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ESTABLISHING NORMS OF BEHAVIOUR IN OUTER SPACE

FROM THE EARTH TO THE MOON, AND BEYOND

Béatrice Hainaut, PhD

Researcher on space policies at IRSEM

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BIOGRAPHY

CNE Béatrice Hainaut holds a PhD in Political Science and International Relations from the Université Paris II Panthéon-Assas, and joined IRSEM in September 2022 as a researcher on space policies. Her thesis work focused on the emergence and promotion of behavioral norms relating to the safety of space activities.

CNE Hainaut has held a number of military space-related positions within the French Air Force. First at the French Air Force Research Center (CREA), then at the Center of Operations for Military Surveillance of Space Objects (COSMOS), then at the French Air Force Staff (Strategy Office) and finally at the Space Command.

Her current work focuses on standards of behavior in space, as well as on all contemporary developments affecting the space sector.

Contact: beatrice.hainaut@irsem.fr

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ABSTRACT

Ongoing space revolutions (change in the relationship between state and private partners, access to space technologies facilitated for many players, technological evolutions, etc.) modify risks and threats players using space are confronted with.

It would be useless to try to describe with certainty the space landscape of tomorrow, as evolutions are rapid, and the consequences of the latter more or less known, understood and controlled.

Despite these uncertainties, it seems essential for most of the space players to establish new norms in order to ensure the long-term sustainability of space, i.e. to perpetuate its use to the benefit of everyone. To this end, the promotion of binding and non-binding norms is carried out through a number of initiatives under different formats, such as the United Nations Open-ended Working Group on reducing space threats through norms, rules and principles of responsible behaviours, which held in May 2022 and September 2023 four distinct sessions.

The precise analysis of the third session permits, through interstate exchanges, to grasp current space challenges, and to notice the impact of the international context on space discussions. In this regard, the report that should result from these exchanges will not be published. In fact, the states did not succeed in coming to an agreement, by consensus, on its content. If this can be seen as a failure, the favourable evolution of the positions of certain states, once reluctant to accept non-binding norms of behaviour, suggests the discussions are not closed.

The purpose of this study is to analyse the mechanisms for the emergence and cascade of norms of behaviour in space, be it for terrestrial orbits, the cislunar space, or the Moon. It also outlines the role and influence of each of the state actors in the promotion of these norms.

GLOSSARY OF ACRONYMS

UNGA: United Nations General Assembly
APSCO: Asia-Pacific Space Cooperation Organization
ASEAN: Association of Southeast Asian Nations
ICRC: International Committee of the Red Cross
CNES: French National Centre for Space Studies
COPUOS: Committee on the Peaceful Uses of Outer Space
DA-ASAT: destructive, direct-ascent anti-satellite missile testing
DGE: Directorate General for Enterprise
IHL: International Humanitarian Law
ESA: European Space Agency
HCoC: Hague Code of Conduct Against Ballistic Missile Proliferation
IAC: International Astronautical Congress
IADC: Inter-Agency Space Debris Committee
ICoC: International Code of Conduct for Space Activities
SDI: Strategic Defence Initiative
ILRS: International Lunar Research Station
ISR: Intelligence, Surveillance and Reconnaissance
MEAE: Ministry for Europe and Foreign Affairs
MESR: Ministry of Higher Education and Research
MINARM: Ministry for the Armed Forces
OEWG: Open-Ended Working Group
NATO: North Atlantic Treaty Organization
RPO: Rendez-vous and Proximity Operation
EEAS: European External Action Service
SLS: Space Launch System
STSC: Scientific and Technical Subcommittee
SWF: Secure World Foundation
TCBM: Transparency and Confidence-Building Measures
EU: European Union
UNIDIR: United Nations Institute for Disarmament Research

INTRODUCTION

Of strategic interest for states since its conquest during the Cold War, space remains of strategic interest despite the growing number of private actors.[1] It therefore constitutes a resource[2] of the state power among others. Depending on the states' reliance on space and, thus, on their vulnerability, this resource is critical for their survival. It is today the subject of a renewed interstate competition. The balances of forces on Earth thus tend to extend to space, but the consequences can only be different due to the particular physical nature of the space domain. The new warfighting framework is embodied in the "competition-dispute-confrontation"[3] tryptic. Now, states already "pass each other" in space. This can possibly change the mode of "confrontation". The utility of space, alongside the vulnerable character of mobiles that cross each other in it, acts as a strategic constraint preventing a priori head-on collision. This can partly explain why, during the Cold War, no conflict took place in space. Space was also at that time, for the two great powers, the guarantee of compliance with the treaties limiting nuclear weapons.[4]

Faced with the growing number of actors in space and the physical constraints specific to this domain, states cannot but address the issue of the regulation of space activities, a minima with a pragmatic aim, in the name of their national interests. Thereby, certain states make proposals to constitute a regime. The regime is a collective solution aimed at bypassing the states' competitive policies and at reducing the effects of security

1. Often largely financed by the public power.
2. Raymond Aron mentions the "material, human and moral resources" that each unit (State) possesses, in *Paix et guerre entre les nations*, Paris, Calmann-Lévy, 2004, p. 59.
3. Strategic vision of the French Chief of the Defence Staff, October 2021, https://www.defense.gouv.fr/sites/default/files/ema/211022_EMACOM_VisionStrategiqueCEMA_FR_Vdef_HQ%20%282%29.pdf.
4. Xavier Pasco, "L'espace et les approches américaines de la sécurité nationale (1958-2010)", in *L'information géographique*, vol. 74, 2010, p. 85-94.

dilemma. Stephen Krasner's theory of regimes defines them that way:

> A set of implicit or explicit principles, norms, rules, and decision-making procedures around which actors expectations converge in a given area of international relations. Principles are beliefs of fact, causation, and rectitude. Norms are standards of behavior defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice.[5]

