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# Legal principles governing the exploration and use of outer space in times of peace and war

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## Introduction

The current issue of ELSA Leiden Magazine addresses the theme “Law of War”, and the editors asked me to write a short contribution about this issue in relation with “Space Law”. When one first thinks about space and man’s activities out there, one does not necessarily have thoughts about “war”, but rather thinks about exploring the wonders of the universe and dreams about the opportunity of opening up new frontiers for the benefit of mankind. Unfortunately, even though we have not yet experienced ‘star-wars’, it cannot be denied that military aspirations have from the beginning played an important role in the exploration and exploitation of our final frontier, outer space.

The ‘Space Age’ began when Sputnik 1 was launched in an orbit around the earth by the former USSR, on 4 October 1957. Right from the start, states were worried that the scenes of war which had been ruling the earth since time immemorial would be extrapolated towards that fascinating new area now opening up for humankind to explore.

It is in that context that the United Nations, which became involved immediately after that event marking the birth of the “space age”<sup>1</sup>, has always insisted on the preservation of outer space for “peaceful purposes” and desired to avoid the extension of national rivalries into this new field. This principle of the use of outer space for peaceful purposes has ever since Sputnik 1 been a leading principle that

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<sup>1</sup> Already in 1958, just one year after Sputnik, the General Assembly of the United Nations expressed itself in a Resolution. See UNGA Resolution 1348 (XIII) of 13 December 1958. That same year, the UN Committee on the Peaceful Uses of Outer Space (COPUOS) was created. Its Legal Subcommittee drafted the legal instruments relating to space activities.

can be found throughout the legal instruments that have been formulated to regulate man's activities in outer space.

It is also in that context that today, with several countries recently having carried out activities whose compliance with this basic principle seems at least debatable<sup>2</sup>, this debate is placed firmly back on the world's agenda.

This paper will first set out the political background against which the development of the law of outer space took place, and will then shortly elaborate on some of the main principles of space law. Next, the specific provisions dealing with militarisation and weaponisation of outer space will be analysed, and finally these will be set against some recent developments at the national level, that yet again demonstrate how important it is to preserve outer space for generations to come, how close we are to spoiling it all, and what role the UN can play. Finally, some conclusions will be given.

### **Political background and the distinction between civil and military use of space**

As mentioned above, space law-making started in the early sixties, at the height of the Cold War, in an era characterised by mutual mistrust and fear. There were only two states active in this new arena, viz. the former USSR and the USA, the so-called 'space powers'. Space activities really consisted of a 'race'; a race to launch the first object into outer space (Sputnik 1 – USSR 1957), the first 'earthling' (dog Laika – USSR 1957), the first human (Yuri Gagarin – USSR 1961), the first human on the moon (Neil Armstrong – USA 1969), and so on. There was always this desire to show (military) superiority that boosted governments and scientists to go ever further, and this resulted in the space programmes of both countries reaching magic heights, literally speaking. The achievements in just 50 years of space exploration are immense.<sup>3</sup>

One must also not forget that the budget for space activity in most countries was, and in many cases still is, provided by the military; a day-to-day space application like GPS (Global Positioning System)<sup>4</sup> is in fact a US military programme - and may in principle be switched off whenever US national security requires this.

Another feature that is specific for space activity is that many, if not most space applications can have dual uses, i.e. they can serve both military and civil purposes. An example is a so-called remote sensing satellite, which 'observes' the earth from outer space, usually from the geostationary orbit at approximately 36.000 km above the earth. Such satellites can observe land slides, deforestation, predict crops, map areas, and a range of other things, but can also spy on enemies, verify technological advances of other states, check out terrorist training facilities, or can even be used as a weapon. Thus it can become difficult to verify that the use fulfils the legal requirements set by law. It also explains the current situation with ITAR's in the USA,

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<sup>2</sup> China shot down one of its defunct satellites in January 2007, and the USA did the same in February 2008. Although both states had their explanations for these actions, they can also be – and have been by some – interpreted as testing the states' military capability. See for instance [http://www.space.com/news/070202\\_china\\_spacedebris.html](http://www.space.com/news/070202_china_spacedebris.html) and <http://www.space.com/news/080221-asat-aftermath.html> See also *infra*.

