Note de l'Ifri

Space Security:
Europe Takes the Lead

Laurence Nardon

Janvier 2009

ifri
Space
Policy Programme

The Institut Français des Relations Internationales (Ifri) is a research center and a forum for debate on major international political and economic issues. Headed by Thierry de Montbrial since its founding in 1979, Ifri is a non-governmental and a non-profit organization.
As an independent think tank, Ifri sets its own research agenda, publishing its findings regularly for a global audience.
Using an interdisciplinary approach, Ifri brings together political and economic decision-makers, researchers and internationally renowned experts to animate its debate and research activities.
With offices in Paris and Brussels, Ifri stands out as one of the rare French think tanks to have positioned itself at the very heart of European debate.

Dr Laurence Nardon is the Head of the Space Policy Programme at Ifri.
Laurence Nardon : nardon@ifri.org

The writing of this paper was supported by

The Ifri space policy program is supported by

ISBN : 978-2-86592-459-2

IFRI
27 RUE DE LA PROCESSION
75740 PARIS CEDEX 15 - FRANCE
PH. : 33 (0)1 40 61 60 00
EMAIL: IFRI@IFRI.ORG

IFRI BRUXELLES
RUE MARIE-THÉRÈSE, 21
B-1000 BRUXELLES - BELGIQUE
PH : 32 (2)238 51 10
FAX : 32 (2)238 51 15
EMAIL : INFO.EURIFRI@IFRI.ORG

SITE INTERNET : www.ifri.org

Contents

Introduction:
A Shift in Space Security

These are very interesting times for defense analysts and space experts. The international community has recently experienced an evolution in its overall attitude towards space security. In concrete terms, the situation is shifting from the beginning of an “arms race in space” to the beginning of “arms control in space”.

The destruction of one of its own satellites by China in January 2007 caused much alarm to space powers throughout the world. It has given new incentives to proponents of a stabilization of activities in orbit and even seems to have brought about a change of mind in the last months of the Bush administration.

In December 2008, the member states of the European Union adopted a draft Code of Conduct for Outer Space Activities. They will now present this text to the other space-faring nations of the world. As long as the risks demonstrated by the Chinese test remain in everyone’s minds, the adoption of such a Code by the international community seems possible. By suggesting to the world that space should not be weaponized, Europe makes more remote the risk of future dangerous escalation and gives concrete substance to a major strategic development. The EU has rarely played such a decisive role in the strategic affairs of the world. With the Code of Conduct in Space, Europe becomes an influential actor in strategic matters, which is an important first.

The Beginnings of an Arms Race in Space

Starting in the 1990's and culminating in 2007, the international community witnessed what seemed to be a slow but unstoppable progression towards an arms race in space, based on increasingly aggressive rhetoric and behaviour in space. The main actors of this evolution were the United States and China.

The Gulf War of 1990-1991 had made very visible the use of space systems for the support of military operations. Military experts observed that space assets had become key to military operations, especially for technologically advanced powers such as the United States. With this observation came the realization that space systems would soon become an ideal target for attacks. Indeed, from an operational standpoint, it would be extremely useful to disable an adversary's space systems, making its military forces blind, deaf and lost on the ground. Pre-emptive destruction of U.S. space systems, for instance, would be extremely tempting for the nation's adversaries.

The U.S. Policy of Space Control

For many defense analysts, this reasoning led to the tenet that "war in space is inevitable"[1] and that the U.S. will most probably be the victim of future space aggressors. From the 1990's, a number of these experts recommended that the U.S. prepare for the impending occurrence. For reasons of national security, the U.S. must remain the first space power, able to control access to space and to overcome all other space-faring nations in the future. The technology gap between the United States and other space powers must be reinforced. This policy was adopted under the Clinton administration. Space control was one of the four national space security mission areas defined by the National Space Policy of 1996. Space was called a "vital national interest" by Secretary of Defense William

[1] The 2001 Rumsfeld Report calls war in space a "virtual certainty". See infra, Rumsfeld Report, p.12.

Cohen in 1999.[2] Any strike on a U.S. space system would be considered as a strike on the U.S. mainland.[3]

The Bush administration confirmed this policy, giving it a more aggressive tone. In military circles, the term of “space dominance” slowly came to replace that of “space control” for the description of U.S. military goals.[4] The 2001 Rumsfeld Report on national space security uses strong rhetoric: a surprise attack on space systems would be the equivalent of a "Pearl Harbor in space.[5]" Retaliation by U.S. forces would be of a high order. The National Space Policy of 2006 replaces the Clinton National Space Policy of 1996 and is the main space policy document adopted by the Bush Administration.[6] The text mentions for instance that the United States will “respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to U.S. national interests."

