
MILITARISATION OF OUTER SPACE – SELECTED PROBLEMS

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INTRODUCTION

War and peace are eternal problems of humanity, where the scientific and technical progress increases not only the possibilities of destroying man but also his environment. Despite the awareness of the international community about the destructive power of the world's arsenals of weapons of mass destruction and measures for disarmament, there is a perpetual arms race. The arms race is not only limited to the domination on the ground, on water, under water and in the Earth's atmosphere, but it is also carried out in outer space.

The ongoing scientific and technical progress enables space exploration in areas such as telecommunication, navigation, meteorology. Outer space is also associated with a progressive militarisation where servicemen seek to place, next to spy satellites, combat platforms equipped for example with laser, molecular or electromagnetic weapon.

This article aims at indicating a significant problem from the point of view of international security, i.e. militarisation of outer space and the

ongoing race for domination with the participation of the United States, the Russian Federation, China and India.

I. SPACE EXPLORATION

The nineties of the twentieth century are considered as a breakthrough in the international and national security, where the collapse of the bipolar division of the world along with its consequences justifies the need to find new ways to reinforce security.

“Only lay people may think that the end of the confrontation between two opposing systems stands for entering a phase of a long-term, unthreatened peace. When we look at the world map and analyse the relations between the countries, it is easy to perceive the flickering embers of a conflict that can quickly turn into fire covering large areas. Misunderstandings, silenced for years, may revive at any time”¹.

The world has indeed faced the threats which have been previously controlled and channelled by the then powers. Furthermore, there appeared new and previously unknown risks. The international community currently pays more attention to non-military risks, which does not mean that the military threats are ignored.

In terms of our analysis, it merits noting a group of cosmic threats that are connected with physical and chemical processes taking place in the closer and further space surrounding Earth². The awareness of the infinity of the space around us limits the possibility of understanding it, which results mainly from the technological barriers. The undertaken studies show that the universe has a big impact on life on Earth which constitutes the source of a number of threats that may take place on our planet and influence its inhabitants and their natural environment.

¹ Z. Ścibiorek, *Wojna czy pokój?*, Wrocław 1999, p. 100.

² K. Ficoń, *Inżynieria zarządzania kryzysowego. Podejście systemowe*, Warszawa–Gdynia 2007, p. 83.

The most common threats generated by the extraterrestrial space are, for example³:

- 1) cosmic radiation, hard, soft, harmful, piercing, depending on many factors which have not yet been thoroughly analysed,
- 2) the intensity of solar radiation, its spectrum and penetration and its impact on the climate and the conditions of life on Earth,
- 3) the statistical possibility of some objects from the space colliding with Earth, the influence of such a collision on the civilization and environment,
- 4) the change in the intensity of magnetic and gravity fields both of Earth itself as well as of our star in the entire solar system,
- 5) the impact of the so-called sunspots and various sources of radiation and thermonuclear explosions on the Sun,
- 6) the possibility of meeting an alien civilization or any signs of extraterrestrial life and the associated unpredictable biological, social and civilizational consequences.

Outer space, especially in the perspective of the solar system, is also a great prospect and hope of mankind to improve the standards of life on Earth, to increase the sense of security in such areas as raw materials and energy and the chance to carry out researches as well as to systematically develop the scientific and technical progress⁴. It should be kept in mind that the cosmic space has a very strong influence on the formation of Earth's climate, all weather effects, as well as on geophysical processes (including magnetic and tectonic ones).

“Bearing in mind the safety of life on Earth, a considerable risk is posed by the asteroids. The scientists warn that the leaders of the most developed countries should come up with a plan of defence against the threat to Earth from the space. At the same time they agree on one thing: unless there is a real threat and a possible asteroid has been spotted, humanity will not prevent any disaster in the space”⁵.

³ Ibidem, pp. 83–84.

⁴ K. Ficoń, *Inżynieria zarządzania...*, p. 83.

⁵ Czy uda się zapobiec zniszczeniu Ziemi, „Panorama 21. Wiek” 2012, p. 14.

“The analysis of the information on the directions of the studies on new weapons provides a very disturbing picture. It turns out that the existing weapons of mass destruction whose destructive power has not been yet entirely revealed have their very dangerous successors. There are being created new, even more dangerous weapons which can be used on the tactical level”⁶.

When creating a vision of future war, it merits pointing out the directions of the undertaken studies.

The development of technology and significant transformations in today’s battlefields allowed for creating the conception of the military use of space.

Highly developed countries focus on improving air and space resources, including high-precision missile warships, military satellite systems, air shock (equipped with precise means of destruction and electronic warfare), and on creating information field that uses air and space combat platforms⁷.