<sup>3</sup> See for instance an interesting overview on the website of the European Space Agency at [http://www.esa.int/SPECIALS/Space\\_Year\\_2007/SEMANZP11ZE\\_0.html](http://www.esa.int/SPECIALS/Space_Year_2007/SEMANZP11ZE_0.html)

<sup>4</sup> See <http://www.gps.gov/>

where regulations governing the international traffic in 'arms' are in fact paralysing the space industry.<sup>5</sup>

### **Main principles of space law**

As said before, the drafting of outer space law was initiated immediately after the launch of the first object into outer space, as states were from the start convinced that regulation of man's activities in outer space was necessary in order to preserve it from the terrestrial scenes of war.

Thus a total of five treaties was concluded under the auspices of the United Nations between the early sixties and the late seventies. They are:

- The "Outer Space Treaty" of 1967<sup>6</sup> (also referred to as OST),
- The "Rescue Agreement" of 1968<sup>7</sup>,
- The "Liability Convention" of 1972<sup>8</sup>,
- The "Registration Convention" of 1976<sup>9</sup>, and
- The "Moon Agreement" of 1979<sup>10</sup>.

In addition to these Treaties, the UN General Assembly has adopted five Resolutions containing sets of 'Principles', dealing for instance with the use of Nuclear Power Sources (NPS), direct television broadcasting, or remote sensing. These Resolutions of course do not have the same binding force as a treaty, but since most of them were adopted by unanimity and have given rise to consistent state practice and *opinio iuris*, at least some of the principles contained therein have become binding at international law as 'international custom'.

The five treaties mentioned above set the scene for the activities of man in outer space. They have all, except for the Moon Agreement<sup>11</sup>, been ratified by a large number of states. The Outer Space Treaty is seen as the Constitution for outer space, its 'Magna Charta'. The amazing thing about this Treaty is that although it was

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<sup>5</sup> See on ITAR's [http://www.pmdtcc.state.gov/itar\\_index.htm](http://www.pmdtcc.state.gov/itar_index.htm) and see on their influence on the US space industry, "ITAR's failure" by T. Dinerman (17 March 2008), who says that "ITAR handed over control of an important part of the US high tech economy to a set of hyper-cautious, hyper-legalistic, and slow-moving bureaucrats". Article at <http://www.thespacereview.com/article/1086/1>

<sup>6</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, opened for signature on 27 January 1967, entered into force on 10 October 1967.

<sup>7</sup> Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, opened for signature on 22 April 1968, entered into force on 3 December 1968.

<sup>8</sup> Convention on International Liability for Damage Caused by Space Objects, opened for signature on 29 March 1972, entered into force on 1 September 1972.

<sup>9</sup> Convention on Registration of Objects Launched into Outer Space, opened for signature on 14 January 1975, entered into force on 15 September 1976.

<sup>10</sup> Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, opened for signature on 18 December 1979, entered into force on 11 July 1984. See for the text of all these treaties the website of the UN Office for Outer Space Affairs, at <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>.

<sup>11</sup> The Moon Agreement has only been ratified by 13 states, all non-space powers.

drafted more than forty years ago, in a field that is subject to technological revolutions so extreme and so fast that they were hard to imagine even for SF writers like Sir Arthur Clarke, its provisions are still relevant today, and are surprisingly broad enough to facilitate the most incredible range of space activities developing today. For instance, even though space activity at the time of drafting was very much a pure state activity, it was already foreseen that one day private entities would carry out space activities.<sup>12</sup>

The other treaties more or less elaborate on principles already contained in the Outer Space Treaty. This is not the place to go into a detailed discussion of the treaties, but it is interesting to at least list a few salient features of space law.

First, it is essential to know that in outer space, there is no “territorial sovereignty”, unlike on earth or in the airspace above the territory of a state; outer space is in principle “free” for exploration and use and appropriation is forbidden. Thus, the planting of a US flag on the moon by Neil Armstrong and Buzz Aldrin in 1969 did not imply that the moon had become US territory. An important ‘collateral’ of the freedom of use is that it must be carried out “for the benefit and in the interests of all countries”, and shall be the “province of all mankind”.<sup>13</sup>

Interestingly, although airspace and outer space are characterised by diametrically opposed legal regimes (sovereignty in air law and freedom in space law), there is actually no precise boundary between airspace and outer space. The debate about the need for such a boundary has been ongoing within the UN for more than forty years, and a solution is not in sight – although the advent of space tourism might well accelerate the search for a solution.