This policy translated into military acquisition plans. A military goal of the 1990’s and 2000’s is to comfort U.S. dominance of the space environment. Air Force documents show a strong interest for the development of antisatellite weapons (asats). Their deployment would lead to what is termed “space weaponization”. The 2003 USAF Strategic Master Plan details three successive layers of space systems that must eventually be acquired:[7]

- “Space Situational Awareness”. SSA is the monitoring of the orbital environment. It has been operational for decades, with networks of ground-based radar systems operated by NORAD.[8]

- “Defensive Counterspace” (DCS) is the ability for U.S. satellites to avoid aggressive actions. Several techniques already exist, such as the hardening of satellites against jamming or escape manoeuvres.

- “Offensive Counterspace” (OSC) is the ability to strike other nations’ space systems. This is space

---

[2] Department of Defense Directive 3100.10, Space Policy, 9 July 1999 (www.dtic.mil/whs/directives): “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-being. “

[3] John Donnelly, "Attack on U.S. satellite is attack on United States", Defense Week, July 26, 1999.

[4] See for instance Scott Elliott, “America Must Reach For Space Dominance: Teets”, Air Force News, Sep 20, 2004, and Everett Dolman, “Dominance in Space”, Space News, April 17, 2006.

[5] Report of the Commission to Assess United States National Security Space Management and Organisation, pursuant to Public Law 106-65, 11 January 2001 (“Rumsfeld Report”), p. 22.

[6] U.S. National Space Policy 2006 was signed by President Bush on August 31, 2006.

[7] U.S. Air Force Space Command, Strategic Master Plan FY06 and Beyond, Peterson AFB, October 2003.

[8] NORAD is the North-American Aerospace Defense Command.

> weaponization proper. Ground-based asats are already operational, including jamming systems relying on electromagnetic pulse (EMP), modified missiles for kinetic destruction, and possibly laser beams. The USAF report mentions more ambitious space-based projects such as a space-based-laser and kinetic-kill vehicles. Budget lines in Congress documents show that many systems are currently under consideration.[9]

However, in spite of eight years of having proponents of space weaponization in office, space-based asats are nowhere nearing deployment in the U.S.. Several reasons explain this. First, the most exotic projects run into technical difficulties and remain very difficult to build. Second, Congress continues to question their necessity and their ever expanding cost, especially when ground-based systems are already operational.[10] The similarity between space weapon and missile defense (MD) systems further complicates matters. Difficult policy decisions about MD will negatively affect asat funding.

The Chinese asat Test

Starting in the late 1990's, China also postured about space weaponization and asats.[11] In January 2006, China announced a Medium-to-Long-Term Plan for the Development of Science and Technology. This plan aims to make China an innovation-oriented society by 2020 and a world leader in science and technology by 2050. Aerospace is listed as a crucial theatre, lasers as a frontier technology and manned space exploration as a critical project. In December 2006, China published its fifth White Paper on Defense, in which it justified its high military spending by the importance of its economic expansion, the reassertion of the Japanese military power, Taiwanese independence wishes and North Korean nuclear ambitions.[12]

The reality of Chinese military space developments remained difficult to assess in the West. Proponents of space dominance

---

[9] Beau Rizzo, *Fiscal Year 2009 (FY09) Defense Budget: programs of interest*, http://www.cdi.org/pdfs/FY2009ChartFinal.pdf, accessed on January 13, 2009.

[10] For an overview of Congress misgivings about asat testing, see Laura Grego, *A History of Anti-Satellite Programs*, Union of Concerned Scientists (UCS), 2003.

[11] See *Unrestricted Warfare*, Qiao Liang et Wang Xiangsui, PLA Literature and Arts Publishing House, Beijing, February 1999. This monograph establishes the principles of an asymmetric strategy for China, in which space holds a key position. It was written by two officers of the PLA. A 228 pp. translation is available online at www.terrorism.com.

[12] Both texts are quoted in Patrick Cronin, "China's Missile Targets More than a Satellite", Pacnet Newsletter, CSIS, February 20, 2007.

claimed China's threat was very real, whereas disarmament supporters contended that it was exaggerated. For instance, the Annual Report of the U.S. Department of Defense on Chinese military developments, especially in its 2003 and 2004 editions, was accused of presenting the Chinese threat too seriously, in order to support U.S. acquisition plans.[13] A degree of certitude was reached however when the People's Liberation Army (PLA) realised the first asat test in 20 years.[14] In January 2007, China launched a ballistic missile turned into a direct-ascent antisatellite weapon and destroyed one of its old meteorological satellite.

In a way, all Western commentators had been right. Experts who contended that the Chinese threat was overstated were correct because advanced space-to-space asat capacities were seemingly not yet in the reach of the Chinese military. The PLA had used a ground-based missile system that was presumably relatively easy to modify for use as an asat. Believers in the Chinese threat were also right however, because the Chinese intent and capacity to test asats had undeniably been present.