A contemporary battlefield consists mainly in introducing modern systems of destruction with land, sea and air use. There are also the plans to use them in cosmic space. Many countries have departed from the quantitative conception of developing the arsenals for the benefit of qualitative transformations. At the end of the twentieth century this process was observed in two areas:

- 1) miniaturization of nuclear weapons that can be used on the battlefield,
- 2) the development of space programs which allow to use cosmic space in military operations.

Modern armed forces depart from the traditional forms of warfare where the key to the victory are surgical strikes in the sensitive infrastructure. Therefore, the conception which is likely to become increasingly popular will be the so-called non-contact warfare, carried out, among others, from space with the use of orbital combat platforms.

⁶ Z. Ścibiorek, *Wojna...*, p. 58.

⁷ H. Sołkiewicz, *Siły morskie w wojnach szóstej generacji*, „Przegląd Morski” 2008, No. 6, p. 13.

The scientific, technical and technological progress causes that the interest in space being the theatre of war is of concern to many countries.

“Space intelligence systems, early warning systems, systems of navigation, communication, command and control of military forces, as well as the systems of topographic, geodesic and hydrometeorological security create a global information field. It can be used both by the highest state authorities as well as directly on the battlefield”⁸.

The intelligence, communication, scientific, geophysical, astronomical and meteorological satellites used by the state are not typically considered a weapon, nor do they constitute a source of attack in space or from space (in certain situations, however, they can be used for that purpose):

- 1) intelligence satellites warn against missile attacks, they make photographs of the systems being of interest for the party who holds them, they control military operations and intercept the communication between various objects. Such intelligence is carried out in peacetime, crisis and war. It is considered as the most important type of intelligence and it is conducted at the strategic, operational and tactical levels. The purpose of intelligence satellites is to provide the data on the economic and military potential of the enemy, the structures, equipment and dislocation of the armed forces, as well as the extent to which a given country is prepared for a defence. In addition, such intelligence provides the information about the objects which are of interest for the operations carried out by the country that holds such satellites. In view of their purpose and installation, intelligence satellites are divided into:
 - imagery intelligence (IMINT), including photographic one (PHOTINT),
 - signals intelligence (SIGINT), including COMINT and ELINT,

⁸ Ibidem, p. 12.

- measurement and signature intelligence (MASINT),
- ocean intelligence satellites,
- early detection and warning satellites,
- 2) communication satellites receive signals from a ground station, they reinforce it and send it back to Earth. Such a signal can be received throughout the continent, as well as in a specific area,
- 3) scientific – research satellites,
- 4) geophysical satellites permit to locate disasters, detect natural resources, identify forest growth, etc.,
- 5) astronomical satellites provide information on the areas located much further than the most distant regions of space visible from Earth. They record the radiation from distant galaxies and stars, including gamma rays, ultraviolet, X-ray and infrared radiation,
- 6) meteorological satellites are used to study the upper layers of the atmosphere and transmit data – via radio and television – about the current state of the weather on the globe, especially in the areas that are difficult to reach. They allow meteorologists to develop long-term weather forecasts.

The abovementioned satellites are conducive to maintain the strategic stability, they deprive the opposing party of the possibility to carry out a surprise attack, for example, with the use of the weapons of mass destruction. Therefore, the existence of military satellites in cosmic space does not give rise to the thesis that this space has already been militarised. Such a view is undoubtedly correct, yet the fact of using military satellites in the undertaken researches indicates that in the near future they will become a part of the military component of cosmic space.

It should be emphasised that the respective countries attach great importance to satellite intelligence. Its destruction paralyses not only the activities of the armed forces or the intelligence but the whole infrastructure of the state. On account of the high costs it is practised by very few countries. “The primary objective of satellite intelligence is to acquire data on the opponent’s economic and military potential, the dislocation of his armed forces and the extent of the preparation for offensive and defensive operations. Such a reconnaissance is a prerequisite for acquiring accurate and timely data without which it is virtually impossible to prepare and

conduct modern military and non-military operations at the strategic, operational and tactical levels”⁹.

“Modern satellite intelligence includes land, sea, air and cosmic space. It has a significant advantage over classical intelligence because it does not violate the state sovereignty under the international law. The satellites placed in cosmic space transmit millions of pictures from Earth’s surface. [...] The enormous number of data gathered by this global observation network is stored in the information resources of the intelligence agencies and other authorised entities. [...] The present level of the development of spy satellites is so high that they are capable of maintaining an effective identification of any areas of the globe in all weather conditions and at any time of day in real time”¹⁰. Satellite intelligence is carried out in peacetime, in crisis and during war

“The eye of spy satellites is now able to see through the clouds, it can track the terrain at night in adverse weather conditions, even during dust storms; it also goes beneath the surface of the ocean which hides the atomic submarines (the carriers of missiles with nuclear warheads – the author’s note). The analysts gather and evaluate civil information on harvesting, water supplies and even on the number of people buying in shopping centres or on cars and trucks in traffic.