Regimes would constitute a way of putting in order an anarchic international environment. The state of anarchy is, in the conventional, realistic thinking of the Theory of International Relations, synonymous with a state of war, since no central authority superior to states can prevent the recourse to armed violence. The corollary of anarchy is the security dilemma. It has to be noticed that the generalised recourse to weapons did not occur in space. There is not strictly speaking a war in orbit. This is not the result of a virtuous supranational institution, but rather of a strategic restraint[6] that states have imposed on themselves. Several academics have studied the issue of this "auto-restriction" of the two great powers during the Cold War through a "limited space regime" in order to regulate the militarisation of space. Anarchy is "What State's Make of It".[7] We could then speak of a Lockean anarchy inasmuch as states see themselves above all as rivals.[8] The (re)conquest of the Moon is also one of the illustrations of this. Anarchy does not prevent interstate

5. Stephen D. Krasner, *International Regimes*, Ithaca/London, Cornell University Press, 1982, p. 2.

6. James Clay Moltz, *The Politics of Space Security Strategic Restraint and the Pursuit of National Interests*, Stanford, California, Stanford University Press, 2008.

7. Alexander Wendt, "Anarchy is What State's Make of It: The Social Construction of Power Politics", *International Organization*, 46 (2), 1992, p. 391-425.

8. There are two other ideal types of anarchy: Hobbesian (States perceive themselves as hostile) and Kantian (States perceive themselves as friends).

cooperation. Besides, international cooperation depends on how states perceive their interest in cooperating together and the benefits they could derive from it. Perceptions define interests. Taking account of idea factors (perception, ideas, values, norms) raises questions about the subjective understanding of human beings. These factors come into play during interactions between states within international fora. Then, we should not neglect the role of *learning* fostered by repeated interactions. The sociological learning enables the co-constitution of norms between states. This has more or less to do with the evolution of the political positions of states. The regime is therefore the result of utilitarian calculations by rational state actors and specific circumstances. When states have converging interests, cooperation is more profitable than confrontation, because the costs of autarchy are too high compared with the possible benefits of cooperation. The existence of a regime therefore seems possible, because space is by nature common and shared. The idea of a non-binding regime for space activities is a long-standing one.[9]

Thus, the contemporary evolutions of the space landscape call for more regulation in space. However, there are already norms in it. In fact, international law applies to outer space. In addition, space law is a reality, but it is mainly based on the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies.[10] It is today ratified by 112 states,[11] including the space-faring powers. The latter can be defined as states

9. For an history in French of international initiatives in this area, read Hubert Fabre, *L'usage de la force dans l'espace : réglementation et prévention d'une guerre en orbite*, Brussels, Bruylant, 2012.

10. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, adopted in Washington, Moscow and London on 27 January 1967, entered into force on 10 October 1967, Treaty Collection, vol. 610, 1967, UNTS No 8843, p. 205.

11. Iran and the Philippines have signed, but not ratified it. These States are, however, very active in the UN Working Group on Reducing Space Threats through Norms, Rules and Principles of Responsible Behaviours, studied in the second chapter of this study.

that are able to master the technology of launchers, to manufacture their own satellites, to launch them from a sovereign launch base, and to have at their disposal a ground base to control them.[12] Some people would add that a space-faring power must have the capacity to monitor space, thereby reducing significantly their number.

The "Outer Space Treaty" permitted to develop space activities as we know them today. It lays down some fundamental principles that still serve as points of reference in a complex environment. First of all, outer space, including the Moon and the other celestial bodies, can be used freely by all states. It cannot be subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means. This establishes the freedom of space. Then, exploration and use of space shall be carried out for peaceful purposes. The expression is not further defined, which has left, and still leaves today some leeway in terms of military space capabilities or "counter-space". Conversely, it is strictly forbidden to States Parties to establish military bases, installations, and fortifications, to test any type of weapons, and to conduct military manoeuvres on the Moon or any other celestial body. States Parties must use the Moon and other celestial bodies *exclusively* for peaceful purposes.

National laws also play a major role in regulation. They have been on the increase, by the way, since a few years. This trend can be explained by the fact that more and more States Parties to the Outer Space Treaty are actually using space, and that they have international responsibility for the national activities carried out in outer space, including the Moon and other celestial bodies, whether they are undertaken by governmental bodies or by non-governmental entities.

Finally, a more restrictive, binding legal text dedicated to the Moon also exists. It is the 1979 Agreement Governing the

12. Béatrice Hainaut, "L'utilisation de l'espace extra-atmosphérique comme ressource de puissance mobilisée par les États dans leurs jeux de pouvoir interétatiques", in Sophie Wintgens and Gregory Piet (eds), *La puissance : débat autour des jeux et des enjeux du pouvoir*, Éditions de l'Université de Liège, 2011, p. 86.

Activities of States on the Moon and Other Celestial Bodies.[13] This document establishes the Earth's natural satellite as "common heritage of mankind" and, as such, subjects states to a very strict regime of use and exploitation. Only 18 states, but no space-faring ones, have ratified it to date.

With these few legal succinct elements in mind (which will be further developed in the first section of this study), the question of the safety and security of space activities represents a current and future challenge. This question applies as much to our "useful", circumterrestrial space as to the Moon and the other celestial bodies in the near future. Regarding the useful space, i.e. the space used by artificial satellites, the security of space activities refers to the fight against weapons in space,[14] and, more precisely, against multiform threats (intentionally hostile acts) to the benefit of strategic stability. As for the safety of space activities, it refers to the fight against risks (interferences and collisions that can fuel a proliferation of orbital debris) to the benefit of the long-term sustainability of outer space activities. As for the Moon and the other celestial bodies, which are solid spaces, it refers as much to security (avoid misunderstandings, rising tensions that can lead to a conflict; prevent malevolent intentions) as to safety (avoid that the different actors on celestial bodies interfere with each other's activities, leading possibly to an accident). In both these space "fields", there is regulation. Today, this regulation applies de facto inasmuch as, even if no official, automatic mechanism has been put in place, actors in space cannot move in it without a minimum of coordination or communication between them. There is now a desire for more concrete regulation through the establishment of technical standards, transparency and confidence-building measures, as well

13. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies adopted in New York on 5 December 1979, entered into force on 11 July 1984, Treaty Collection, vol. 1363, 1984, UNTS No 23002, p. 3.

