

IAC-06-E6.4.4

MILITARY APPLICATIONS AND SPACE LAW

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ABSTRACT

The conflicts which recently took place (The Gulf War, the War in Kosovo and in Iraq) show how space has been used to a much further extent than before, for military operations purposes, as preparation and planning, as well as execution. These operations have the peculiar feature of being able to guarantee a continuous exchange of data and information between weapon devices, due to state-of-the-art technology, as: satellite-driven smart weapons to strike military targets, AWACS (Airborne Warning Control System) and JSTARS (Joint Surveillance and Targeting Radar System) systems. Technological progress changes human perception of space and distance, so it subsequently modifies the relationship between war and space.

This paper aims at analyzing the effects of technological progress on the relationship between war and Space within the legal context of European Union's and United Nations' current regulations.

The first part of the paper analyzes Space militarization and its limits, set by States for prevention reasons, to safeguard Outer Space, seen as development and knowledge resource. The second part analyzes States' security and defense concepts, one of which is the Strategic Defense Initiative –SDI - or Space Shield, and another one is the Russian Defense Initiative – SSDP. On the other hand, stressing the two Powers' commitment to limit offensive weapons' development and use in Outer Space, is essential.

These agreements on weapon limitation include weapon control, as SALT I and II, the Limited Test Ban Treaty, the Non Proliferation Treaty and START I and II for nuclear weapon reduction.

The third part of the paper focuses on the European Union's concern on the growing militarization of Space, which leads to the drafting of the "Green Paper"; through this project, the European Commission and the European Space Agency put up questions on Europe's future space power and develop an action plan, the "White Paper". The realization of GALILEO, Europe's current effort, planned for civil purposes, is already embedded in problems regarding its possible use for military and security reasons. The EU – ESA environment and security monitoring project, the Global Monitoring for Environment and Security (GMES), is under examination.

States are currently considering using remote sensing satellites for both civil and military purposes, (dual use); remote sensing satellites provide high quality services and relevant economic benefits. On the matter, European HELIOS satellite and Cosmo Sky-Med project must be mentioned. They strengthen even further the legality of military remote sensing satellites, which are also used to monitor military agreements' compliance.

The research will be carried out on the basis of the current space regulations, which up to date set the total demilitarization of the Moon and of other celestial bodies, while the demilitarization of Outer Space is set only partially; but we must keep in mind that banning any use of Outer Space for dangerous and offensive purposes, as well as for any purpose which could be harmful for resources and Patrimony of Mankind, is the basic principle of the current space regulations.

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1.1 The military importance of outer space

Outer space has become an environment where new weapons are being tested and where there is growing military presence.

Hence the potential danger for outer space to turn into the battlefield of the future.

Most space activities are carried out by the superpowers, and regard projects for military purposes; this results from the strong political, ideological and military rivalry between the major world powers, typical of the post-war period.

Outer space has therefore started to play a leading role in the global balance of powers; its influence is so strong that it could even take control over a war fought on the Earth's surface.

If, instead, a war should begin in outer space, the latter should be the "theater" of war and international conflicts, and the war itself should not be a localized phenomenon, but it would certainly cause repercussions on the terrestrial surface.

At present times, almost all sectors regarding planning and execution of the Great Powers' political-strategic plans depend on systems placed in outer space: all the different aspects of conflicts, from identification of targets to execution of Special Forces' secret operations, depend on the abovementioned space devices and communication.

Potential enemy targets are constantly monitored, weapons detected, missiles counted and identified by reconnaissance satellites.

New technologies, thanks to some, perhaps deliberately left open, lacuna in the regulations, are radically changing all countries' concept of defense, by introducing the idea of a space defense system, having great offensive and destructive potential.

So it seems we are definitely moving away from the principle of freedom of outer space, despite all the efforts made to stop the arms race and legitimize the demilitarization process.

Article 4 of this Treaty is the only one that specifically regulates the issue regarding the "militarization" of outer space and celestial bodies, resuming the contents of the UN Resolution 1884¹ between the United States and USSR. The resolution calls upon States to refrain from placing nuclear weapons or any other kinds of weapons of mass destruction in outer space; the US and USSR accepted the resolution and its principles, and encouraged other countries to do the same.

Reading article 4, we notice how important the principle of "peaceful use" of space activities is; as clear as it may seem though, it has often been a topic of debate, since, up to day, no clear definition of the term can be found in the agreement itself. In the last ten years, the technological development of new weapons has pointed out how uncertain and ambiguous the meaning of the term "peaceful" is.

On the matter, there are two opposite doctrines²: the first one, which is the prevailing opinion in the western world, considers the term "peaceful" as "non aggressive"³; thus, all military actions carried out on the Moon and other Celestial Bodies must be considered peaceful until proven aggressive⁴.

On the other hand, the second doctrine, which is most common in Socialist countries, inclines to a stricter interpretation of the term, and considers "peaceful" as "non military"; so, even the mere use of surveillance satellites placed in orbit by military personnel or for military purposes, must be considered illegal⁵.

The problem thickens if we read the abovementioned article 4 very carefully: it explicitly states the principle of "exclusive use for peaceful purposes" with regard to the Moon and the other "Celestial Bodies" only. In fact, outer space as a separate entity is not explicitly mentioned.

Despite this omission, the existence of an only partial "demilitarization" has been granted with regard to outer space, compared to the total one stated for the Moon and other Celestial Bodies; this partial demilitarization, though, only concerns the ban on placing nuclear weapons or any other kinds of weapons of mass destruction in orbit, as stated in article 4⁶.

This partial ban on nuclear weapons can be deduced not only from the abovementioned principles, which are stated in the Preamble to the Treaty as well as in the abovementioned articles of the Treaty itself, but also from the interpretation of the latter.

The fact that these regulations specify which kind of devices have been willfully banned, leads to the opinion that all other devices not explicitly prohibited are to be considered permitted⁷.