Since the late 60s of the last century some spy satellites have been sent into a geostationary orbit, which provides the possibility of a continuous tracking of a single piece of Earth’s surface. A significant height of that orbit nevertheless lowers the level of the reconnaissance of the details of the observed terrain. Therefore, the satellites dedicated to optoelectronic researches remains on the lower orbits, which is inconvenient in so far they are not continuously placed over the observed area. They are capable of a continuous observation, yet only for a several dozens of minutes. The observations carried out by ‘cosmic eyes’ must therefore be complemented by research flights”¹¹.

⁹ A. Żebrowski, *Ewolucja polskich służb specjalnych. Wybrane obszary walki informacyjnej*. (Wywiad i kontrwywiad w latach 1989–2003), Kraków 2005, p. 87.

¹⁰ *Ibidem*, p. 87.

¹¹ P. Gajda, *Zbyt ciekawe oczy i uszy na orbicie Ziemi*, „Panorama 21. Wiek” 2012, pp. 22–23.

To give an example, NROL – 49 spy satellite was launched on 20 January 2011 from the Vandenberg base by means of Delta IV – Heavy missile. Proton M/Briz M launched the Kosmos – 2473 satellite to a geostationary orbit on 20 September 2011, and the Russians officially reported that this was another military satellite used for communication. It is being led by a special centre GICIU KS in Krasnoznamensk. According to the analysts, this is a new type of Garpun (14F136) which will enable to transmit the signal from the spy ships carrying out optical measurements and to replace obsolete Geyser satellites from Potok programme that stopped flying in 2009. The Russians, however, are still struggling with the financial problems, making it difficult to work on the programme. Whether this last piece of information is not intentionally misleading, is not known. Indeed Vladimir Putin puts great emphasis on space technology”¹².

“It is science and technology that provide the opportunities for the development of modern weapons, not less dangerous than nuclear weapons, based on other physical principles, including the potential to be placed in the cosmic space. It is laser weapon of elementary particles, of a high frequency, and the weapon constructed in accordance with the principle of electromagnetic energy, as well as other weapon that can result in such destruction of humanity which even escapes a theoretical evaluation”¹³.

Weapons placed in cosmic space can be geared to offensive and defensive operations. This is a weapon of a global nature. When located in cosmic space and equipped with manoeuvring systems, it has the ability to attack any country on the globe. Apart from the ground targets its striking power can be oriented at the objects in the cosmic space, as well as in the atmosphere. Due to its purpose, it is ready for immediate use.

It is hard to imagine any autonomous military operations in space, yet it is equally difficult to imagine any military operations on Earth without the use of the military weapons placed high above its surface¹⁴. It is worth mentioning that in the cosmic space there are both military and civilian

¹² Ibidem, pp. 22–23.

¹³ Joint publication, *Wojny gwiazdne, iluzje i niebezpieczeństwa*, Warszawa 1985, p. 5.

¹⁴ W. Krzeszowski, *Kosmiczny teatr wojny*, „Myśl Wojskowa” 2001, No. 6, p. 25.

satellites of diverse purposes, reflecting the strategic importance of this area and justifying the reasons for the interest in this area.

As can be seen from the experience of past wars, each sphere of human activity is transformed into armed struggle after the following conditions are met¹⁵:

- 1) the level of science, technology, economics and social conditions allows to create and prepare the necessary forces and resources to the comprehensive use of the new field,
- 2) the new sphere provides efficient execution of current and anticipated new tasks of armed struggle,
- 3) the number of appropriate forces and resources is sufficient to perform independent strategic tasks.

“In the case of cosmic space, the first two conditions have been already met. A high probability of the fulfilment of the third condition allows to make the thesis that the near future will bring the possibilities of creating a separate theatre of war in outer space”¹⁶.

II. SPACE THEATRE OF WAR

“The theatre of war is considered as the vast areas of land, sea and air (including cosmic space) with specific physical – geographic characteristics which may be the platform for military operations between coalitions or some countries of these coalitions. The theatre of war may be perceived as one or more theatres of war [...]. The theatre of war can cover the entire globe, including cosmic space”¹⁷.

“Space theatre of war includes the co-location of intelligence systems, situation monitoring, navigation, communication and command as well as retranslation which protect the combat use of military forces. It also includes terrestrial space infrastructure used to launch space devices (vehicles) and control their flight as well as to receive the relevant informa-

¹⁵ Ibidem, p. 25.