14. This expression is falsely simple, because the term "weapons" in space has never been defined. It is therefore preferable to use the broader term of "threats".

as norms of responsible behaviour that can in fine translate, for some of them, into binding legal rules. Standards are technical norms that emerge either from major standardisation bodies towards users, or within technical fora towards political bodies (e.g. via the Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space (COPUOS)).

The norms mentioned in this study are discussed among the states and their representatives. Technical standards emerge more rapidly than norms. In fact, though the first ones have consequences on behaviours in space, they can be more rapidly adopted, because they are established between technical experts (with a specific language that is likely to be inaccessible to the layman without "decoding"), and sometimes free themselves from political mediation. This can be for example the case for the standards for space adopted within the International Organization for Standardization (ISO) or for those promoted within the Inter-Agency Space Debris Committee (IADC) among national space agencies. Measures and norms can likewise emerge from initiatives of the private sector such as those of the Space Data Association, which gathers most of the telecommunication operators.

However, states have never succeeded, up to now, in coming to an agreement on the substance and form of this regime. It seems that the precondition for the existence of a regime of norms is the establishment of "Transparency and Confidence-Building Measures" (TCBM). These soft law measures attempt to establish a favourable context among states by "building confidence". The aim is to ensure that states commit to concrete measures taking essentially the form of exchanges of information (on national space policies, launch notifications, etc.). There is, however, great distrust between, schematically, two groups of states, namely the US and its like-minded partners on the one hand, and China, Russia and their like-minded partners on the other. A third group is made up of intermediary states, some of which belong to the Non-Aligned Movement. The two groups of states confront one another on the nature of the new regime to put in place in order to regulate space activities. The definition of norms represents a serious challenge

to the latter. The norm is considered as a "Standard of appropriate behavior [that could thus be seen as responsible] for actors with a given identity"[15] in the works of Martha Finnemore and Kathryn Sikkink on the norm life cycle. Both writers analyse it in three stages: norm emergence, cascade, and internalization. We could add a fourth stage, that of verification/sanction. For some states, norms applicable to the safety of activities are already internalised into national laws. The norm life cycle can be here analysed in the light of two case studies: that of norms of responsible behaviour in the circumterrestrial space and that of norms for the Moon and the other celestial bodies. For the latter, the study takes as a subject the Artemis Accords.[16] The latter have been promoted in 2020 by the US, which invite the other states to sign them. They are precisely described by the US as "principles for a 'safe', 'peaceful' and 'prosperous' future." Today, 36 states, including France, are signatories.

The subject of the establishment of norms is put on the international agenda, but in a differentiated manner for the Earth and the Moon. The purpose of this study is to analyse the emergence and cascade of these norms, and to understand relevant challenges. The preliminary section sets out the cardinal rules of space law, and presents international fora dedicated to space, as well as their recent normative initiatives. The second section deals with the discussions that take place within the UN Open-Ended Working Group (OEWG) on Reducing space threats through norms, rules and principles of responsible behaviours. The third session of this WG (30 January – 3 February 2023), divided into four distinct sessions over time, is studied here. The third section sets out the incipient norms of behaviour applicable to the Moon and the celestial bodies. Finally, the last chapter analyses the persuasion and cascade processes at work in two case studies.

15. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", *International Organization*, 52 (4), Autumn 1998, p. 891.

16. NASA Artemis Accords.

I. SPACE LAW AND INTERNATIONAL FORA DEDICATED TO SPACE

This preliminary chapter provides the general framework necessary to understand the topics developed in the three following chapters. It sets out the physical characteristics of space, some historical elements, the evolution of the threat in orbit today, the cardinal rules of space law, and presents the traditional UN space discussion fora, and the (UN or non-UN) initiatives conducted in parallel.

THE GRADUAL "OCCUPATION"[1] OF AN HOSTILE SPACE

The physical characteristics of space

A few precisions are necessary, when we talk about outer space. We make a distinction between three spaces : the near-Earth, the solar, and the far spaces.[2] There is no legally established altitude marking the limit between the air and space domains. This pragmatic interest overlaps with a physical reality.[3] However, even if the limit between the air and space domains cannot be defined, it is generally admitted that the lower limit of space begins at about 100 km, which corresponds to the "Karman Line", named after a Hungarian engineer and physicist, who became a naturalised American. Below this limit, an object cannot stay in orbit,

1. "[…] driven by the commercial impetus, it [the freedom of movement specific to common domains] puts up a priori with a momentum of unlimited occupation and opens up theoretically to all modes of appropriation"(Xavier Pasco, "L'espace extra-atmosphérique : un espace commun en voie de privatisation ?", *Stratégique*, 123, 2019, p. 215-223).

2. Serge Grouart, *La guerre en orbite. Essai de politique et de stratégie spatiales,* Paris, Economica, "Bibliothèque stratégique", 1994.

3. In fact, between 50 and 200 km of altitude, there is an area, where spacecraft cannot maintain themselves, but where a satellite cannot either orbit. This is the upper limit between the stratosphere and the thermosphere. This area (*Higher Space Operation*) is, today, gradually re-invested by mobiles. It is estimated that at an altitude of about 120 km, atmospheric friction is reduced.

because the atmospheric friction and gravity are too strong. In addition, to stay in orbit, an object must orbit at about 7,8 km/s – (satellisation speed). Legally, no text, even the most fundamental one, the Outer Space Treaty of 1967, specifies the limits between the airspace and the outer space. The upper limit of the near-Earth space is set at about 40 000 km. This is the maximum distance, at which certain satellites, mainly telecommunication and meteorological ones, can be kept if their payload is to operate properly. However, most of the active satellites and in-orbit debris (out-of-service satellites, rocket structures, anthropogenic debris of all kinds) are concentrated at lower space level (200 to 2 000 km). This is within this space that most of the space objects are to be found.