The United States, as well as other western countries such as France and Canada, have always been great supporters of the use of outer space for non aggressive military activities; on the other hand, the Soviet Union and the other Socialist States opted for the strict interpretation until the '60s, when 'Remote Sensing' satellites made observing the Earth possible, which led Socialist countries to approach the American version⁸.

Many authors have tried to broaden the scope of article 4, mainly referring to the Charter of the United Nations⁹, which was already mentioned in article 3 of the Treaty. The fact that the abovementioned article 3 also refers to international law seems to strengthen this interpretation. Article 39 of the Charter only prohibits those activities which may constitute a threat to peace or an act of aggression, and, at the same time, it allows military operations which are necessary to exercise the right of self-defense¹⁰. So what makes single uses of outer space legitimate or not is the peaceful or aggressive nature of the use itself, and not whether it is military or not.

Another issue which supports the western interpretation of this article, is the dual use¹¹ of civil satellites, which may also be used for military purposes, in certain cases of international tension.

Unfortunately, despite all these efforts made to interpret the "Treaty on principles", its provisions are still insufficient to prohibit certain behaviors.

The vagueness of this provision must be considered in light of the ways it was interpreted in the different political-social contexts; but banning all military activity doesn't seem very convincing.

1.2 Legitimacy of military activities in outer space and limitations deriving from the main Treaties

Treaties, bilateral and multilateral agreements play a very important role in the creation of rules concerning space law, as they are effective means of international collaboration.

The evolution of space law is diametrically opposed to the evolution of space technology: in fact, the first military satellite programs were carried out for surveillance purposes, to transport missile seeker systems, and for military communications and navigation purposes.

CORONA satellites were launched back in 1959, in total secrecy¹²; it was then, in this atmosphere of tension, that arose the need to regulate the exploitation of outer space, considered as heritage of mankind.

The "Treaty on Principles" was signed at London, Moscow and Washington, on January 27, 1967 and entered into force October 10, 1967.

In general, the Treaty states the same principles already outlined in the General Assembly Resolutions, explicitly referring to Resolutions 1884 and 1962 in its Preamble.

The provisions that place specific limitations on military activities in outer space and on Celestial Bodies are the following:

article 4, which binds all State Parties to undertake "not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction¹³, install such weapons on celestial bodies or station such weapons in outer space in any other manner".

It also states that the Moon and other Celestial Bodies shall be used exclusively for "peaceful purposes", and that "the establishment of military bases, installations, and fortifications, the testing of any type of weapons and the conduct of military maneuvers" shall be forbidden.

On the other hand, "the use of military personnel for scientific research and for any other peaceful purposes shall non be prohibited", nor the "use of any equipment or facility necessary for peaceful exploration of the Moon and other Celestial Bodies".

Article 12 states that “all stations, installations, equipment and space vehicles on the Moon and other Celestial Bodies shall be open to representatives of other States Parties to the treaty on a basis of reciprocity”.

The 1963 “Moscow Treaty”¹⁴ owes its existence to the Geneva Conference on Disarmament¹⁵; this Treaty introduced the issue of demilitarization of outer space and regulated it for the first time, by erecting barriers to the development of armaments in outer space.

The historical context of the Moscow Treaty was quite complex and characterized by a strong tension between States; the atomic bombings of Hiroshima and Nagasaki in 1945 and the nuclear testing carried out in the 50s awakened public opinion to the growing nuclear threat.

The Treaty was first signed by the nuclear forces, and by the other countries¹⁶ immediately after; by the end of 1973, it had already reached 106 ratifications. The only dissenting countries carrying out space activities were China, which opposed the nuclear monopoly of the three countries organizers of the Treaty, and France, which still conducts nuclear tests and follows the armament policy.

For what concerns demilitarization, the most important part of the Treaty is article 1, which bans all nuclear weapon test explosions, at any place under the jurisdiction or control of the States Parties¹⁷. Moreover, each of the States Parties to the Treaty undertakes to refrain from participating in any way in the abovementioned nuclear testing¹⁸.

It is important to recall how the Treaty does not include any provisions on weapon disposition control, due to the fact that the States thought they could count on using artificial satellites and new technologies for this purpose.

Although the “Treaty on the non-proliferation of nuclear weapons”¹⁹, signed at London, Moscow and Washington in 1968, doesn’t include any provision which explicitly refers to outer space, there is no doubt as to its validity on the matter; article 6²⁰ states that each of the States Parties undertakes to cooperate and to

reach an agreement so as to pursue nuclear disarmament.

The 1979 Moon Agreement²¹ broadened the scope of the ban on military use of celestial bodies; this treaty aimed at clearing up any problems left unsolved by the Treaty on Principles. The connection between article 4 of the abovementioned Treaty and article 3 of the 1979 Agreement is clear, since it reasserts the principle of exclusive use of the Moon and other Celestial bodies for peaceful purposes, confirming that placing in orbit nuclear weapons or any other kinds of weapons of mass destruction or establishing military bases on the Moon is forbidden, and prohibiting the testing of any type of weapons and the conduct of military maneuvers on the Moon, allowing for the use of military personnel and equipment for scientific research only. The innovations introduced by the Agreement are the following:

- the areas included in the ban, such as the Moon’s orbit, routes to the Moon, the Moon itself and other Celestial Bodies
- any threat or use of force or any other hostile act is forbidden: on the Moon, or using the Moon to harm the Earth, spacecrafts, personnel of spacecrafts or other manmade space objects. Unfortunately, the principle that states the use of the Moon and other Celestial Bodies exclusively for peaceful purposes is effective only for those countries that have ratified the Agreement, which are very few, and none of which is a nuclear force.

This agreement represents a model for international cooperation; it doesn’t simply reaffirm and apply rules already stated in the Treaty on principles and in previous acts regarding activities on the Moon, but it introduces innovations of great importance. Article 11.1 provides that the Moon and its natural resources be considered as Common Heritage of Mankind, reaffirming the principle of Common Heritage of Mankind for the exploitation of depletable resources, that must be managed through international agreements.