¹⁶ Ibidem, p. 25.

¹⁷ *Leksykon wiedzy wojskowej*, Warszawa 1979, p. 452.

tion from them, thus protecting military operations and exploitation of space technology”¹⁸.

It should be noted that the experiments carried out with different types of satellites, ships and space stations already allowed to indicate their suitability for military operations. The researches focused on the military possibilities of intelligence, telecommunication, meteorology, navigation and surveying satellites.

Apart from the United States and the Russian Federation, there are 18 other countries which actively participate in the exploitation of space, including, among others, Brazil, China, France, India, Japan, South Korea, Germany, Pakistan and the United Kingdom¹⁹, as well as the European Union.

The countries that carry out the most advanced researches on the exploration of outer space for military purposes are the United States, Russia and People’s Republic of China.

These are the Chinese who most speedily implement their programme of militarisation of the space, since in 2005 they sent their astronaut into an orbit. In 2007, they managed to shoot down their own satellite. This sparked protests coming from all over the world, and mostly from Washington. The reason for that was the fact that there appeared another competitor who acquired the ability to carry out military operations in cosmic space. In this situation China is not able to stop the possible intervention of the Pacific Fleet, but it can effectively reduce the possibility of the Americans to communicate over long distances and to use satellite tracking. It suffices to destroy a number of satellites used by the U.S. Army (the American fleet in the orbit consists of more than 400 satellites).

“Since mid-August 2011, there is a new Chinese satellite in the orbit around Earth, which aims at observing Earth, in particular the oceans. The satellite is used for marine weather forecasts and to track the dynamic environment of the ocean, i.e. wind, wave height, sea level changes. These observations are intended to help in the prevention of maritime disasters”²⁰.

¹⁸ H. Sołkiewicz, *Siły morskie...*, p. 14.

¹⁹ W. Krzeszowski, *Kosmiczny teatr...*, p. 37.

²⁰ *Mozaika aktualności*, „Panorama 21. Wiek” 2012, p. 13.

It should be noted that currently the best conceptions of space flight are being developed by the Chinese. "As a result of the access to the Russian licence to Shenzhou ship and Salut / Mir satellite modules, the Chinese tend to target the strategic objective, namely to build a small Tiangong station, weighing 8.5 tonnes (Heavenly Palace). In 2012, there will be two ships sent in the direction of the said station, thus marking the beginning of the orbital station, i.e. Shenzhou 9 and 10. By 2020, the Chinese plan to build their own orbital station which does not vary much from the Russian Mir space station, but weighing only 60 tonnes (Mir weighs 137 tonnes). The strategic direction of the Chinese development of the space exploration is Station – Moon – Mars"²¹.

Washington is determined to maintain its dominance in orbit and anxiously observes space weapon tests carried out by other countries, because it is itself considerably vulnerable to an attack on its satellites.

In February 2008, the United States shot down their own satellite with its SM-3 missile. They also have missiles to destroy targets in orbit, fired from aircraft at high altitude. The Americans also conduct active research on laser weapon which can be used to destroy the enemy satellites without using missiles. It should be noted that there is no defence against laser weapon. For example, already in 2001, the engineers from Lockheed Martin and Boeing conducted successful tests with laser weapon aimed to destroy satellites. Thus, Washington is quite ahead of other countries. It should be noted that similar researches are being carried out by China and Russia.

It merits pointing out that the position of the United States in the fight for dominance in cosmic space is constantly evolving due to the emergence of new actors. The Americans, however, take steps to maintain their position, including the development of satellite intelligence (identifying, tracking, early detection), communication (GPS) and missile defence systems. The existing network of more than 30 GPS satellites can be used both for data transmission and as a device tracking and missile guidance. The missile defence systems serve a dual role:

- 1) as an early warning system,
- 2) as a system to track enemy ballistic missiles.

²¹ P. Gajda, *Kosmonautyka na rozstaju dróg*, „Panorama 21. Wiek” 2012, p. 72.

An example of the race for militarising cosmic space is the National Space Policy of the United States of America, which constitutes a document setting out the American priorities concerning cosmic space. This policy was for the first time formulated in 1996 during Bill Clinton's presidency. A similar document was also adopted on 31 August 2006 by George W. Bush. The purpose of the National Space Policy is the use of extraterrestrial space to carry out the foreign policy of the United States and to put the emphasis on the importance that the cosmic space has for the U.S. national security. The amendments to this document implemented by George W. Bush assume the total domination and active defence of the American interests in the cosmic space. This could mean that the United States will seek to block the operations of other countries in space by means of the policy of deterrence and blocking the flow of technologies which allow military exploration of the cosmic space. In practice this stands for the development of weapons programmes – with an emphasis on creating a coordinated defence based on missile systems and early warning systems. At this point, one can use Toffler's approach to twenty-first century geopolitics, namely:

- 1) who rules in the space around Earth, subdues Earth,
- 2) who rules the Moon, is in the possession of the space around Earth,
- 3) who exercises authority over L4 and L5 (the place in space where the gravitational pull of the Moon and Earth are equal), governs Earth – Moon system.