Space is hostile. It is traversed by numerous harmful rays (X-rays, gamma, ultraviolet, infrared rays), and is subject to spectacular temperature variations (from +120°C to -180°C). There is no noises, no smells, no plants, no animals in it. What is more, this domain is inhabited by other natural space objects such as meteorites. Nevertheless, due to its electromagnetic properties, it constitutes an excellent communication relay. Keeping a satellite in orbit is a permanent task for state and private operators. In fact, Earth gravitation, but also the gravitational pull exerted by the Moon, the atmospheric friction and the solar radiation cause a change in the trajectory of the satellite, and its fall, if it is not kept on station. Too much drift from its orbit does not allow it any longer to fulfil the mission, for which it has been designed. Operators must therefore compromise with the laws of astrodynamics, but also with orbital debris and other operational satellites. Then, sometimes, it is necessary to manoeuvre the active satellite to avoid a risk of collision. This, however, reduces the life expectancy of the satellite, which will have less fuel to be kept on station. When the satellite has reached its lifetime, most of the operators let the satellite drift and re-entry into the atmosphere, where it will burn up totally or in part. Today, many operators are taking steps to deorbit actively their satellite, so that it does not constitute a dangerous debris for the others. Space objects are not interesting as such, but rather for the official missions

they fulfil (sensors of the payload), for the status of their owners (civilian, governmental, or military operator), or for their effective uses (civilian and/or military missions). The benefits of the use of space by states were quickly understood. From a strategic viewpoint, it constitutes the ultimate *high point* that enables to see without being seen. The Cold War has been the ideal historical context for the rapid development of space technologies.

"Arms race" and space race between the two Great Powers

The Cold War saw two superpowers oppose between 1943 and 1990. The most striking feature of this period is an opposition that is focusing on the subject of the possession and possible use of the nuclear weapon. During this conflict, each of the two Great Powers wishes to know how many nuclear weapons the other holds. The US feeds a fear for the missile gap. This expression reflects its perception of an imbalance between the Americans and the Soviets on the quantity of intercontinental nuclear missiles. This supposed imbalance to the detriment of the US is, however, largely overestimated.[4] If this concern disappears, it is thanks to the images provided by the American observation satellites. The strategic edge gained through space intelligence then becomes evident. Moreover, the technology that enables to launch rockets is not far from that of missiles. The rocket is only a missile that is enhanced to place objects in orbit. Most of the time, nuclear power and space power go hand in hand. The military conquest of space finds a place in the states' strategy. As well as being ideological, the US-Soviet rivalry is political and military, as well as cultural, economic and scientific. The space race is also a prestige race. Each show of force becomes a symbol of superiority over the adversary. In this race, the Soviets arrived first. On 4 October 1957, they launch the first artificial satellite,

4. In summer 1961, Americans can make sure of it thanks to the images from their reconnaissance satellites CORONA.

Spoutnik. Lyndon Johnson, the future President of the United States, then sees that as a "new Pearl Harbour."[5]

By referring to the tragedy of Pearl Harbour, Johnson expresses the feeling that this exploit is also a threat for the US. In fact, this demonstration is proof that the Soviets master the technology of intercontinental ballistic missiles. This can upset the balance of the international system. Johnson comes to the conclusion that the control of space means the control of the world. Technological exploits then follow one another like counter-strikes in this duopolistic competition. The apparent technological advance of the Soviets could not, however, prevent a very symbolic and prestigious American conquest, that of the Moon. Neil Armstrong is the first man to have walked on it, on 21 July 1969. The six Apollo missions successfully carried out by the Americans have no equals in the Soviet Union despite its will to also conquest the Moon.

These media demonstrations should not overshadow the fact that the conquest is, first and foremost, military. The "militarisation of space" then means the use of this domain for military, but non-offensive purposes. The two protagonists have different strategic concerns.[6] For the US, the purpose is to best estimate the Soviets' strategic capabilities. The reconnaissance satellite is then an effective response to the capture of a U2 aircraft by the Soviets.[7] For the USSR, on the contrary, the purpose is to fill the distance that protects the US against any reprisals in case of an attack on its soil. This implies to develop ICBMs. The Cold War space activity has been strongly influenced by developments in

5. Memorandum of the then Senator Lyndon Johnson, in Congress, on 11 April 1958, before he became President of the United States. Lyndon Johnson is the thirty-sixth President of the United States (22 November 1963 – 20 January 1969).

6. Isabelle Sourbès-Verger, "Conquête spatiale et relations internationales", *Annuaire français des relations internationales*, vol. IX, July 2008, p. 892.

7. On 1 May 1960, the U2 aircraft of the American pilot Gary Powers was shot down over the Soviet Union. This reconnaissance aircraft carried out intelligence missions from Pakistan. Gary Powers was imprisoned, then released against a Soviet spy in 1962. This event put an end to the period of relaxation of tensions between the two States.

the nuclear activity. Space race and nuclear arms "race" are the two key elements of international relations. This also brings the two superpowers to design and place in orbit, as early as the 1960ies, genuine spy space stations.[8] They will be later on ousted by the observation satellites, less expensive and without any risk to human life. Gradually, observation satellites also become useful instruments for the verification of the implementation of the first agreements on the limitation of nuclear weapons (Strategic Arms Limitation Talks (SALT 1)) in 1972.