The main problem is that the States involved in space activities still lack will to create an international regime to regulate the exploitation of the Moon’s resources, and assure that all the benefits deriving from these

resources be equally dispersed between all States. Perhaps this can represent a further reason why many States have not ratified this Treaty.

2. Main satellite projects for defense purposes

2.1 Remote Sensing satellites

The military use of outer space for peaceful purposes has recently been growing; it has been investing in new development sectors including: surveillance systems, state-of-the-art traditional space weapons, anti-satellite satellites and long-range missile control, guiding and aiming.

After launching the first scientific satellites (such as Sputnik, Explorer, Vanguard, etc.), the United States started launching satellites for military purposes in 1959²²; the first ones were the **Corona “spy” satellites**²³, which **took photographs** of the most strategically relevant targets and then transmitted data to Earth, for elaboration and analysis, by means of a film-return capsule, which was retrieved in mid-air by an aircraft before hitting the ground. But the film-return capsule of the second Corona satellite was retrieved by the Soviets in the Barents sea; this gave them the opportunity to start carrying out their own surveillance activity: Zenit “spy” satellite, which flew under the guise of a research vehicle²⁴, was launched in orbit in 1962.

Very soon both sides started to feel threatened by the fact that this space race, which had military origins, could become offensive in nature, due to the fact that one of the two States could achieve such a high technological progress to be able to overwhelm the other.

All these events led to the signature of the 1967 Treaty on Outer Space by the United States and the Soviet Union; this treaty also aimed at limiting the militarization of outer space: it allowed all states to carry out operations for reconnaissance and surveillance purposes.

Satellites used for these purposes fall within the “spy” satellite category, and have the following aims:

- surveillance, in all weather and light conditions, of specific activities on the Earth surface, which may constitute a threat for

allied countries and for national or international security;

- reducing the efficaciousness of the enemy’s concealment and identifying its command, control and communications centers;

- alarming own national civil and military command centers so as to timely react;

- verifying that all Treaties drawn up between States be observed.

These instruments transmit photographs and TV images via radio, are capable of detecting ballistic missiles, during night or day, by means of sensors, and of spotting concealed military objectives.

They can also see through clouds and vary own orbital height to perform closer observation; they have such a high resolution that people can be seen clearly and military objectives can be distinguished from civil ones.

Earth Observation satellites also have great political and strategic importance, since they have often been used during international crises for security and defense purposes, allowing to control the current state of the disarmament process²⁵.

Military activity for remote sensing purposes cannot be considered espionage.

According to the law of war, gathering information is considered obtaining of military secrets with the aid of members of the enemy armed forces. Reconnaissance, on the other hand, although carried out in the same way, aims at civil or military objectives of great interest.

Espionage in peacetime, instead, means secretly acquiring a foreign country’s political, military or economical secrets²⁶.

International Law lacks any positive provision providing the definition of espionage²⁷; nonetheless, it is certain that military reconnaissance flights cannot be considered peacetime espionage, as they lack of “secrecy”, taking place in the airspace, and thus being observable²⁸. National regulations confirm this point of view, since they consider intelligence activity as indictable: in the Italian Criminal Code²⁹ the definition of the term “espionage” includes all those crimes concerning violation of the secrecy of information, especially with regard to state security; the German Criminal

Code instead does not stress the “secrecy of attaining” information, but the “secrecy of the information attained”.

Therefore, in principle, according to the Italian and German regulations, the use of reconnaissance satellites is to be considered legitimate, as they are information collection instruments.

The military sector is a special client: from a commercial point of view, it demands and pays for complex services. Structures used for military purposes, though, become strategic targets during wartime³⁰, which can be attacked and neutralized by the enemy forces; all infrastructures connected to the gathering, interpretation and distribution of data for military purposes, also become military targets.

An important aspect of remote sensing satellites which has recently arisen regards an eventual dual use of these satellites, which means a combined use, for both civil and military purposes.

In many space applications, as telecommunications, GPS and remote sensing, satellites are often used in a combined way, especially with regard to those activities where technology development has been financed by the Department of Defense³¹.

After the end of the Cold War, military satellites started to be used, to some extent, for civil purposes also; at the same time, the military started to attain data from commercial operators, instead of developing their own expensive systems.

HELIOS satellite is a project developed by France, in collaboration with Italy and Spain³²; it was launched to replace the SAMRO satellite, launched at the beginning of the 80s, and it's based on the experience achieved through the SPOT civil satellite. HELIOS and SPOT use the same platform and magnetic recorders, capable of storing hundreds of images.

This project regards the construction of two satellites: at first, only one of the two was launched in orbit, since the second was held in reserve, in case of difficulties with the first satellite, HELIOS 1 A³³.

HELIOS 2 A satellite instead, was launched on the 18th of December 2004; this is a strong symbol of European defense cooperation.

The program developed by three countries (France, Spain and Belgium) is a political-military instrument of crisis management, since it allows to use high-resolution images and infrared rays, to see clearly during night and day.

HELIOS 1 A is still operating, while HELIOS 1 B was taken out of service in October 2004. HELIOS 2 B is scheduled for launch in March 2008, but it could be launched earlier in case of malfunctioning of H. 2 A.

Success achieved by the HELIOS programs, developed through a cooperation between European countries, is an important step forward in European space policy, which might help Europe face the United States and China, which are investing more and more in the field.

Italy will not participate in the development of Helios 2, since it decided to focus on another project in cooperation with France. The Intergovernmental Agreement³⁴ between the governments of Italy and France was signed on January 29, 2001 in Turin; it aims at cooperating on the development of an Earth observation capacity which uses optical sensors and radars to develop the dual use system.

The Preamble to the agreement³⁵ defines the meaning of the term “dual use” as a satellite observation system for military and civil (meaning both institutional and commercial) purposes, based on French and Italian small satellite programs, respectively **PLEIADES** and **COSMO-SkyMed**³⁶; it is composed of an optical component including two satellites and the relevant ground functions, managed by France; a radar component including four satellites and the relevant ground functions, managed by Italy; and a user ground segment, jointly developed by the two countries³⁷.