Another important feature, also in the context of our topic, is that activities must be carried out in accordance with international law, including the UN Charter, in the interest of maintaining international peace and security and promoting international co-operation and understanding.<sup>14</sup> This means that provisions of the Charter such as Article 2.4 and Article 51 on the duty to refrain from the threat or use of force and the inherent right of self-defense are equally applicable to man’s activities in outer space.

The treaties also contain rules concerning responsibility and liability.<sup>15</sup> A state is responsible for ‘national activities’ in space, and a launching state is liable for damage caused by its space object to another state or its natural or juridical persons, whether that damage occurs in space, in the air or on the ground. It must be noted that space law only has a system of state liability, i.e. a private entity or a natural person cannot claim directly under the Treaties but must be represented by its state;

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<sup>12</sup> Article VI OST, which states that States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities. They must assure that national activities are carried out in conformity with the Treaty, and the activities of non-governmental entities require authorization and continuing supervision by the State Party. This does however not mean that the Treaties do not need some supplementing by means of other forms of regulation, such as regional or national space legislation, in order to address all the specific legal intricacies of today’s space activities, including for example space tourism.

<sup>13</sup> Article I and II OST. The latter states that outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

<sup>14</sup> Article III OST.

<sup>15</sup> Article VI and VII OST. Liability is further elaborated in the Liability Convention.

this is yet again an important difference with the system of air law, where for instance a passenger who suffered damage on board an aircraft can present a claim for damage directly to the operator of the aircraft.

A system of dual registration has been elaborated, whereby states register an object they launch into outer space both in a national register and in a central UN register, and jurisdiction and control are exercised by the state of registry.<sup>16</sup> The requirements for registration are however not very detailed and there have recently been discussions about the need to improve these. The reason is that identification of defunct objects or parts of such objects could be more easy if the details given during registration were more elaborate. This would greatly help in avoiding the growing problem of 'space debris', as it would be easier to identify the state which is supposed to 'control' the object it launched. Registration is also a subject of interest in terms of military use, because even though it is well known that space activity started out as (and to a large extent still is) a purely military activity, the number of satellites that have actually been registered as a military object is extremely limited if not non-existent. It is obviously much easier to register a remote sensing satellite as a tool for disaster management, rather than to register it as a spying satellite...

### **Specific provisions regarding the military use of outer space**

Two of the space treaties contain specific provisions dealing with military use and use of weapons.

Article IV of the Outer Space Treaty states:

“States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.”

And Article 3 of the Moon Agreement states:

“1. The moon shall be used by all States Parties exclusively for peaceful purposes.

2. Any threat or use of force or any other hostile act or threat of hostile act on the moon is prohibited. It is likewise prohibited to use the moon in order to commit any such act or to engage in any such threat in relation to the earth, the moon, spacecraft, the personnel of spacecraft or man-made space objects.

3. States Parties shall not place in orbit around or other trajectory to or around the moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the moon.

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<sup>16</sup> Article VIII OST. Registration is further elaborated in the Registration Convention.

4. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration and use of the moon shall also not be prohibited.”

The above implies that outer space is partially demilitarised; namely, nuclear weapons and other weapons of mass destruction are prohibited always and everywhere, i.e. in orbit, on a celestial body, or in any other way. Of course the problem is that the treaties do not contain any definition of these terms. On the other hand, celestial bodies must be used ‘exclusively for peaceful purposes’; this does not imply a complete ban on military use – although use must of course always be in conformity with the UN Charter, as stated in Article III OST. It raises the question what ‘peaceful’ means. Does it mean non-military? Or non-aggressive? This is yet another question that has given rise to decades of debate with the UNCOPUOS and has to this day not been solved. Basically, the view of the USSR was that ‘exclusively for peaceful purposes’ means ‘non-military’, and the USA rather held the view that it meant ‘non-aggressive’ because, they argued, some military uses of space, like reconnaissance, can actually contribute to peace and should therefore not be forbidden.<sup>17</sup>

Military personnel and equipment may be used for peaceful exploration, which again seems to denounce a complete ban on military use of space in the treaties.