The military use of space, dominated by optical remote sensing capabilities,[9] diversifies rapidly. The generalisation of the use of remote sensing prompts the UN to regulate its use.[10] Satellites are now carrying out electronic eavesdropping, early warning (for the detection of missile firing), meteorology, communications, etc. The US and the USSR, the only truly structuring players in the international system, make out of the nuclear and space resources the constitutive elements of their global power. These two resources also fed the fears of the other states. The possession of nuclear weapons on both sides gives birth to the expression of "equilibrium of the terror", whilst space race makes fear a "star wars". Of course, this expression is popularised in 1983 by the announcement of the "Strategic Defence Initiative (SDI)"

8. Béatrice Hainaut, "Les drones prennent de la hauteur : de l'utilisation des *unmanned space vehicle*", in Grégory Boutherin, Emmanuel Goffi, Jérôme de Lespinois, Sébastien Mazoyer, Christophe Pajon (eds), *Les drones aériens : passé, présent et avenir. Approche globale*, Paris, La Documentation française, "Stratégie aérospatiale", 2013, p. 447-457.

9. Between 1960 and 1992, the US launched 266 reconnaissance satellites. For its part, between 1962 and 1987, the URSS placed into orbit 712 photographic reconnaissance satellites out of the 1 601 military satellites launched (Jacques Villain, "La militarisation de l'espace", in *L'espace, un enjeu terrestre*, La Documentation française, "Questions internationales" 67, April 2014, p. 55).

10. This is Resolution 41/65 of 3 December 1986. Among others, this resolution, adopted without any vote, lays down the principle (n° XII) that "the observed State shall also have access to the analysed information available in the territory under its jurisdiction which is in the possession of any State participating in remote sensing activities without discrimination and under the same conditions, with due regard for the needs and interests of developing countries".

project of President Reagan,[11] but the US, like the USSR, did not wait until the 1980ies to think about the design of anti-satellite weapons (ASAT).

The arms "race" is transposed into space. The conflict on Earth finds its equivalence in orbit. The arms "race" in space consists in developing kinetic weapons designed to cause harm to an adversary's space capabilities. These can be Space to Earth weapons (STEW), a variety of ASAT weapons: air-launched weapons targeting space, space-based weapons with a target in space (killer/interceptor satellites), weapons launched from the ground to a target in space or Space-Based Ballistic Missile Defence. The first "successful" American ASAT firing took place on 13 October 1959 against the satellite Explorer 6 from the Bold Orion missile launched from a B-47 bomber. The missile only passed a few kilometres from the satellite. If it is not recognised as the first ASAT carried out successfully by the US, as it did not destroy its target, it is nevertheless considered as such by others, considering that, if it had been equipped with a nuclear payload, the target would have been destroyed. However, the American administration under Eisenhower considers counter-productive[12] the development of ASATs, which are likely to hit their space infrastructures.

During the 1960ies, the US also thought to use high-altitude nuclear explosions to destroy in-orbit satellites. The Hard Track Teak test is carried out in 1958, then another one, the Starfish Prime, is conducted in 1962. The electromagnetic impulse causes damage to a few satellites and interrupts the satellite communications over the Pacific Ocean. Other ASAT tests are conducted with the DOMINIC I. A version adapted from the Nike Zeus system has been used as ASAT from 1962. Under the code name Mudflap, this missile (DM-15S) has been deployed in the Kwajalein atoll until 1966, when the programme was stopped for

11. This American missile defence shield project aimed at the obsolescence of nuclear weapons.

12. Laurence Nardon, "L'arsenalisation de l'espace : projets américains, réactions européennes", IFRI's paper, October 2007.

another one based on the Thor missile that was operational until 1975. The Directed Energy Weapons made possible by the technology of lasers are another area of research into space weapons. On the Soviet side, the project of an orbital bomb is launched in 1962 (R-36 project).

The resumption of ASAT projects took place under Ronald Reagan's presidency with the SDI programme in 1983. It continued until 1992 (nuanced under George H. W. Bush's presidency as early as 1989). The aim is to place in orbit a constellation of small killer satellites (equipped with missiles or acting by direct impacts) that can destroy ballistic missiles, whatever their flight phase. The first American ASAT test recognised as successful by the US took place on 13 September 1985. The weapon in question is an ASAT mounted on a rocket structure (ALTAIR). The aim is to push it into space thanks to a modified F-15 jet. The targeted satellite is destroyed in orbit and creates a debris cloud at an altitude of 550 km. This test and its consequences mark the beginning of the work undertaken by the NASA scientists to know and let know the effects of the production of orbital debris. In fact, from this event onwards, an event that acted as a genuine catalyst, the creation of debris in space becomes the pet subject of a handful of scientists. Albeit officially stopped in 1988, ASAT researches are going on. The space-based missile defence programme (SDI), deemed too expensive and unrealistic, is cancelled in 1993 by the Clinton administration. The space race came to an end in 1987, when the Soviets failed to place in orbit a battle station equipped with mines, nuclear missiles, and power lasers.[13] Later, from the beginning of George W. Bush's term in 2001, offensive space projects are resumed. This has to take the form of "platforms that the US could develop and deploy into space, and that would be able to strike on Earth or in outer space".[14] This American policy is strengthened and justified by the attacks of 11 September 2001. The immediate effect is the

13. Jacques Villain, "La militarisation de l'espace", p. 57.

14. Bruno Gruselle, "La défense antimissile dans l'espace : l'ultime frontière ?", UNIDIR, 2007.

American withdrawal from Anti-Ballistic Missile (ABM) Treaty the same year. On 21 February 2008, the US does not hesitate to demonstrate that its capacity of destroying an in-orbit satellite is maintained. They use a missile to destroy the American military missile USA 193. This show of force follows the same operation conducted by China a year earlier.

