in outer space is likely to arise from expanding economic interactions in this medium. Because international cooperation is difficult in the security realm states should take steps to provide their own security. Unilateral steps, however, are likely to bring about a more competitive security environment characterized by the security dilemma. Following the realist prescriptions, thus, may lead to a self-fulfilling prophecy and turn outer space into a new battlefield in the 21^{st} century.

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governmental organizations (NGOs) in 90 countries—with the coordinator Jody Williams who was awarded the 1997 Nobel Peace Prize for her contribution into this international endeavor.

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