The Department of Defense and ASI assume responsibility, towards the French partners and potential domestic and foreign users, respectively, for military, institutional and commercial needs.

Since the dual system may be used by different categories of users, as public, institutional,

private and commercial users, it must respect certain obligations, related to the needs of the Department of Defense. The Ministry of Defense's demands are considered top priority, more important than those of any other subject, apart from requests made by countries dealing with a crisis, particularly in "Very Urgent Cases"³⁸.

The success of this collaboration depends on timely and complete exchange of the information necessary for dual system cooperation³⁹.

2.2 Telecommunications satellites: SICRAL, the first Italian satellite system for military telecommunications.

Space communications systems are considered a mainstay of worldwide policy of peace.

After some pioneering activities carried out in the 60s, it is only at the end of the 70s that the Defense Administration focuses its attention again on the exploitation of outer space for national security and defense purposes.

In particular, the feasibility study for a classified communications satellite is undertaken thanks to the Air Force; this satellite is to be used for tactical communications by the Department of Defense, and as an alternative to traditional connection systems, in case of natural catastrophes and disasters.

The commitment of the Department of Defense in this sector leads to the Italian Classified Communications and Alarm System (SICRAL-Sistema Italiano di Comunicazioni Riservate ed Allarmi)⁴⁰, the first device that is totally planned, developed, and managed by the Defense Administration.

This project is developed together with another one, which uses satellite systems: the HELIOS project, a remote sensing optical satellite, designed by France in collaboration with Italy and Spain; the growing participation in these programs is a sign of the increased interest in the potential of outer space use for national defense and security purposes⁴¹.

The system has been placed in geostationary orbit⁴², and is made up of a satellite, a management and control center and sea-based and air-based ground terminals; therefore it provides a wide-area coverage of the Earth's

surface, as well as voice, video and data transmission on national territory, and the possibility to connect to forces engaged in operations abroad⁴³.

The fall of the Berlin wall changes the geo-strategic situation, and the current military needs which now demand for communications systems other than traditional ones; the latter aimed at supporting operational forces mostly on national territory, but the current needs regard dynamic systems, characterized by flexibility, integration between forces, timely reaction and transmission, mobility and interoperability⁴⁴. From an operational point of view, SICRAL is a "force multiplier"⁴⁵, a telecommunications system capable of supporting the Armed Forces in any part of the world where there is a crisis or tension or war which requests intervention and peace maintenance operations.

2.3 Anti-satellite satellites and anti-missile missile systems

In 1957 the presence of an innovative soviet vehicle in outer space causes the so-called "Sputnik shock" within US political and military bodies, a widespread sense of uncertainty for a threat believed to be insurmountable⁴⁶.

Only three years after the launch of the first artificial earth satellite, both the United States and the Soviet Union had already developed the first armament projects regarding weapons specifically aimed at neutralizing the enemy's satellites, to be placed on the terrestrial surface or in outer space.

The term "anti-satellite"⁴⁷ means any device capable of putting out of action or shooting down a vehicle in earth orbit.

Regulations are not very helpful in this case: there is no ban regarding anti-satellite satellites in article 4 of the "Treaty on principles", it only prohibits nuclear weapons and weapons of mass destruction in earth orbit; therefore, some experts believe it should be revised and this prohibition introduced.

The general principle of the UN Charter, which prohibits the "recourse to force" doesn't apply either, since the destruction of a military satellite by an anti-satellite system does not

constitute attack against the territorial integrity or the political independence of a State.

The idea that was becoming widespread within the two superpowers is that neither one could ever be capable of protecting own population, as according to the principle known as Mutual Assured Destruction (MAD): the development of these defense systems results in the fact that any nuclear conflict is avoidable only if the enemy's nuclear weapon capabilities be such that a mutual destruction is certain. **The ABM Treaty**⁴⁸ prohibits the deployment of nationwide defense systems against ballistic missiles, but allows, to a certain extent, the development and testing of fixed land-based radars, interceptor missiles and launchers.

It explicitly prohibits the development, testing, and deployment of sea-based, air-based, space-based, and mobile land-based ABM systems and ABM components.

Keeping this research's cost and strategic repercussions into account, US and USSR signed the Strategic Arms Limitation Treaties (**SALT I and II**).

The Strategic Arms Reduction Treaty (**START I**) was signed on July 31st 1991 between the US and the USSR and the **START II** on January 1993 between US and Russia. In the **SORT** Treaty, stipulated on May 2002, US and Russia agreed to a unilateral reduction.

2.4 The "American National Missilistic Defense" initiative and the Soviet Strategic Initiative

The previous statements on the benefits for mankind deriving from the exploitation of outer space for peaceful purposes become of minor importance after the statement of US President Reagan of the 4th of July 1982: on that occasion, he declares that the attention shall be focused on new action lines⁴⁹. The Strategic Defense Initiative (SDI) is nothing more than a four-layer defense system, capable of hitting enemy missiles in all phases of their trajectory⁵⁰: the first layer regards the boost phase, when a missile is launched, it should be detected by surveillance satellites and destroyed by laser-guided weapons placed in outer space; the second one is the "post-boost" phase, which occurs after the missile

has exhausted its boost phase, when it takes up its ballistic trajectory and starts releasing multiple warheads. During the last two phases, missile warheads are intercepted during their trajectory and brought back within earth's atmosphere by defense detection devices.

Despite all researches and studies carried out on all possible defense systems and weapons, SDI has never gone beyond the phase regarding the selection of weapons to use in the different defense layers.

The US Strategic Defense Initiative, also known as "Space Shield" or "Star Wars", has often been subject of political debate at both national and international level, due to the potential repercussions it could cause on worldwide balance between the State and to its effects on European security.

During the first stages of the Cold War, only the United States and the Soviet Union held ballistic missiles; at the end of this period, though, new countries approached this defense policy position, such as France, the UK, Germany, Bulgaria, Poland, Hungary, China etc.⁵¹.