Perception of the threat today

The threat builds itself in the interaction between states. The threat is defined by a state according to what it considers to be prejudicial to its national interests. China has officially been considered a threat by the US since 1996.[15] At the same time, satellite capabilities are what state make of them. Today, demonstrations in orbit are construed on both sides as illustrations of the saying *si vis pacem para bellum* (if you want peace, prepare for war), and as operations aiming at discourage the potential adversary. We talk also of developments of ASAT or "counter-space" capabilities.[16] To date, four states have destroyed one of their own satellites using a missile: the US, China, India, and Russia. These intentional destructions would have created 6,850 debris in total, of which 3,472 would be still in orbit in 2023.[17] Beyond these demonstrations of power that create orbital debris, other actions are developing. They are construed as the result of behaviours deemed hostile, or, at least, dangerous for the other space-based objects. As such, satellites able to manoeuvre agilely by moving in orbit can be particularly threatening to other capabilities in the vicinity. By the way, Russia's in-orbit operations have already

15. *Final Report of the Select Committee on US National Security and Military/ Commercial Concerns with the People's Republic of China*, better known as Cox report after the name of the Republican representative, who chaired the committee. A non-classified version of this report was published in 1999.

16. For an exhaustive and updated presentation of these capabilities, see "Global Counterspace Capabilities Report, An Open Source Assessment", Secure World Foundation, 2023.

17. Ibid.

been denounced in 2018 by the then Minister for the Armed Forces, Florence Parly:

> While Athena-Fidus (a Franco-Italian military communication satellite) quietly continued its rotation above the Earth, a satellite came close to it, a bit too close. So close that anyone would have thought that it was trying to intercept our communications. Trying to listen to one's neighbour is not only unfriendly. It is called an act of espionage. And this little Star Wars did not happen a long time ago in a galaxy far away. It happened a year ago, 36,000 kilometres above our heads. And this satellite with big ears is called Louch-Olymp, a well-known, but a little indiscreet Russian satellite.[18]

Russia has also developed a system of in-orbit "Russian nesting dolls". In fact, "'mother' satellites release small 'daughter' sub-satellites, which in turn eject things that look more like missiles and do not seem to be harmless".[19]

Rendez-vous and proximity operations are a matter of concern for states. The US regularly denounces China's machinations in this area, and vice versa. For example, the Chinese satellite Shijan-21 or SJ-21 seized, in January 2022, a worn-out satellite to move it 3,000 km away into a so-called "graveyard orbit" (beyond the geostationary orbit, i.e. beyond 36,000 km) to then come back to its initial position.[20] The uses of this satellite, presented by China as reducing debris, are worrying the other users of space. China is notably blamed for carrying out these operations in orbit without informing the other users. This is important in space, where exchanges of information and coordination can prevent a potential collision. Likewise, the American GSSAP (Geosynchronous Space Situational Awareness Program)

18. Statement by Ms Florence Parly, Minister for the Armed Forces, on space defence, in Toulouse, on 7 September 2018.

19. In camera hearing of the air vice-marshal Philippe Adam, Space Commander, on the lessons from the Ukrainian conflict, report from the Committee of National Defence and Armed Forces, National Assembly, 14 December 2022.

20. " Shijian-21 satellite", eoPortal, powered by European Space Agency, 31 January 2022, https://www.eoportal.org/satellite-missions/shijian-21#mission-status.

satellites are said to have carried out proximity operations in the vicinity of satellites, especially American, Russian, and Chinese ones.[21]

Even if the existence of capabilities, a minima considered threatening by a third party, is not new, the context, in which they are developing, is not the same as during the Cold War. Moreover, the growing number of dual-use satellites[22] increases the risk of misunderstanding and rising tensions between states. While the militarisation of space, consubstantial to its conquest, is not challenged today, the growing number of abovementioned hostile behaviours prompts a growing number of states to start discussions on the subject.

France, in its Defence Space Strategy, points out that "it will continue to give its full backing, in the relevant multilateral forums, to the pragmatic and effective regulation of space, with a particular focus on standards of behaviour in order to ensure strategic stability and avoid possibilities for misunderstandings or escalation."[23] Besides, France's commitment to norms of behaviour is part of the necessity to protect its interests, and the need to discourage destabilising actions.[24]

THE FUNDAMENTAL PRINCIPLES OF SPACE LAW

It is essential to come back to certain principles of space law. Though the latter is regularly considered "liberal"[25], it has, however, conditioned the development of space activities until today.

21. "Global Counterspace Capabilities Report, An Open source Assessment", Secure World Foundation, 2023.

22. UNIDIR defines dual-use satellites as satellites designed to fulfil "non-offensive" missions such as in-orbit services (in-orbit replenishment) or active debris removal, but that can also be used in another way, which harms other satellites (Jessica West and Almudena Azcárate Ortega, "Space Dossier 7 – Norms for Outer Space: A Small Step or a Giant Leap for Policymaking?", UNIDIR, Geneva, 2022).

23. Space Defence Strategy, Ministry for the Armed Forces, p. 29.

24. Alice Guitton, "Maîtriser le milieu spatial, une nécessité stratégique et opérationnelle", *Revue Défense nationale*, 835, December 2020, p. 6.

25. Space Defence Strategy, Ministry for the Armed Forces, p. 16.

Moreover, within international fora, certain space law principles are used by states in their argumentation to denounce actions of other states (see Chapter II). Even if they can sometimes be similar to *lawfare* defined as "a use of law aimed at establishing, perpetuating or reversing a balance of power with a view to constraining an adversary"[26], it is critical to master these fundamental principles to understand how states use them and for what purpose.