An important role in the militarisation of space is played by the private sector which enters slowly into cosmic space. One example of the civil use of space technology is the GPS system. The revenue from GPS-related services is counted in billions of dollars, and by 2020 it will be counted in tens of billions of dollars. Similar systems are built by Russia (Glonass) and the European Union (Galileo). It should be kept in mind that GPS is a system developed by the army and it constitutes the basis of the so-called smart weapons. For example, over 70% of the bombs and missiles used in Iraq in 2003 were equipped with this system. The possible impact on the satellites supporting these systems deprives all their users of the crucial tool.

“The development of new technologies will result in an increasing number of countries which participate in the cosmic space. It is even more

true when we consider the fact that, without any exaggeration, the war in space has been of interest for a long time. The battle for the roof of the world continues, and despite a number of international agreements, it will continue, and the militarisation of space will support the war on Earth. There will be not only satellites and intelligence systems in the cosmic space, but also the most advanced weapons against the objects located on our planet”²².

It is a fact that each country with the potential to use satellite resources, will gain an advantage over anyone who will not have such a possibility. Therefore, the availability of a sufficient amount of military forces in outer space is a key element of the current as well as future strategies.

The forecasts associated with the development of the satellite systems in terms of technical and military capabilities allow to specify the main directions of the militarisation of the cosmic space and to define the tasks to be implemented by means of using the outer space²³:

- 1) satellite protection of the military operations on Earth,
- 2) combating the opponent’s individual satellite systems,
- 3) galvanizing support from the space of the armed forces on Earth,
- 4) conducting independent military operations in the extraterrestrial space.

Currently there is a considerable number of satellite systems in the cosmic space which allow to secure military operations. These systems are for example used by the armed forces during peacekeeping missions (special forces, military and civilian police forces, institutions involved in the fight against drug plantations, combating terrorism, civil peacekeeping missions etc.). The nature of contemporary armed conflicts causes that satellite protection of military operations on the ground, in the air or at sea is a prerequisite for the effective functioning of the armed forces.

According to the official information provided by the representatives of the United States and the Russian Federation, these countries have mastered the technique of destroying ballistic missiles of enemy satellites. It is understood that other countries may also dispose of similar means.

²² H. Ścibiorek, *Wojna...*, p. 59.

²³ W. Krzeszowski, *Kosmiczny teatr...*, p. 37.

The international law prohibits the establishment of military bases, fortifications, military manoeuvres and testing any types of weapons on celestial bodies (the Moscow Treaty Banning the Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water as of 1963), extended by the Treaty of 1967 with the provision to prohibit the placing on the Earth orbit objects carrying nuclear weapons or any other kinds of weapons of mass destruction. “In 1972, the United States and the former Soviet Union signed Limitation of Anti-Ballistic Missile Treaty, thereby committing to comply with the prohibition on creating, testing and deploying – and consequently using – any means in the outer space with the potential to destroy intercontinental ballistic missiles during their flight in orbit around the Earth. Compliance with this prohibition, however, depends entirely on the will of the signatories, and its control is extremely difficult”²⁴. Therefore, given the level of the development of space technology, it can be assumed that in the near future there will be special platforms in the outer space used as the carriers of weapons designed to destroy the targets on land, in the air and at sea. It is a very tempting prospect, yet there arise doubts as to the reduction of military operations only to the cosmic space. What should be therefore kept in mind is that any action aimed at the destruction of any of the satellite systems can result in the escalation of hostilities on Earth due to the fact that the number of military resources in the outer space will be negligible.

The ongoing development of military resources in the outer space and the existing gaps in the international law regulations concerning space law result in the fact that the concept of the cosmic theatre of war is gradually realised.

“Currently, it is difficult to unambiguously identify the boundaries of cosmic theatre of war, because no one has yet defined the limits of the outer space. Given the changes in the physical properties of outer space that emerge along with the increasing distance from Earth and modern deployment of various means in outer space, it is most appropriate to limit the cosmic theatre of war within the area of Earth’s activity, namely within a distance of about 925 thousand kilometres from its centre”²⁵.

²⁴ *Ibidem*, p. 38.

²⁵ *Ibidem*, p. 39.