Even though Western secret services had been expecting such a test for months, the event came as a shock for the international community. The destruction of the Chinese satellite was a definite proof of Chinese intentions and capacities. Taking place at an altitude of 850 km, the impact also created a large amount of debris that will clog low Earth orbit for decades and may damage all satellites orbiting there.[15]

On February 21, 2008, the United States destroyed one of its own satellites, called USA-193. The reconnaissance satellite had misfunctioned shortly after being launched and threatened to re-enter the atmosphere loaded with toxic fuel. An SM-3 missile, part of the Aegis MD system, was launched from a cruiser ship with a modified targeting system. The impact took place at 247 km and created debris that burnt within weeks upon atmospheric re-entry. The Pentagon took steps to explain the test in advance and justify it by safety

[13] Annual Report on the Military Power of the People's Republic of China. Report to Congress, Office of the Secretary of Defense. See critics of the 2003 and 2004 edition in the archives of Dr. Jeffrey Lewis' blog: www.armscontrolwonk.com.

[14] In October 2006, U.S. officials had reported that during the previous Summer, one of their spy satellites had been temporarily blinded by a ground-based laser located in China (Reuters, October 5, 2006). However, as suggested by the fact that the White House never filed an official complaint to the Chinese government and by the disappearance of all mentions of this incident in later U.S. reports on space and security, there is a strong possibility that the blinding of a U.S. satellite by a Chinese laser was after all non-intentional.

[15] The test is the largest recorded creation of space debris in history with at least 2317 pieces of trackable size (golf ball size and larger), thereby increasing the total number of currently tracked objects in Earth orbit by more than 22%. Source: Center for Space Standards and Innovation, CSSI, 2008.

reasons.[16] Nevertheless, the satellite destruction was generally perceived as a deliberate demonstration that U.S. asat capacities matched Chinese capacities. After all, never before had such dramatic action been taken to protect the Earth from a falling satellite.[17] The most recent U.S. asat test dated from 1985 and the world might need to be reminded of U.S. capacities. The amount of publicity around the destruction of USA-193 tends to indicate that the event was used at least partially as a demonstration.

These two intentional satellite destructions can be construed as a sequence of asat capability demonstrations, in other words the beginning of an arms race.

[16] DoD News Briefing with Deputy National Security Advisor Jeffrey, Gen. Cartwright and NASA Administrator Griffin, USDOD News Transcript, 14 February 2008.
[17] John Schwartz, "Satellite Spotters Glimpse Secrets, and Tell Them", New York Times, February 5, 2008, quoting NSC Spokesman Gordon Johndroe on the fact that 328 satellites had peacefully come down in the past five years.

A Change of Strategy

The destruction of the Chinese satellite in January 2007, followed by that of U.S.-193, has brought about a change of perception in several parts of the world.

Tackling the Issue of Space Debris

For one thing, builders and operators of commercial satellites are now concerned that this series of asat tests is taking their business in a dangerous direction. It is bad enough that hit-to-kill asats may target certain military satellites, but the long-lasting debris they create constitutes a risk for all spacecrafts. If the different asats are to proliferate, commercial satellites as well as military satellites may be damaged. In order to adapt to such a situation, commercial satellites will have to be hardened against jamming, laser radiation or kinetic attacks. They will have to perform more avoidance manœuvres and will therefore need to upload more fuel. They will become heavier, which will make launch more expensive. Besides, the cost of insurance will soar. All this will make commercial satellites considerably more costly, on a market where competition is already fierce.

The mitigation of debris has thus become a serious topic and two recent initiatives are now under way. They involve respectively space agencies and private satcom companies. In 2007, the UN Committee for the Peaceful Uses of Outer Space (COPUOS) in Vienna was presented with a set of Debris Mitigation Guidelines prepared by the Inter-Agency Space Debris Co-ordination Committee (IADC)[18]. The Scientific and Technical Subcommittee of COPUOS (STSC) adopted the Revised Draft Space Debris Mitigation Guidelines during its forty-fourth session, held in Vienna from the 12th to the 23rd February 2007, under the 2006-2007 chairmanship of former CNES Director General Gérard Brachet. In 2008, an informal working group was set up by STSC and an extensive document is now being formulated. Although COPUOS is not allowed to deal with arms control issues, Guidelines number 4 of the Debris Mitigation

[18] The Inter-Agency Space Debris Co-ordination Committee (IADC) is a group of eleven space agencies. IADC came up with “Debris Mitigation Guidelines” in 2002 and “Support to Guidelines” in 2004.

Guidelines demands that nations "avoid intentional destruction and other harmful activities", because they create debris.