Space law was born, in a manner of speaking, with the launch of the first artificial satellite put in orbit on 4 October 1957. This launch, then that of the first American artificial satellite, *Explorer 1*, on 1 February 1958, establish de facto the freedom of use of space and its non-appropriation. In fact, neither of the two superpowers at the time questions the fact that the other could send a satellite into space, letting it fly over its territory among others, without asking for authorisation. State sovereignty does not project into outer space. This practice becomes an established fact. Confronted with the growing interest of states for the use of space, the United Nations creates the COPUOS in 1959 and adopt a first major text on 13 December 1963[27] : the Declaration of Legal Principles Governing the Activities of the States in the Exploration and Use of Outer Space. It prefigures the adoption of the Outer Space Treaty entered into force on 10 October 1967 (see Appendix 1) and today ratified by 112 states. It constitutes a general legal basis for the peaceful uses of space and a framework for the development of the other texts of space law. The other treaties and principles of the United Nations on outer space are more accurate, and most often develop a particular aspect of the use of space.

The Outer Space Treaty establishes the freedom of space and its peaceful use.

26. Amélie Ferey, "Vers une guerre des normes ? Du *lawfare* aux opérations juridiques", IFRI's studies, Focus stratégique 108, April 2022.

27. United Nations General Assembly, "Statement of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", 13 December 1963, 1 280th plenary session.

The freedom of exploration and use of space and its non-appropriation

In its Article I, the Outer Space Treaty stipulates that:

> Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

The freedom of space is the corollary of the principle of non-appropriation set out by Article II of the Outer Space Treaty:

> 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.

The legal principles of the freedom of space and its non-appropriation today allow more than 90 states to invest more than €10 million per year[28] in it. As a result, these states feel concerned about the long-term sustainability of the uses of space. However, those two principles are today undermined by the emergence of a form of appropriation by way of use or "occupation". Some even mention a kind of physical "territorialisation"[29] through the occupation of low orbits by mega-constellations of satellites, and a territorialisation that is being achieved by the allocation of electromagnetic frequencies.

The peaceful use of space

The definition of the peaceful use of space remains, however, problematical. The treaty clearly prohibits the placement

28. Diane Geribaldi, "Pour une organisation de l'action de l'État dans l'espace", *Les Cahiers de la Revue Défense nationale*, "Au(x) défi(s) de la puissance – Regards du CHEM – 72th session", September 2023, p. 132-144.

29. Anne Battistoni-Lemière, "Vers la territorialisation de nouveaux espaces : océans et espace exo-atmosphérique", in *Tout comprendre à la géopolitique*, Paris, Armand Colin, 2022, p. 14-24; and Xavier Pasco, "L'espace extra-atmosphérique".

of weapons of mass destruction in orbit, but not directly that of conventional weapons. Arms race in space is not therefore formally forbidden, even if its realisation would most probably undermine the principle of peaceful use. Additionally, the military use of space is also possible. By this, we mean the use of military satellites in support to land, sea and air operations. This treaty is first and foremost the result of a compromise between the only two space powers at the time, the USSR and the US. It has provided significant leeway to these protagonists for the militarization and development of weapons in space. While remaining free to monitor, from space, the arsenal of their adversary on the ground, the two powers rule out the possibility of a nuclear war in orbit, considering that the latter would be counter-productive. In its Article III, the Outer Space Treaty recognises the applicability of international law to space, including the Charter of the United Nations. However, the latter underlines that states settle their disputes by peaceful means, and that they refrain, in their international relations, from the threat or use of force.[30] Finally, France has adopted a realistic approach based on a use of space for non-aggressive purposes. In this interpretation, states may prepare for defence, and protect their space-based assets by developing, acquiring or adopting any means or methods necessary to preserve their interests, with the exception of means and methods that would be prohibited by international law, including space law and international humanitarian law.[31] It should be noted that there is no consensus among states as to whether or not international humanitarian law applies to space in the event of an armed conflict.

Recognition of the centrality of the state in outer space affairs

Articles VI and VII establish the responsibility of the state conducting space activities.

30. United Nations Charter of 26 June 1945, Art. 2-3-4.

31. Ministry for the Armed Forces, Manual of the Law of Military Operations, 2022, Chapiter 3, p. 276.

> 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, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty [Article VI].

To this end, non-state actors conducting space activities must be subject to an "authorization" and "continuing supervision" by the appropriate State Party to the Treaty (Article VI). Finally, in case of "damage" caused by these activities, the state, once again, remains liable for it (article VII). These provisions are today central given the "privatization"[32] of space. France, for example, considers that the international responsibility of a state cannot be automatically involved for internationally illicit facts that may be committed without its knowledge or even against its will.[33]

The Moon and other celestial bodies in space law

The Treaty of 1967 mentions in its title the Moon and other celestial bodies. So, all its provisions also apply to them. However, the Treaty adds other provisions regarding the Moon and other celestial bodies. This is necessary, because, contrary to outer space, the Moon is a "solid" surface, a "territory". The establishment of "military bases", the "testing of any type of weapons" and the "conduct of military manoeuvres" (Article IV) on them are then forbidden. The State Parties must use the Moon and other celestial bodies *exclusively* for peaceful purposes. Likewise, all the representatives of states present on the Moon are de facto authorised to enter facilities of other states. A requirement for transparency and security appears in this article.[34]

32. Xavier Pasco, "L'espace extra-atmosphérique".

33. Manual of the Law of Military Operations, p. 284.

34. "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. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations

All these provisions relating to the Moon and other celestial bodies are enjoying renewed interest today. The number of plans to return to the Moon or to conquest other celestial bodies for the purpose of exploiting resources is in fact growing. Between 1976 and 1990, there has been no attempt to land on the Moon (as opposed to 18 successful moon landings out of some fifty attempts between 1966 and 1976).[35] Since 1990, five moon landings have been carried out, four by China, and one by India.[36] These figures do not include unsuccessful attempts such as the Israeli probe *Beresheet* in 2019, the Japanese probe *Hakuto-R* in April 2023, both coming from private initiatives, or the Russian probe *Luna-25* in August 2023.