Having in mind the current possibilities of deploying military means in outer space which can be referred to as the close theatre of war in the cosmic space, one can distinguish two theatres of military operations:

- A) the first one, referred to as the theatre of military operations, should cover the area of extraterrestrial space from its lower boundary to about 40 thousand kilometres from the centre of Earth. Thus, it would cover the vast majority of Earth's artificial satellites, including military strategic satellites in geostationary orbit. Due to considerable differences in the physical properties of the outer space, resulting from the distance from Earth, it would also be expedient to further divide the area into two parts, separated at the height of about 500 kilometres²⁶.

The advantages of the first part of the extraterrestrial theatre of war are mostly the following²⁷:

- 1) high efficiency in the observation of different areas of Earth,
- 2) relatively good possibilities to detect, intercept and destroy the carriers and their cargos,
- 3) high efficiency of using fireless weapon to destroy ground targets from the outer space,
- 4) low power radio waves needed to carry out information activities.

The fundamental drawbacks of this area are the following²⁸:

- 1) a considerably high loss of power to manoeuvre, compared with other areas of the theatre of war, what significantly limits the possibilities of spatial manoeuvre by orbital means,
- 2) the ease of detecting and capturing orbital means by those on ground,
- 3) the need to possess a number of orbital means to ensure continuous observations of Earth surface.

The advantages of the second part of this theatre are the following²⁹:

- 1) virtually unlimited movement time of the orbital means in the orbit,

²⁶ Ibidem, p. 39.

²⁷ Ibidem, pp. 39–40.

²⁸ Ibidem, p. 40.

²⁹ Ibidem, p. 40.

- 2) a reduced loss of energy for manoeuvre with the increased altitude of the orbit,
 - 3) a smaller number of orbital means necessary to create a system of continuous monitoring of Earth.
- B) the second theatre of war, much less known and more uncontrollable, should cover the areas ranging from 40 thousand kilometres to the upper limit of extraterrestrial space, with a particular focus on the area of 300–450 thousand kilometres. Due to the fact that the central object of this theatre is the Moon, it seems reasonable to refer to it as the lunar theatre of war. The strategic areas of the lunar theatre of war are the Moon as well as L4 and L5 Libration points placed in this area. Despite a number of limitations in terms of the international law³⁰, the Moon is certainly an interesting area to be used for military purposes.

It should be remembered that the establishment of strong scientific and technical basis in the space exploration process is treated as the final stage of its militarisation. However, the interested representatives of the armed forces and research centres are aware that there is now little chance of militarising the outer space on a large scale. The latter is due to the following factors³¹:

- 1) scientific and technical feasibility of constructing munitions capable of action in outer space. This applies to the theoretical basis of constructing satellite warfare and technical possibilities of their production. Although the current level of science and technology in the respective countries – space-powers is considerably high, it is yet insufficient to carry out the strategic plans related with this area.
- 2) economic capabilities of particular states. It concerns the vast financial outlays needed for research and the production of space warfare.
- 3) standards contained in the documents related with the international space law. They concern the provisions of the international law governing human activities in outer space, including those associ-

³⁰ The most important rules have been laid down in the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies of 18 December 1979 which was not ultimately signed by the United States or the former Soviet Union.

³¹ W. Krzeszowski, *Kosmiczny teatr wojny...*, pp. 41–42.

ated with military action. This factor turns out to be controversial due to the following reasons:

- the international space law has still many loopholes and there are a lot of inaccuracies that allow for military operations in outer space,
- the obligation to comply with the stipulations contained in various instruments of the international space law applies only to those states that signed and ratified the documents,
- there is no control mechanism that would enable to effectively monitor the compliance with the adopted legal standards,
- the compliance with the adopted legal standards will always depend on the will of the decision makers in the respective countries, which suggests the possibility of deliberate violation of these standards in specific circumstances, for example during military conflicts or wars.

Taking into consideration the applicable provisions of the international space law, it can be argued that in terms of the escalation of threats between the countries which develop technologies aiming at the militarisation of space, these provisions will be routinely violated.

III. MISSILE DEFENCE

“The conditions of the present and future security environment somehow enhance the tendency to develop weapon systems. They can be neither ignored nor stopped. The development of missile defence is therefore inevitable. What is of a particular importance in this aspect is the emergence of a new quality of threats which are referred to as asymmetric nuclear – missile threats. This is a consequence of the proliferation of the weapons of mass destruction and missile technology. It is noticeable that these new forms of weapons are becoming more popular among different countries, even unpredictable ones, like North Korea”³². In addition, non-state actors, like terrorist organizations, have an increasing access to the weapons of mass destruction.