In 2008, Gérard Brachet set up another forum that aims to establish "best practices" for private companies, particularly satcom operators. The so-called Paris Group looks at ITU frequency allocations, sharing the GEO and Sun-synchronous polar orbits and how to implement the Debris Mitigation Guidelines.[19]

The Limits of Space Dominance

The "space dominance" strategy of the United States has also undergone a dramatic reality check in recent months. As demonstrated by the January 2007 asat test, China now has the technical capability to inflict considerable damage to U.S. high-tech space systems, should it wish to do so. For such an end, China would use modified ground-based missiles that the PLA possesses in numbers. What officials at least at the U.S. State Department have come to realize is that it is probably impossible to establish a watertight space dominance –whatever the technological superiority of U.S. asat systems- in the face of Chinese low-tech means. China possesses an asymmetric advantage over the United States. In time, the U.S. technological superiority may even start to shrink noticeably. In order to maintain the present situation where the United States is the undisputed number one in space, the time has come to freeze the arms race. "Space dominance" may remain the ultimate intention, but the method needs to shift from the dynamics of an arms race to the status quo of arms control.

Prone to pragmatic adaptations, State Department officials are now relaying a message favorable to Best Practices Guidelines and Transparency and Confidence-Building Measures (TCBMs) in space.[20] This new attitude can only be reinforced by the upcoming Obama Administration. During his campaign, President-elect Obama suggested a Code of Conduct for responsible space-faring nations.[21]

---

[19] Source: Ray Williamson, Secure World Foundation, 17 November 2008.
[20] Ambassador Donald A. Malhey, Acting Deputy Assistant Secretary, Bureau of International Security and Non-Proliferation, Department of State, Remarks at the Space Policy Institute workshop *The State of Space Security*, 24 January 2008.
[21] "Presidential Candidates Respond to Seven Key National Security Questions" (Do you support or oppose a multilateral international ban on placing weapons in space?), *Council for a Livable World*, August 16, 2007.

Europe Adopts a Code of Conduct in Space

Europe has been thinking seriously and independently about space security for a few years. One reason is that Europe is not in a position to become a predominant military space power. A number of European countries have developed a "traditional" array of military satellite systems, covering observation, telecom and -soon- navigation needs. Space weapons, however, are not on the European radar screen. The strategy behind space weaponization is too radical to be developed nationally and too contentious to be developed in cooperation. In consequence, Europe will never be a serious contender in an arms race in space, except as a victim of it. asats developed by other nations will put European military and commercial satellites at risk. Putting an end to an arms race in space is therefore the only reasonable option for Europeans.

On December 8, 2008, the European Union adopted a Code of Conduct for Outer Space Activities.[22] The idea originally appeared in an Italian "Food for Thought" paper in March 2007.[23] The Italian paper was further developed by the then German Presidency of the EU.[24] In June, a seminal conference on this issue was organised in Berlin by the German Foreign affairs ministry.[25] France circulated the final draft for discussion amongst European countries during its own EU Presidency in the second half of 2008.

Other factors explain the European involvement in space security matters and the relatively quick completion of the Code. First, the wind had turned after the Chinese test and there was a demand for international action. The U.S. was ready to admit change but probably needed an external force to start the process. Second, space security was not a contentious issue amongst Europeans and

[22] The Code of Conduct for Outer Space Activities was adopted by the General Affairs and External Relations Council of the European Union on December 8, 2008.
[23] Ambassador Carlo Trezza, "A possible comprehensive Code of Conduct for space objects in an EU perspective", Presentation made at the EU Conference on security in space, the contribution of arms control and the role of the EU (Berlin, 21-22 June 2007).
[24] The 27 Member States of the European Union take turns to occupy the six-month presidency of the EU Council.
[25] *EU Conference on Space Security, Arms Control in space and the role of the EU*, Berlin,
21-22 June, 2007.

the conduct of negotiations on this topic was therefore not too difficult in political terms. The European Union was willing to fill the void in the area of space security. Finally, the adoption of a Code of Conduct in space would give Europe an unprecedented role in the strategic affairs of the world. It is therefore not surprising that the French presidency of the EU in the second half of 2008 was determined to get results on the Code negotiations.

A Code Rather Than a Treaty

The idea of a Code of Conduct was adopted because a treaty relating to space would be too difficult to negotiate.