Many of these countries, though, are politically unstable, therefore the risk that these devices could actually be used or acquired by terrorists arises.

On the matter, some technologically advanced countries are developing anti-ballistic defense systems, such as the Arrow System, designed by Israel, S300/400 by Russia and MEADS, jointly developed by West Europe and the US. But, apart from advanced countries, most of the other countries do not have the money to invest in these defense systems nor the technological know-how necessary to develop them.

Consequently, the world will be divided into two separate groups: one consisting of those countries who have developed a missile defense system and one of those who haven't.

On July 23rd 1999, US President Bill Clinton shakes the international community by announcing the **1999 “National Missile Defense Act” (NMD)**, making it in the policy of the US to deploy, as soon as is technologically possible, a national missile defense system, capable of defending the US territory against ballistic missile attack, whether accidental or deliberate.

Russian President Putin immediately opposes the NMD, claiming that it would constitute a violation of the Treaty on the Limitation of ABM systems, of the interim agreement and of the Protocol on the Limitation of Offensive Strategic Arms.

The NMD testing constitutes a serious infringement of the provisions of the treaties signed between the US and the USSR-Russia in the period going from 1972 to 1997.

On the other hand, the Soviet Union too on developed both active and passive defense measures, to prevent enemy attacks against the Soviet territory.

Soviet developments in the field of active Defense included air and ballistic missile Defense, similarly to the project presented by the United States.

The Soviet Strategic Defense Program (SSDP) included both active and passive defense measures; it provides continuous updating of the ABM system surrounding Moscow, adjustment of the Krasnoyarsk radar for ballistic missile detection and tracking, investments in technology research in the field of laser, kinetic energy and subatomic particle beam weapons, as well as the strengthening of passive defense, which consists of bunkers and physical protection of government members.

These defense measures provide immunity to the country, denying the enemy forces which have survived the first attack, any chance of destroying national targets.

This shows how important global defense is for Moscow, as it's a deep-rooted concept within Soviet doctrine and strategy.

In case of nuclear conflict, the offensive forces' task is to destroy, or cause damage to the enemy's command, control and communications system and to destroy or neutralize the largest possible quantity of the enemy's nuclear weapons.

On the other hand, defense forces have to intercept and destroy the enemy's weapon systems, before they hit their targets, and to protect the Party, the State, military forces and industries.

Therefore the Soviet defense system, apart from having been developed before the American one, also reflects and anticipates the defense model⁵² announced by Reagan; nonetheless, the Kremlin never stopped opposing the militarization of outer space.

2.5 Effects of the “Strategic Defense Initiative” on international law.

According to US President Reagan's concept, the Strategic Defense Initiative would have allowed to change the essence of the philosophy of discouragement, previously based on offensive weapons, to defensive weapons; this way it would achieve higher credibility and develop a less dangerous strategic asset than before⁵³.

Article III of the ABM Treaty states that every party undertakes not to deploy ABM systems or their components except that within two geographical areas: an area surrounding the country's national capital, for government protection purposes; and an intercontinental ballistic missile (ICBM) launch site, so as to grant the survival and retaliatory capacity of the country in case of attack.

The ABM systems deployment areas shall have a radius of maximum 150 km, and may hold no more than one hundred ABM interceptor missiles and one hundred ABM launchers.

The Treaty provides that each Party undertakes not to deploy, outside its national territory, ABM systems (article IX), and that each Party shall use national technical means of verification at its disposal, as surveillance satellites and radars (art. XII).

The Treaty explicitly bars ABM defense systems capable of protecting the entire national territory of both State Parties to the agreement.

Only few days after Reagan's speech, the Soviet Union started declaring that SDI constitutes a violation to the SALT agreements, and, in particular, to the ABM Treaty provisions that prohibit the development, testing, and deployment of space-based ABM systems and ABM components.

The United States responds to the charges by confirming that SDI is totally compatible with ABM obligations⁵⁴ on one side, and by referring to the principle of international law sanctioned by the 1969 Vienna Convention on the Law of Treaties on the other⁵⁵. The US accuses the Soviet Union of having infringed the abovementioned Treaties by constructing a new huge radar station in Krasnoyarsk, oriented towards inland regions and by developing a mobile ABM system.

Moreover, the US tries to legitimize the SDI program by insisting on the fact that it be for advanced technology research purposes, and by referring to article VII of the ABM treaty, which explicitly allows for modernization of ABM systems; according to a literal interpretation of the Treaty, though, this faculty should regard only the systems listed in article III⁵⁶.

Finally, December 13, 2001, under the Bush administration, the US decided to withdraw from the ABM Treaty. This strategy has often been criticized, since it could lead to a new arms race, involving not only Russia.

China is developing new types of missiles, the Dong Feng 31 and the Dong Feng 41, so as to achieve a credible minimum deterrence. The situation in Asia will become particularly alarming, due to Asian countries like India and Pakistan having nuclear weapons, and other countries which are about to pursue the nuclear option. There is an actual risk of nuclear proliferation, which is a source of instability that will further destabilize one of the most turbulent regions of the world.

An eventual realization of SDI would call into question especially the Outer Space Treaty, which tried to limit military activity in outer space, and to direct the use of this environment for peaceful purposes only. This treaty might not apply in case of laser weapons aiming at the Earth, or of anti-satellite arms since the treaty doesn't consider these types of weapons, which therefore are not prohibited.

Since it is impossible for chemical or laser Earth-based weapons to destroy these missiles, due to their speed, it seems necessary to use X or gamma rays, powered by nuclear explosions generating high-intensity roentgen ray beams; this clearly clashes with the provisions of the "Treaty on principles"⁵⁷, which explicitly prohibits to place any nuclear weapons in outer space.

3. Evolution of European Defense policy and the EU Commission's White Paper

The EU has recently realized how important outer space is, and is developing the space applications necessary to achieve its policy goals, such as the GALILEO project (a satellite-navigation and positioning system) and the GMES initiative (for surveillance, environment protection and security purposes).