³² S. Koziej, Czy obrona przeciwrakietowa ma sens? <http://wiadomosci.wp.pl> (updated: 12.07.2012).

More and more countries have an increasing potential of nuclear weapons, which greatly influences the risk of accidental firing of ballistic missiles. Moreover, there is the risk that the countries with the weapons of mass destruction will be involved in domino effect war³³.

One of the biggest challenges that are contemporarily faced by the international security is the proliferation of missile technology, especially in those countries that are seeking to obtain a favourable regional geopolitical position or aspiring to become supra-regional leaders.

The uncontrolled proliferation of nuclear warheads and missile technology means that even non-state actors can nowadays pose a serious threat for military powers.

The nuclear strategy of the countries that have the weapons of mass destruction, as well as those who plan to possess them, is formed on the basis of the assessment of mutual potential and the possibility of a credible retaliatory strike. In addition, the following factors are often taken into account:

- 1) an increasing number of the countries (including the enemy states) which have nuclear weapons and other means of mass destruction, including the intercontinental means of their transportation,
- 2) growing asymmetric threats posed by the international terrorist groups armed with weapons of mass destruction and diverse, sometimes primitive means of their transportation.

These conditions, often innovative in qualitative and quantitative terms, give rise to the problems related to missile defence (missile defence system) which are basically justified in view of the threat of asymmetric or accidental attacks. Nevertheless, such systems violate the traditional logic of nuclear deterrence (MAD), based on strategic stability guaranteed by the ability to proceed with the second strike under all circumstances.

“Missile defence is defined as a properly organised system of technical devices and specialised forces and measures of air defence, which makes it impossible to reach the target by the enemy missiles. The means of

³³ The concept of domino effect is a metaphor used to define the situation in which one minor event initiates a series of consecutive events. This formulation is usually applied in relation to violent and destructive processes, which are impossible to control after they have been initiated.

missile defence are linked to the computer system on the ground and in the air as well as with the satellite long-range reconnaissance system. The operation of the automated system consists in detecting, tracking and classifying the targets as well as intercepting and destroying the missile heads before they reach the target. This system aims at destroying the flying missiles by means of anti-ballistic missiles (operating in groups), characterised by high acceleration and possibility of transporting nuclear cargos. This means that the incoming ballistic missiles in outer space would be destroyed by a number of nuclear explosions of great power. This system has not been obviously practically tested in terms of group nuclear explosions in outer space but its effectiveness should be undoubtedly high. However, the system has some drawbacks. One can assume that it will not destroy all incoming missiles, especially in case of the massive attack undertaken from different directions and at diverse time points. What has not been yet fully verified is the impact of group nuclear explosions carried out outside the atmosphere on ground objects nearby the explosions epicentres, although it is known that in the case of a single explosion, it is considerably low³⁴.

Missile defence systems are being developed intensively by many countries, usually in consultation with the United States (Israel, Japan, South Korea, United Kingdom, Taiwan, Italy) or in the framework of the international cooperation (a consortium of Western Europe and the operations within NATO) or independently (China, India, Israel, Russia). Some national systems, focused on defence against missiles of short and medium range, are already operationally mature (Israel), while others are to a large extent developed (NATO system). There is no doubt that the development of ballistic missile defence as well as the defence against all types of self-steering missiles will be continued, regardless of the discussions among the various national and international bodies.

The development of a missile defence system also stands for a new phase in the arms race. It has been evidenced by China which shot down its own satellite. This project has shown that it is possible to destroy the

³⁴ J. Pięta, Plusy i minusy tarczy antyrakietowej w Polsce, <http://realia.com.pl> (updated: 17.07.2012).

cosmic elements of a missile defence system, thus causing great anxiety in Washington. The signal sent by Beijing was clear: do not let us go in this direction, since the attempt of absolute domination in outer space has no chance of success. However, the aggressive environment of President Bush has decided to reject this message. They responded with the assurances to intensify the work on the militarisation of outer space.

Missile defence system consists of four inter-related and complementary elements: land, sea, air and outer space. That is why the United States are opposed to the UN Convention which bans the militarisation of outer space. It should be noted that the United States are now the only country that rejects the Convention. This position is supported by Bush administration, which openly announced to acquire hegemony in outer space. The elements of missile defence system placed in outer space are positioned to have a global reach, which is to provide military cover at any point of the globe. Consequently, this system does not aim at defending the United States, but rather their imperial interests. This should be assessed as a security system of one superpower, which is to cover the whole world. Such an attitude of Washington administration allows to make the thesis that the United States strive to ensure the complete impunity³⁵.