Back in the mid-2000's, it was not realistic to suggest the adoption of a new Space Treaty to the United States. The 2006 U.S. National Space Policy underlined that no new treaty must be adopted that would prevent the United States from pursuing space dominance. "The United States will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit U.S. access to or use of space."[26] The reason for this statement is that the U.S. should not tie their hands with legally binding instruments. Even thought the U.S. administration seems to have changed attitude on military space issues, this opinion may live on. During his campaign, President Obama said a treaty may be too difficult to negotiate.[27]

But there is a more structural problem. A treaty would have to be based on clear definitions and for most elements considered, reaching an agreement on definition would be far too difficult. For instance, there is no agreement on the definition of outer space –at what altitude does it start? There is no easy definition of space weapons either. By their sheer velocity, virtually all space artefacts can be turned into kinetic or hit-to-kill weapons, even a space shuttle. A cloud of debris could even be engineered as a space weapon. There is also the issue of antiballistic missiles (ABMs). If ABMs are considered as space weapons, which they technically are, then this may call for difficult ABM issues to be taken into account when negotiating an asat ban. Finally, the issue of verification is also difficult to agree upon when the objects considered are in orbit.

This is why the Chinese/Russian proposal of a new Outer Space Treaty, presented at the Conference on Disarmament (CD) in Geneva in 2002 and again in 2008, is not a convincing option. Indeed, it leads most observers to question these countries' ingenuousness.

---

[26] U.S. National Space Policy, 2006, unclassified, page 2.
[27] *Council for a Livable World*, op.cit.

Transparency and Confidence-Building Measures

Contrary to a treaty, a code of conduct is not legally binding and does not need exhaustive definitions. Most states may enter the negotiations easily. There are several examples of such Codes of Conduct, like the 1972 Code of Conduct in the High Seas. They revolve mostly around Transparency and Confidence-Building Measures (TCBMs) which were created during the Cold War to try and ensure a minimum level of communication between the East and the West. The goal was to prevent misperceptions and incidents that could degenerate in full-scale hostilities, such as during the NATO-conducted Able Archer exercise of 1983.[28]

TCBMs involve the notification of military exercises, the invitation of observers to these exercises, setting up registers of weapons, and other sorts of information-sharing mechanisms and pledges. A Code of Conduct in space would pretty much adapt TCBMs to the space environment.

Arms control and TCBMs rely on trust and goodwill, feelings that are essentially fragile and transient. Arms control skeptics recall that the arms control treaties of the 1970's stopped functioning as soon as the international situation deteriorated in 1979. It is true that a minimum goodwill threshold is necessary for a Code of Conduct to function. However, the world community needs a reference as to what is allowed and what is dangerous in space. There is currently no provision in international law that forbids asat testing or the production of space debris. The 1967 Space Treaty, forbidding the deployment of nuclear weapons and other weapons of mass destruction in orbit, is not longer sufficient. A Code would provide a legal basis on which to blame the nations that pursue dangerous activities.

TCBMs in Space

There are different ways of organizing a Code of Conduct. A common-sense typology of what Transparency and Confidence-Building Measures in Space could entail follows the successive steps in the life of a satellite:

[28] For information on the Able Archer incident, see Laurence Nardon, *Transparency Measures in Space? Ifri Working Paper*, November, 2007.

General space-related activities:[29]

- Having a declared national space policy
- Sharing information on planned activities
- Developing cooperative space projects

Launch-related activities:

- Launch notification
- Launch demonstrations
- Invite observers to launches

During the spacecraft's lifetime in orbit:

- Space traffic management (including special caution zones around satellites and notification of orbital manoeuvres)
- Set up a register of operational satellites and spacecrafts with regular updates
- Space surveillance system with information available to all parties (preferably a common system)

Decommissioning and re-entry of spacecrafts:

- Re-entry notification
- Debris mitigation (graveyard orbits, fuel exhaustion, atmospheric burn-up, etc.)

Recommendations on harmful interference –different wordings:

- refrain from debris-creating activities
- refrain from conducting kinetic asat tests
- refrain from harmful interference in general

The Washington-based disarmament-oriented Henry L. Stimson Center drafted a Code of Conduct for Space-Faring Nations in 2007. It lists rights and responsibilities of space actors. Part of a large debate in the U.S. on space weaponization, the Stimson draft Code involved experts from different countries. The text is on the Stimson Center website and has been widely circulated. It mentions "the responsibility of space-faring nations to refrain from harmful interference against space objects". This wording may have inspired the European Code negotiators.

The European Code was made public in December 2008 (see annex). It clearly condemns aggressive actions in space. The chapter

[29] Adapted from Lars Höstbeck, "A Small Nation's View of TCBM's for Space Security", presented at the conference *Improving our Vision II : Building Transparency and Cooperation* (CDI, Eisenhower Center for Space and Defense Studies, SWF), London, 25-26 October 2007.

on general principles calls for subscribing states to “cooperate in good faith to prevent harmful interference in outer space activities.” The chapter on debris mitigation calls for them to “refrain from intentional destruction of any on-orbit space object or other harmful activities which may generate long-lived space debris”. This rules out further destruction of satellites by direct-ascent weapons, be it a hostile manœuvre or the conduct of an asat test.