The GALILEO system, essentially developed for civil, commercial use, will eventually be used for military defense purposes also. Surveillance services, mapping of the Earth's surface and telecommunications security will be necessary, since the European need for security is growing, also with regard to the broader concept of Defense.

The growing challenges in the field of security, and the dual use of space devices, allow us to reflect upon Europe's role in the space sector; on the matter, special attention must be paid to the quick development of the **Common Foreign and Security Policy (CFSP)** and the **European Security and Defense Policy (ESDP)**.

The green paper, prepared by the EU Commission in cooperation with ESA, aims at raising the most important issues and at identifying medium and long term options; comments made by interested parties help

develop an action plan, outlined in the White Paper.

The Green Paper defines the Common Foreign and Security Policy (CFSP) as the policy aiming at providing the EU with the capacity to act and decide autonomously, in sight of a global crisis management approach, including conflict prevention by civil and military means⁵⁸.

In the European military space sector there are five telecommunications satellite and three observation satellite programs, each based on own technology, which makes it difficult to achieve interoperability between them⁵⁹.

On the other side, technologies for civil and military purposes have many characteristics in common, therefore the European policy aims at combining all means and at developing a wholly European defense and security satellite system.

Obviously the security sector and military users have special needs; therefore it seems necessary to draw up protocols so as to meet the different needs, satisfied by multiple-use technologies.

The European Security and Defense Policy (ESDP) needs a priority access to space systems and services, due to their strategic capabilities and to the decision-making autonomy they provide.

Currently most information used by EU comes from satellites managed at national, bilateral or intergovernmental levels; it is therefore crucial to grant EU long-term access to strategic information, by supporting space infrastructures.

Space services contribute to increase security for citizens, by allowing to efficaciously verify that border and coast restrictions on illegal border-crossers and illicit trade be met; they also favor conflict prevention by keeping potential threats under control, and by identifying humanitarian crises when still in the initial stages.

No member State shall ever have the necessary means to satisfy all space capabilities by itself; therefore, this goal must be achieved through cooperation at EU level, for what regards telecommunications and observation satellites, satellite navigation and

positioning, global monitoring and signal intelligence⁶⁰.

For what concerns monitoring the Earth, most observations will be carried out by GMES services, with benefit for treaty compliance control, border surveillance, surveillance of sites and installations in critical situations, forecasting and monitoring of eventual EU crisis.

For what concerns signal intelligence, timely alarm and space surveillance, instead, Europe will have to develop tools capable of monitoring electromagnetic activities, of timely detecting missile proliferation activities as well as a space surveillance system, capable of providing the EU with an autonomous capability to detect and identify space objects⁶¹.

The Global Monitoring for Environment and Security (GMES) is a joint initiative of the EU Commission and of the European Space Agency⁶².

The GMES concept was initiated in 1998 by the EU Commission and a group of Space Agencies, with the aim of integrating institutional, scientific and industrial structures so as to assure consistency in information and to respond to policymakers' growing demands in an independent and reliable way, with regard to new international challenges, which go from environmental monitoring to crisis management, from peace-keeping operations to humanitarian and development aids.

For what concerns the space segment, there are several national or bilateral projects and systems that are currently active, such as: the Italian Cosmo-SkyMed initiative; the UK-German "Infoterra/TerraSar" project, aimed at developing next-generation Earth observation radar satellites; the French Earth observation program called Pleiades; the military observation satellite system called Helios II; and the Spanish Ishtar program. It has been suggested that some of the abovementioned initiatives be developed as part of the Earth Watch program.

At the beginning, the action plan on GMES focused on priorities requesting high-quality information, in particular with regard to climate changes and public health risks, to

grant a more responsible use of natural resources and a better management of territorial assets. On the matter, GMES services meet environmental priorities set by the Sixth environmental action program of the EU on climate change, nature and biodiversity, environment, health and quality of life, natural resources and waste.

Organizations participating in this initiative are the following: Eumetsat, the European Environment Agency, the European Space Agency together with national space agencies, the WEU Satellite Center, Environmental Ministries and Agencies of member States, Eurostat, research organizations, telecommunications and space (EUROSPACE) industries, value-added sectors (EARSC), and civil society organizations, such as NGOs and partnerships with other regions of the world.

GMES means Global Monitoring for Environment and Security: the term "security" appears due to the fact that environmental deterioration and a non-sustainable use of vital resources may lead to potential conflicts. GMES can therefore become an information collection instrument for conflict prevention purposes, in line with the so-called "Petersberg missions", outlined by the European Security and Defense Policy. The Amsterdam Treaty also considers the European need to develop own Earth observation systems to analyze and evaluate potential international crisis situations.

At this stage, the political relevance still regards the capability of providing early warning before embarking upon military intervention. A "serious request ..." was also made "...aiming at providing the EU with strategic knowledge (intelligence) in the future"⁶³.

The integration of the former WEU Satellite Center into EU is something to keep into account with regard to the GMES initiative's developments.

The GMES Forum was created to support the involvement of the stakeholder community, especially end-users, in the identification of future operational services. The Forum aims at considering current or planned initiatives to rally users and/or suppliers around the

different priority applications. The Forum has been a major element of the GMES Initial Period since it formed the platform where a broad range of users, suppliers, and service providers have met.

The initial period (2001-2003) of the program is now over and GMES has currently reached its stage of development and implementation, which will end in 2008. It will be necessary to achieve a core capacity, i.e. the initial set of services and the supporting components needed to deliver these services on an operational basis.

Conclusions

Even though the military aspect of space activities has been known since the beginning of space applications, the use of space systems for military purposes has only recently become widespread.

The US Defense is reorganizing its space structures to favor commercial use also, by developing a new integrated approach between national security and profit; Europe is about to do the same.

This integration involves investments, scientific and technology research and industrial applications, so as to call into question the peaceful use of outer space "carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development", monopolized by the richest nations.