“While the strategic balance in the symmetrical relations between nuclear superpowers during the Cold War was assured by a deterrence based on the rule of mutual assured destruction (MAD), in the contemporary world in the conditions of asymmetric nuclear relationships, namely relations between the nuclear superpowers and small asymmetric nuclear actors, especially non-state actors, this rule does not prove effective enough for the superpowers or international organizations [...] to base their security on. There is no doubt that a defence strategy against such threats cannot be restricted merely to a deterrence by a retaliatory strike. Is it possible to stop a missile attack of the terrorist organization in this way? Where to address this retaliatory strike? What if such attack is carried out in the form of a blackmail of launching a missile attack with the use of chemical or biological weapon? Is the threat of a retaliatory

³⁵ More on this issue, see R. Kuźniar, *Tarcza zimnowojennej iluzji*, „Le Monde Diplomatique” 2007, No. 13, <http://monde-diplomatique.pl> (updated: 17.07.2012).

nuclear attack a proper answer and credible protection in such situation? The answer is undoubtedly negative³⁶.

It is puzzling nowadays how popular are missile defence systems that enhance the defensive possibilities, thus allowing to reduce asymmetric threats, with a focus on neutralising the strategies of missile – nuclear blackmail. This means that there is a strategic need for missile defence systems and there are indeed technological opportunities for developing them. Therefore, the effect of these two trends is the inevitable development of a strategic missile defence system.

The development of missile defence systems is justified by the following factors:

- 1) there is a natural and an increasing threat of the attack in the form of long-range missiles,
- 2) the protection of particular countries or international organizations (such as NATO, the EU) and the population is technically feasible and can provide defence against missile threats of all types,
- 3) the current anti-missile defence system (ALTBMD) is not able to protect all the population centres and the whole area of the North Atlantic Alliance,
- 4) there is a need for a missile defence system that can destroy enemy missiles in their middle phase of flight at very high altitudes or in outer space, which in turn requires a few (3 or 4) bases with missile interceptors,
- 5) the system must include multiple sets of sensors to track and target enemy missiles, including terrestrial and satellite systems.

In addition, what merits noting in respect of the Member States of NATO is the position of the United States, which indicates that:

- 1) the number of missiles capable of attacking NATO European Members continues to grow,
- 2) the construction of a missile defence system for NATO European Members is a feasible and a necessary task,

³⁶ S. Koziej, Czy obrona przeciwrakietowa ma sens?, <http://wiadomosci.wp.pl> (updated: 12.07. 2012).

- 3) in order to provide protection against any kind of missiles capable of attacking NATO European Members it is necessary to develop the system able to capture missiles in their middle phase of flight,
- 4) it is necessary for NATO to undertake the planning in non-real time and to proceed with consultations regardless of whether the missile defence systems will be subject to NATO or NATO individual states; NATO must designate a forum for consultations on missile defence,
- 5) the national defence systems can contribute to reinforce the defence of NATO European Members and to support NATO – controlled systems (the third element of the U.S. defence shield),
- 6) the cost of building NATO missile defence system will depend on the choice between NATO systems and the integration of the national systems,
- 7) due to technologically advanced level of development, the earliest achievable solution for defence against missiles in the middle phase of flight is the choice of the U.S. ground-based interceptor (GBI).

Missile defence systems must be considered from the point of view of the needs arising from the generated threats and challenges faced by the international and national security, as well as the possible composition and structure of this system. Due to the fact that the missile defence system has a transnational dimension, the existing risks (as well as those that may arise in the future), challenges and needs should be assessed both at the national and international level.

IV. CONCLUSION

“Space exploration, accompanied with the arms race, continues to grow in strength. The situation in outer space resembles the Wild West. There are merely a few binding rules laid down by the Outer Space Treaty of 1967. However, there are no international rules or organizations that would ensure the safety of the orbit. The Americans from time to time point out that the world indeed needs a cop who will deal with

this issue, suggesting at the same time that they would be best fit to do it. Yet, so far no one has bothered to honour Americans with a star of cosmic sheriff³⁷.

Abstract

This article aims at indicating a significant problem from the point of view of international security, i.e. militarisation of outer space and the ongoing race for domination with the participation of the United States, the Russian Federation, China and India. The ongoing development of military resources in the outer space and the existing gaps in the international law regulations concerning space law result in the fact that the concept of the cosmic theatre of war is gradually realised. One of the biggest challenges that are contemporarily faced by the international security is the proliferation of missile technology, especially in those countries that are seeking to obtain a favourable regional geopolitical position or aspiring to become supra-regional leaders. Missile defence system consists of four inter-related and complementary elements: land, sea, air and outer space.

³⁷ B. Bartoszek, *Zmagania o kosmos*, www.mojeopinie.pl/zmagania_o_kosmos (updated: 14.07.2012).