The chapter on cooperation mechanisms most resembles former arms control agreement, listing measures of notification, registration, information and consultation. Organisational aspects of the Code are provided for, with a plan to hold biennial meetings, the setting up of a point of contact and a common database. Finally, the Code does not arrange for sanctions, as it cannot be legally binding. In the spirit of TCBMs, this Code is about trust and goodwill.

How to Make the EU Code a Worldwide Code?

The European Code will now be submitted to the other space-faring nations of the world. This will be done on a bilateral basis and not in the framework of existing international, for a. COPUOS would probably not be competent since it does not deal with defense issues. The Conference on Disarmament (CD) in Geneva covers all issues of arms control and would have been a possible choice. However, the political context of this multilateral forum would be too difficult at present. China and Russia continue to demand that a new space treaty be negotiated. Their proposal would forbid all space weapons, but not asat tests. This would indeed not resolve the problem of space debris, nor would it put an end to the present arms race in space. The EU has therefore chosen to approach space-faring countries on a one-to-one basis. When enough countries have agreed to respect the Code, an ad-hoc conference may be convened for its official adoption and entry into force.

Conclusion: On the Evitability of War in Space

The idea that war in space is inevitable has been a real buzzword in many circles, and as recently as in Fall 2008, when it was reaffirmed in a paper by Professor Colin Gray.[30] The argument went that all environments must be contaminated by war, just as air became a military battlefield as early as in World War I.

But this opinion is debatable and authors have claimed that the inevitability of war as a principle is at best untrue and at worst a self-fulfilling prophecy.[31] The first argument opposed to the inevitability of war in general is the example of nuclear weapons: in the 1980's, South Africa, Brazil and Argentina abandoned their development programmes and gave up nuclear weapons, on considerations of national security.

Indeed, space was conquered after the nuclear bomb was invented and used. All space endeavors have happened in the context of the nuclear era. This could make the contamination of outer space by war less likely. Things that were inevitable before (like air becoming a medium for warfighting) do not apply anymore, because nations in the nuclear age find themselves in a paradigm of self-restraint. Nuclear deterrence causes nations to think twice about taking even limited military action. Furthermore, starting a war in space would be unprecedented: there would be no precedent as to the type of retaliation chosen by the attacked country. The use of an asat could unleash responses of high proportions. The Rumsfeld Report of 2001 made it understood that a surprise-attack on U.S. satellites would be considered similar to the Pearl Harbor surprise-attack, or an attack on the U.S. mainland. Retaliation in kind would follow. The risk of escalation would be very strong. We may believe that governments will refuse to take that risk and refrain from using destructive asats. Space may remain safer than other environments have been in the past.

---

[30] Colin Gray is a well-known arms control sceptic. He is famous for his 1992 book *House of Cards: Why Arms Control Must Fail*. He recently issued a paper on space security: "Global Commons, Space Power and Strategy", *Quaderni di Relazioni Internazionali*, number 8, October 2008.

[31] Allport, G. (1950). "The role of expectancy", in Cantrill, H.: *The Tensions That Cause Wars*. Urbana: University of Illinois, pp. 43–78.

An objection to this reasoning is that some actors do not behave according to the rationale followed by traditional actors of international relations. Terrorist groups that routinely send suicide bombers to their doom may not be scared by the prospect of high-level retaliation. But even so it seems doubtful that they would use asats. Creating an effect of terror usually demands massive bloodshed. Blinding or destroying a few satellites would not provide it –at least not directly. An attack on satellites would therefore not appeal to terrorist groups. Moreover, it may not be easy for these groups to get hold of the necessary systems, even the simplest ground-based ones. Actually, one can fear that, if acquired by a terrorist group, a missile would be put to much more tragic uses.

Annex

The European Draft Code of Conduct for Outer Space Activities

COUNCIL OF THE EUROPEAN UNION

Brussels, 3 December 2008 (04.12)

(OR.fr)

Limité

PESC 1595

CODUN 59

NOTE

from: General Secretariat
to: COREPER/COUNCIL
Subject: Council conclusions and draft Code of Conduct for outer space activities

Delegations will find attached:

-In Annex I, draft Council conclusions concerning the draft Code of Conduct for outer space activities,

-In Annex II, the text of the draft Code of Conduct for outer space activities,

which have been finalised by the Working Party on Global Disarmament and Arms Control and endorsed by the Political and Security Committee and are now submitted to the Council, via Coreper, for adoption (Annex I) and to serve as a basis for consultations with third countries (Annex II).

Annex I:
Draft Council Conclusions on the Draft Code of Conduct for Outer Space Activities

The Council considers that strengthening the security of activities in outer space is an important goal in the context of the expanding space activities that contribute to the development and security of States. This objective is part of the European Union's space policy.