The issue on how to establish solid legal guarantees for safeguarding peace and security in outer space appears now more relevant than ever: current concerns are more or less those of the past, only now they are more urgent and realistic than before⁶⁴.

Analyzing the conflicts which recently took place, we notice how, nowadays, the US and allied countries have to face a totally different situation compared to the Cold War: the enemy is unknown, and the political and military pressure is very high.

The arms race in outer space is currently taking place; this could affect the global strategic balance, cause the militarization on the Earth to increase, hinder the disarmament process and wipe out mutual trust between countries.

The military use of outer space is destined to increase in the future, with the development of new technologies and the increase of operational needs, which will eventually regard outer space also.

It is hard to say how the use of outer space will expand, but what is certain is that it will depend on how conflicts evolve, since conflicts have always been and will always be a part of human history.

The most direct way to safeguard the use of outer space for peaceful purposes is to strengthen multilateral agreements and treaties, through a peaceful and general use of outer space.

This can be achieved by suggesting the development of new treaties, or by updating and revising existing ones, especially now that drawing the line between military space activities, scientific research and commercial applications seems impossible; it is also necessary to grant free circulation of data between non-military users⁶⁵.

The analysis carried out shows how militarization constitutes a risk which regards political, institutional, ideological and strategic aspects, as well as local conflicts: only an integrated approach shall keep us on the right track, and allow us to achieve important results in the future.

NOTES

¹ Resolution 1884 of 17 October 1963, also known as the "no bombs in orbit resolution"

² CATALANO SGROSSO, "Demilitarisation of Outer Space", Proc. 35th Colloquium on the Law of Outer Space", 1992

³ BALLARINO-BUSTI, "Diritto aeronautico e spaziale", Milan, 1988. Cf. the stance of US Senator Albert Gore in UN-Doc A/C.1-PV 1289

⁴ VINCINEU, "Aspects juridiques de la militarisation de l'espace extra-atmosphérique", Colloque international sur la militarisation de l'espace extra-atmosphérique, Bruxelles, 1988, p.44 ; ZWAAN, « The (il)legality of the military use of Outer Space », ibidem, p.303 ; LAKSHMAN, « Prohibition of weaponisation of Outer Space », Proc. 28th Colloquium, on the Law of Outer Space 1985; MENTER, "Peaceful uses of Outer Space and national security", Proc. 25th Colloquium on the Law of Outer Space, 1982

⁵ CHRISTOL, "Arms control and disarmament in Space; the rough road to Vienna 1984", Space Policy, 1985; GORBIEL, "Some observations in the juridical essence of the 1967 Treaty's article 4", Proc.25th

Colloquium on the Law of Outer Space, 1982; GAL, "Activities on orbit and celestial bodies: two notions of peaceful purposes?", Proc. 28th Colloquium on the Law of Outer Space, 1985

⁶ Article 4, second paragraph of the Treaty on principles: "the moon and other celestial bodies shall be used by all States Parties to the treaty exclusively for peaceful purposes".

⁷ CATALANO SGROSSO, "Demilitarisation of Outer Space", Proc.35th Colloquium on the Law of Outer Space, 1992; BALLARINO, "Demilitarizzazione dello Spazio", in "Diritto dello Spazio: recenti sviluppi e prospettive" by Catalano Sgrosso, Rome 13-14 March 1992; GOROVE, "Study in Space Law: its Challenge and Prospects", 1997

⁸ GAL, "Military Space Activity in the Light of General International Law", in Proc. 44th Colloquium on the Law of Outer Space 2001; MONSERRAT FILHO, "Total militarization of Space Law: the future of the article 4 of the Outer Space Treaty", Proc.40th Colloquium of Outer Space, 1997.

⁹ UN Charter, S. Francisco 26 June 1945.

¹⁰ GOROVE, "Development in Space Law" The Netherlands, Martinus Publishers, 1991. The UN Charter supports this opinion, since it doesn't consider general military activity as illicit, prohibiting only threats to the peace and acts of aggression.

¹¹ Dual use of satellites = use of the satellite for both military and civil purposes; peaceful purposes = non aggressive activity

¹² PEBBLES, "The Corona project: America's first spy satellites", 1997

¹³ The treaty doesn't contain any clear definition of the terms "nuclear weapons" and "weapons of mass destruction", not even in the article itself.

¹⁴ The Moscow Treaty, signed on August 5, 1963, which is the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water (NTB), entered into force on the 1st of October 1963. By January 1st 2004 it had been ratified by 124 countries and signed by 10. In United Nations Treaties and Principles on Outer Space.

¹⁵ United Nations and Disarmament 1945-1970, UN Department of Political and Security Council Affairs, 1970. The Conference was held for the first time on the 31st of October 1958, with the participation of the US, the USSR and the UK, which aimed at achieving general and total prohibition of nuclear testing.

¹⁶ Italy ratified the Treaty with the law number 1147 of October 12, 1964

¹⁷ The treaty prohibits nuclear explosions in the atmosphere, beyond its limits, including outer space and under water, including territorial waters or high seas, or in any other environment, if they can cause radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control the explosions were conducted.

¹⁸ "Each of the Parties to this Treaty undertakes furthermore to refrain from causing, encouraging, or in any way participating in, the carrying out of any

nuclear weapon test explosion, or any other nuclear explosion, anywhere which would take place in any of the environments described, or have the effect referred to, in paragraph 1 of this Article”.

¹⁹ The Treaty on the non proliferation of nuclear weapons, signed on the 1st of July 1968, entered into force March 5, 1970, and ratified by Italy on April 24, 1975 by law number 131.

²⁰ Article 6: “Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.”

²¹ Known as the “Moon Treaty”, signed on the 18th of December 1979, entered into force July 11, 1984. By January 1st 2004 the treaty had been ratified by 11 countries and signed by 5 countries; “United Nations Treaties and Principles on Outer Space”, United Nations publications, 2000.