Interestingly, Article 3 of the Moon Agreement reiterates Article 2.4 of the UN Charter in its paragraph 2, and extends that prohibition to the ‘use’ of the moon to commit or threaten to use force in relation to the earth or to a celestial body or an object or person in space.

In addition to the space treaties, we must mention here also the 1963 Partial Test Ban Treaty (PTBT)<sup>18</sup>, which prohibits nuclear weapon tests in the atmosphere, outer space and under water. Originally this was a treaty between the USA, USSR and UK, but now there are more than 100 states parties, although neither France nor China adhere to it. A drawback is that Article 4 allows states to withdraw with a mere notice of three months in case of ‘extra-ordinary events’, to be judged solely by the state concerned.

The Comprehensive Nuclear-Test-Ban Treaty (CTBT)<sup>19</sup> bans all nuclear explosions in all environments, for military or civilian purposes. It was opened for signature on 24 September 1996, signed by 178 states and ratified by 144. The US Senate rejected ratification of the CTBT in 1999 (it did sign).

We must also mention the 1972 ABM Treaty, which prohibits inter alia the development, testing, deployment of space-based ABM systems.<sup>20</sup> The US withdrew from this treaty in 2002.

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<sup>17</sup> They would argue that if you can verify what the enemy is doing by means of a spy satellite, this can contribute to the balance of power and thus to the preservation of peaceful relations.

<sup>18</sup> See <http://www.state.gov/t/ac/trt/4797.htm>

<sup>19</sup> See <http://www.ctbto.org/>

<sup>20</sup> See <http://www.state.gov/www/global/arms/treaties/abm/abm2.html>

Of course the above is not an exhaustive enumeration of all relevant instruments, but it is intended to give an illustration of what rules apply to military uses of space.

### **Application in practice and recent developments**

Even though a certain limit on the military use of space is contained in the space treaties, we must observe that this principle is continuously challenged in practice. Who does not recall President Reagan's 1986 plans for a Strategic Defense Initiative (SDI), also known as 'Star Wars'?<sup>21</sup> Can that qualify as 'peaceful use of space'? It does not involve a nuclear weapon or a weapon of mass destruction, although one might argue that a laser beam can cause mass destruction... In any event, SDI never happened (but it did lead to the US withdrawal from the ABM Treaty).

Among the more recent examples, we can refer to the 2007 shutdown of an old weather satellite by China, and the 2008 shutdown by the USA of one of its own satellites which carried a hazardous gas that would not burn up on re-entry and thus pose a threat to health. There has been much debate about whether these were the true reasons behind the shutdown, or whether it was a testing of military capacity to shoot down an object far away in space. Possibly the truth lies somewhere in the middle, as is often the case.<sup>22</sup>

At the same time, proposals for a Treaty completely demilitarising (de-weaponising) outer space have been submitted over and over. Russia has proposed several draft treaties in the 1980s aiming at complete demilitarisation of space. The latest effort dates from February 2008, by China and Russia, in the framework of the UN Conference on Disarmament.<sup>23</sup>

Is that realistic?

The US labeled this proposal as a 'Diplomatic ploy' by Russia and China to gain military advantage, because it would prohibit a new US missile interceptor system from being installed in the Czech Republic and Poland, but Chinese and Russian ground-based missiles that can fire into space would not be covered. The plan also says nothing of normal satellites that can be used as weapons against other satellites. Washington points to China's launch of a ballistic missile that destroyed an old weather satellite and created thousands of pieces of space debris...