The Council supports the annexed European Union draft for a Code of Conduct for outer space activities, in which States would participate on a voluntary basis, and which includes transparency and confidence-building measures, as a basis for consultations with key third countries that have activities in outer space or have interests in outer space activities, with the aim of reaching a text that is acceptable to the greatest number of countries.

Annex II:
Draft Code of Conduct for Outer Space Activities

Preamble

The Subscribing States,

Noting that all States should actively contribute to the promotion and strengthening of international cooperation relating to the activities in the exploration and use of outer space for peaceful purposes (hereinafter referred to as outer space activities);

Recognizing the need for the widest possible adherence to relevant existing international instruments that promote the peaceful uses of outer space in order to meet emerging new challenges;

Convinced that the use of existing space technology, space telecommunications, and their applications, has important consequences in the economic, social and cultural development of nations;

Further recognizing that space capabilities -including associated ground and space segments and supporting links- are vital to national security and to the maintenance of international peace and security;

Recalling the initiatives aiming at promoting a peaceful, safe and secure outer space environment, through international cooperation; Recalling the importance of developing transparency and confidence-building measures for activities in outer space;

Taking into account that space debris could constitute a threat to outer space activities and potentially limit the effective deployment and exploitation of associated space capabilities;

Reaffirming their commitment to resolve any conflict concerning actions in space by peaceful means;

Recognizing that a comprehensive approach to safety and security in outer space should be guided by the following principles: (i) freedom of access to space for all for peaceful purposes, (ii) preservation of the security and integrity of space objects in orbit, (iii) due consideration for the legitimate defense interests of States;

Conscious that a comprehensive code, including transparency and confidence-building measures could contribute to promoting common and precise understandings;

Adopt the following Code (hereinafter referred to as "the Code").

I. Core Principles and Objectives

1. Purpose and scope

The purpose of the present code is to enhance the safety, security and predictability of outer space activities for all.

The present Code is applicable to all outer space activities conducted by a Subscribing State or jointly with other State(s) or by nongovernmental entities under the jurisdiction of a Subscribing State, including those activities within the framework of international intergovernmental organisations.

This Code, in codifying new best practices, contributes to transparency and confidence-building measures and is complementary to the existing framework regulating outer space activities.

Adherence to this Code and to the measures contained in it is voluntary and open to all States.

2. General principles

The Subscribing States resolve to abide by the following principles:

- the freedom of access to, exploration and use of outer space and exploitation of space objects for peaceful purposes without interference, fully respecting the security, safety and integrity of space objects in orbit;

- the inherent right of individual or collective self-defense in accordance with the United Nations Charter;

- the responsibility of States to take all the appropriate measures and cooperate in good faith to prevent harmful interference in outer space activities;

- the responsibility of States, in the conduct of scientific, commercial and military activities, to promote the peaceful exploration and use of outer space and take ail the adequate measures to prevent outer space from becoming an area of conflict;

3. Compliance with and promotion of treaties, conventions and other commitments relating to outer space activities

3.1. The Subscribing States reaffirm their commitment to:
- the existing legal framework relating to outer space activities;
- making progress towards adherence to, and implementation of:

(a) the existing framework regulating outer space activities, inter alia:

- the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967);

- the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (1968);

- the Convention on International Liability for Damage Caused by Space Objects (1972);

- the Convention on Registration of Objects Launched into Outer Space (1975);

- the Constitution and Convention of the International Telecommunications Union and its Radio Regulations (2002);

- the Treaty banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (1963) and the Comprehensive Nuclear Test Ban Treaty (1996);

- the International Code of Conduct against Ballistic Missile Proliferation (2002).

(b) declarations and Principles, inter alia:

- the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space as stated in UNGA Resolution 1962 (XVIII);

- the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as stated in UNGA Resolution 47/68;

- the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of AU States, Taking into Particular Account the Needs of Developing Countries as stated in UNGA Resolution 51/122;

- the Recommendations on the Practice of States and International Organizations in Registering Space Objects as stated in UNGA Resolution 62/101;

- the Space Debris Mitigation Guidelines of the United Nations Committee for the Peaceful Uses of Outer Space as stated in UNGA Resolution 62/217.

3.2. The Subscribing States also reiterate their support to encourage coordinated efforts in order to promote universal adherence to the above-mentioned instruments.

II. General Measures

4. Measures on space operations

4.1. The Subscribing States will establish and implement national policies and procedures to minimize the possibility of accidents in space, collisions between space objects or any form of harmful interference with other States' right to the peaceful exploration and use of outer space.