²² CHRISTOL, “Gathering and dissemination of space-based data in time of armed conflict”, Proc. 47th Colloquium on the Law of Outer Space, 2004.

²³ Corona “spy” satellites’ real purpose was conducting photographic reconnaissance, but they were publicly included in the NASA “Discoverer” program, which was a cover project.

²⁴ The Cosmos satellite program, for scientific purposes only, was the cover for the Zenit satellite.

²⁵ CATALANO SGROSSO, “Aspetti giuridici del telerilevamento”, “Diritto dello Spazio: recenti sviluppi e prospettive”, by CATALANO SGROSSO, Rome, March 13-14, 1992, p.152.

²⁶ This definition omits to specify “on this country’s territory”, which was included in the 4th Aja Convention.

²⁷ KISS gives a non accurate definition of espionage: “the action of an individual attempting to acquire foreign State secrets, to be used by own country”. « Repertoire de la Pratique Francaise en Matière de Droit International », Paris, 1969, Vol.5^o p. 94.

²⁸ HEILBRONNER, “Der Schutz der Luftgrenze in Frieden”, Koln, 1972.

²⁹ Criminal Code, article 256: “any person who acquires confidential information, which must remain confidential, in the interest of state security or anyway in the State’s domestic and international political interest, commits information crime, as in obtaining of information regarding State security”.

³⁰ BOURBONNIERE, “Radarsat-2 regulatory issues and international law perspectives on commercial remote sensing and military operations”, 44^o Colloquium on the Law of Outer Space, 2001, p. 258.

³¹ LEE, “Military use of commercial remote sensing data”, Proc.44th Colloquium on the Law of Outer Space, 2001.

³² HELIOS 1 A is a project developed by France (79%), Italy (14%) and Spain (7%).

³³ HELIOS 1 A was launched in helio-synchronous orbit on July 5th, 1995; Helios 1 B in December 1999.

³⁴ G.U. N°25, 31st of January 2004

³⁵ Convention for the COSMO-SkyMed program between ASI and SGD/DNA, point 8.

³⁶ Point 8

³⁷ Preamble to the Convention, point 9.

³⁸ article V, paragraph 1 of the agreement

³⁹ article IX, paragraph 1.

⁴⁰ The system operates in the UHF, SHF and EHF/ka bands. It has been active since May 2001, and was launched from Kourou (French Guinea) on February 8, using an Ariane rocket.

⁴¹ BUONGIORNO, “L’importanza militare dello Spazio: difesa e politica spaziale nazionale”, RIVISTA MILITARE, N°7/1990

⁴² Geostationary orbit = circular orbit having a radius of 36000 km

⁴³ FRANCESCO IANNUZZELLI, “Satellite SICRAL, Italia in guerra anche dallo Spazio”, <http://www.peacelink.it/tematiche/disarmo>.

⁴⁴ NAZZARENO CARDINALI, “Le telecomunicazioni militari nello Spazio”, www.adnkronos.com.

⁴⁵ GIORGIO RAINO, “Il ruolo dello Spazio nelle strategie militari”, RIVISTA MILITARE, n° 2/2002

⁴⁶ FEDERICO ZAMPARELLI, “Diritto internazionale e attività militari nello Spazio extra-atmosferico”, Rome 1998, p. 163.

⁴⁷ Anti-satellite, known as ASAT, Anti-Satellite System

⁴⁸ Anti Ballistic Missile (ABM) Treaty, signed between the US and the USSR on the 26th of May 1972, entered into force on the 3rd of October 1972.

⁴⁹ This initiative, instead, was presented by US President Reagan during a speech on the 23rd of March 1983. New York Times, March 24, 1983, p. 20.

⁵⁰ PRINCE, “SDI: Gamble, Salvation or what?” Defense attaché n° 2, 1987, p. 18

⁵¹ HASHIMOTO, “Missile Defense and International Law”, ..“In 2002, there are already 46 countries which hold ballistic missiles”, 45^o Colloquium on the Law of Outer Space, 2002, p. 149.

⁵² ZAMPARELLI, “Diritto internazionale e attività militari nello Spazio extra-atmosferico”, Rome, 1998, p. 238.

⁵³ BARTOLUCCI, “Scudo Spaziale: proposta di una strategia antinucleare”, Informazioni Difesa, 1984, p. 21.

⁵⁴ TITO BALLARINO, “Demilitarizzazione dello Spazio”, “Diritto dello Spazio: recenti sviluppi e prospettive”, by CATALANO SGROSSO, Rome, March 13-14, 1992, “Also US President Reagan, in his 1983 speech, had declared that SDI was compatible with their obligations”.

⁵⁵ Article 60, 1st, *inadimplenti non est adimplendum*.

⁵⁶ Article III: “a deployment area having a radius of 150 km, with 100 launchers, and 2 large radars”

⁵⁷ CATALANO SGROSSO, “Demilitarisation of Outer Space” in Proc. 35th Colloquium on the Law of Outer Space”, 1992, p.330.

⁵⁸ Green Paper, May 30th, 2003, p. 24

⁵⁹ EUROPEAN COMMUNITIES, "Research for a secure Europe- report of the group of personalities in the field of security research", in www.europa.eu.int, Luxemburg 2004.

⁶⁰ V. MONTUORO, "La politica d'intelligence nell'Europa comunitaria", in *Informazioni della Difesa* 4/2004, p. 26.

⁶¹ A. POLITI, "Perché è necessaria un'intelligence policy europea?", in www.sisde.it, 10 January 1998.

⁶² White Paper, EU Commission, Brussels, November 11, 2003, p. 17

⁶³ (Statement to the EU General Affairs Council, 20.XI.2000)

⁶⁴ MONSERRAT FILHO, "Acts of aggression in Outer Space", 44th Colloquium on the Law of Outer Space, 2001, p. 365.

⁶⁵ J. W. HEATH, "The vanishing horizon: will the asymmetric battlefield make space-based weapons a reality?", Proc.45th Colloquium on the Law of Outer Space, 2002, p 206.