The US proclaimed a new national space policy in 2006, providing the overarching national policy that governs the conduct of US space activities.<sup>24</sup> On the one hand, it states that the US is committed to exploration and use of outer space by all nations for peaceful purposes, and for the benefit of all humanity. Yet it also states that "peaceful purposes" do allow for US defense and intelligence-related activities in pursuit of national interests. The US will 'preserve its rights, capabilities, and freedom of action in space' and will dissuade and deter others from impeding those rights or developing capabilities to do so. It will take actions necessary to protect its space capabilities, and will respond to interference. Moreover, the US will oppose

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<sup>21</sup> See [http://en.wikipedia.org/wiki/Strategic\\_Defense\\_Initiative](http://en.wikipedia.org/wiki/Strategic_Defense_Initiative)

<sup>22</sup> See the interesting article « Sense, nonsense, and pretense about the destruction of USA 193" by J. Oberg, March 2008, at <http://www.thespacereview.com/article/1073/1>

<sup>23</sup> See <http://news.bbc.co.uk/2/hi/europe/7240796.stm> . The Conference on Disarmament (CD) was established in 1979 as the single multilateral disarmament negotiating forum of the international community, see <http://www.unog.ch> under 'disarmament'

<sup>24</sup> See [http://www.globalsecurity.org/space/library/policy/national/us-space-policy\\_060831.htm](http://www.globalsecurity.org/space/library/policy/national/us-space-policy_060831.htm)



development of new legal regimes or other restrictions that seek to prohibit or limit US access to or use of space, and proposed arms control agreements or restrictions must not impair the rights of the US to conduct research, development, testing, and operations or other activities in space for US national interests.

This new policy implies a move from 'militarisation of space' to 'weaponisation of space'. Where in the past the focus was on militarisation, namely the use of satellites for reconnaissance and communication, now the focus seems to lie on weaponisation: the development of weapons that can project force to, from, in, and through space. The US has plans for a new generation of missile defense shields, part of this new system will be built in Poland and the Czech Republic.

What about China? China issued a White Paper in 2006 on "China's Space Activities in 2006".<sup>25</sup> Reference is made to 'peaceful purposes' and 'international cooperation', while at the same time the upholding of independence and self-reliance are also important. National security is mentioned, but not as strongly as in the US Policy.

### **A role for the UN?**

An important General Assembly Resolution was passed on 6 December 2006, on transparency and confidence-building measures (TCBM) in outer space activities.<sup>26</sup> It reaffirmed that the prevention of an arms race in outer space would avert a grave danger to international peace and security. Member States were invited to submit proposals on international outer space transparency and CBM in the interest of maintaining international peace and security and promoting international cooperation and the prevention of an arms race in outer space. The UN Secretary General submitted a report with proposals from the member states, and subsequently UN General Assembly Resolution 62/43 on transparency and confidence-building measures in outer space activities was adopted on 5 Dec. 2007. 168 states voted in favour, 1 against (USA), and 1 abstained (Israel). The Member States are to continue to submit concrete proposals, and the Secretary General will submit a new report with an annex containing concrete proposals from Member States.

China and Russia support Resolution 61/75, and believe that the existing legal framework is not sufficient to prevent weaponisation. A new international legal instrument is needed in their view, and as stated above, they promote this in the UN Conference on Disarmament. Their view is that Transparency & CBM can be complementary to a new treaty, as an intermediate measure, but cannot replace a new treaty. The US, as seen above, opposes the development of new legal regimes or other restrictions that seek to prohibit or limit US access to or use of space.

### **Conclusion**

It is undisputable that satellites are essential for nowadays' military operations (Iraq, Afghanistan, etc.). Space has been, is, and will always remain, an area with so much military interest and involvement that it seems impossible to demilitarise outer space entirely. Efforts to do so are doomed to fail, and have done so until now. And perhaps there is some truth in the peace-keeping capability of some 'military' space activities.

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[http://www.spacedaily.com/reports/China\\_Issues\\_White\\_Paper\\_On\\_Space\\_Activities\\_999.html](http://www.spacedaily.com/reports/China_Issues_White_Paper_On_Space_Activities_999.html)

<sup>26</sup> UNGA Res. 61/75 (6 Dec. 2006).

But Mankind must refrain from destroying the vulnerable balance of peaceful coexistence on earth and in space. It can do so by ensuring the creation of and adherence to adequate legal rules to govern its activities. Space holds so many wonders yet to discover, let us hope that we will be wise enough to do that in a spirit of cooperation and for the benefit of all mankind. Even though the current political climate as described in the preceding lines does not seem to justify such a positive thought, I insist in sharing it with you. Please pass the message!

*May 2008*