4.2. The Subscribing States will, in conducting outer space activities:

- refrain from any intentional action which will or might bring about, directly or indirectly, the damage or destruction of outer space objects unless such action is conducted to reduce the creation of outer space debris and/or justified by imperative safety considerations;

- take appropriate steps to minimize the risk of collision;

- abide by and implement all International Telecommunications Union recommendations and regulations on allocation of radio spectra and orbital assignments.

4.3. When executing manoeuvres of space objects in outer space, for example to supply space stations, repair space objects, mitigate debris, or reposition space

objects, the Subscribing States agree to take all reasonable measures to minimize the risks of collision.

4.4. The Subscribing States resolve to promote the development of guidelines for space operations within the appropriate fora for the purpose of protecting the safety of space operations and long term sustainability of outer space activities.

5. Measures on space debris control and mitigation

In order to limit the creation of space debris and reduce its impact in outer space, the Subscribing States will:

- refrain from intentional destruction of any on-orbit space object or other harmful activities which may generate long-lived space debris;

- adopt, in accordance with their national legislative processes, the appropriate policies and procedures in order to implement the Space Debris Mitigation Guidelines of the United Nations Committee for the Peaceful Uses of Outer Space as endorsed by UNGA Resolution 62/217.

III. Cooperation Mechanisms

6. Notification of outer space activities

6.1. The Subscribing States commit to notify, in a timely manner, to the greatest extent feasible and practicable, all potentially affected Subscribing States on the outer space activities conducted which are relevant for the purposes of this Code, inter alia:

- the scheduled manoeuvres which may result in dangerous proximity to space objects;

- orbital changes and re-entries, as well as other relevant orbital parameters;

- collisions or accidents which have taken place;

- the malfunctioning of orbiting space objects with significant risk of re-entry into the atmosphere or of orbital collision.

6.2. The Subscribing States reaffirm their commitment to the Principles Relevant to the Use of Nuclear Power Sources in Outer Space as stated in UNGA Resolution 47/68.

7. Registration of space objects

The Subscribing States undertake to register space objects in accordance with the Convention on Registration of Objects launched in Outer Space and to provide the United Nations Secretary-General with the relevant data as set forth in this Convention and in the

Recommendations on the Practice of States and International Organizations in Registering Space Objects as stated in UNGA Resolution 62/101.

8. Information on outer space activities

8.1. The Subscribing States resolve to share, on an annual basis, and, where available, information on:

- national space policies and strategies, including basic objectives for security and defense related activities;
- national space policies and procedures to prevent and minimize the possibility of accidents, collisions or other forms of harmful interference;
- national space policies and procedures to minimize the creation of space debris;
- efforts taken in order to promote universal adherence to legal and political regulatory instruments concerning outer space activities.

8.2. The Subscribing States may also consider providing timely information on space environmental conditions and forecasts to other Subscribing States or private entities through their national space situational awareness capabilities.

9. Consultation mechanism

9.1. Without prejudice to existing consultation mechanisms provided for in Article IX of the Outer Space Treaty of 1967 and in Article 56 of the ITU Constitution, the Subscribing States have decided on the creation of the following consultation mechanism:

A Subscribing State with reason to believe that certain outer space activities conducted by one or more Subscribing State(s) are, or may be, contrary to the purposes of the Code may request consultations with a view to achieving acceptable solutions regarding measures to be adopted in order to prevent or minimize the inherent risks.

- The Subscribing States involved in a consultation process will decide on a time frame consistent with the time scale of the identified risk triggering the consultations.
- Any other Subscribing State which may be affected by the risk and requests to take part in the consultations will be entitled to take part.
- The Subscribing States participating in the consultations shall seek solutions based on an equitable balance of interests.

9.2. In addition, the Subscribing States may propose to create a mechanism to investigate proven incidents affecting space objects. The mechanism, to be agreed upon at a later stage, could be based on national information and/or national means of investigation provided on a voluntary basis by the Subscribing States and on a roster of internationally recognized experts to undertake an investigation.

IV. Organizational Aspects

10. Biennial meeting of Subscribing States

10.1. The Subscribing States decide to hold meetings biennially or as otherwise agreed by Subscribing States, to define, review and further develop this Code and ensure its effective implementation. The agenda for such biennial meetings could include: (i) review of the implementation of the Code, (ii) evolution of the Code and (iii) additional measures which appear necessary.

10.2. The decisions will be taken by consensus of the Subscribing States present at the meeting.

11. Central point of contact

A central point of contact shall be nominated among Subscribing States to:

- receive and announce the subscription of additional States;
- maintain the electronic information-sharing system;
- serve as secretariat at the biennial meetings of Subscribing States;
- carry out other tasks as agreed by Subscribing States.

12. Outer Space Activities Database

The Subscribing States will create an electronic database to:

- Collect and disseminate notifications and information submitted in accordance with the provisions of this Code;
- Channel requests for consultations.