As early as 1979, an Agreement Governing the Activities on the Moon and Other Celestial Bodies came into being. It provides that the Moon and its natural resources constitute the "Common Heritage of Mankind", and that, as such, an international regime should be established to govern its exploitation, when the latter would be about to become feasible. The agreement also includes orbits around the Moon, and trajectories to or around it (called the cislunar). Only 18 states ratified these agreements, but no space-faring powers. The latter have been cautious, and rightly so, because today, in the light of the "new" conquest of the Moon, this agreement could constrain the commercial exploitation of its natural resources. In fact, Saudi Arabia notified to the Secretary-General of the United Nations on 5 January 2023 its decision to withdraw from this agreement in accordance with its Article 20. A state rarely pulls out from a legal text. This decision came into force on 5 January 2024, bringing the number of States Parties to 17. Saudi Arabia considered that its participation in the agreements and in the American Artemis programme to return to the

may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited" (article XII).

35. Dennis Wong, Victor Sanjinez, "The New Moon Race", *South China Morning Post*, 25 August 2023.

36. This is the Chandrayaan-3 probe, which landed on the Moon's South Pole, where no probe had succeeded in landing before.

Moon was no longer compatible with its commitment under the Moon agreement, it had joined in 2012. In fact, the Artemis agreements provide for the exploitation of the resources of the Moon and celestial bodies. Australia and Mexico are in a similar situation, namely they have ratified the Moon agreement and joined the Artemis Accords. For the moment, these two states have made no statement about the potential incompatibility of these two commitments, and have not therefore announced their withdrawal from the Moon agreement. Otherwise, this could have an effect on France's position. The latter has signed, but not ratified the Moon agreement, which commits it all the same not to prejudice the object and purpose of the agreement. In parallel, some states adopt national laws to authorise private companies to exploit the mineral resources of the Moon and other celestial bodies. This is the case for the US (2015), Luxemburg (2017), the United Arab Emirates (2020), and Japan (2021). In order to remain compliant with the Outer Space Treaty, these national laws grant rights of ownership over the extracted resources, not over the celestial body concerned in itself. France and the European Union are, for the moment, somewhat behind these developments. However, in France, the recent information report of the Senate Delegation for Prospective on space resources recommends to adapt the national law (Law on Space Operations (LSO)) to establish the terms and conditions for the exploitation of celestial resources. According to the rapporteurs, the point is no longer to know, whether the appropriation of resources is licit, but to establish the terms and conditions.[37]

The Outer Space Treaty seems too liberal to regulate tensions between states in space. To do so, other initiatives have come up within UN or ad hoc fora in order to tackle issues of security and safety in space.

37. *Information Report made on behalf of the Senate Delegation for Prospective on the Exploitation of Space Resources*, by Ms Christine Lavarde and Vanina Paoli-Gagin, n° 668, p. 80.

FORA DEDICATED TO SPACE IN THE UNITED NATIONS

Historically, the United Nations tackles space issues under two aspects: the civil one, referring to the safety of space activities, represented by the Committee on the Peaceful Uses of Outer Space (COPUOS) in Vienna, Austria, and the military part, referring more to the security of space activities, which the Conference of Disarmament (CD) in Geneva, Switzerland, is dealing with. Today, this dichotomy is questioned. First of all, because the distinction between the civil and military uses of spacecraft is no longer so obvious. Then, because the CD does not only address the topic of space, and the way it operates most often condemns it to inoperability.

The Committee on the Peaceful Uses of Outer Space (COPUOS)

The COPUOS is located in Vienna, Austria. Contrary to the CD, it deals with issues related to the safety of space. Created in 1959, it is at the origin of ten treaties and principles relating to the use of space. It reports to the Special Political and Decolonization Committee, the Fourth Committee of the United Nations General Assembly (UNGA). In 2022, it gathered 102 states. It gathered 74 states in 2012, which represents an increase of 30% in 10 years, a sign of the evolution of the space landscape. Within the COPUOS, the issue of "space threats" is logically not tackled. This committee generally begins its work by looking at the problem of debris, the risk of incidents in orbit or interferences. It is made up of two sub-committees to deal with these issues: the Scientific and Technical Subcommittee and the Legal Subcommittee. In the early 2000ies, the COPUOS takes up issues relating to debris proliferation in space by developing the theme of the long-term sustainability of outer space activities.[38] In that sense, the 21 Guidelines for the Long-term Sustainability of Outer

38. Béatrice Hainaut, "Émergence et promotion de la norme sur la sécurité des activités spatiales", PhD in Political Science, Paris II Panthéon-Assas University, 2017, p. 185.

Space Activities have been adopted in 2019 within the COPUOS. Following the publication of these guidelines, a new phase of discussions, called the "Working Group LTS 2.0", is launched. Its work, which is due to last until 2025, aims at proposing new guidelines that are complementary to the others.

Unsuccessful discussions at the Conference of Disarmament (CD)

The CD, located in Geneva, Switzerland, takes up the theme of the arms race in space at the request of the UNGA, itself called upon by the USSR in August 1981. Two opposed visions give rise to two resolutions adopted by the UNGA.[39] A first resolution (A/RES/36/97), backed by the "Western Europe and Other Group" (WEOG), provides that the CD shall focus on the negotiation of "an effective and verifiable agreement to prohibit anti-satellite systems". The second resolution (A/RES/36/99), backed by the group of "Eastern European and Other States" provides that the CD shall focus on the negotiation of a treaty to prohibit the stationing of weapons, of any kind whatsoever, in space. In 1982, the Prevention of an Arms Race in Outer Space Resolution (PAROS) is adopted, and this topic is added to the agenda of the CD. It enjoys large support; It is in fact adopted by the First Committee of the UNGA in charge of disarmament and international security, by a vote of 170 states for, 0 against, and 2 abstentions (the US and Israel).[40] After tough discussions, an ad hoc committee on the PAROS initiative is created in 1985 within the CD. Here again, the two groups of states oppose, the one wishing that the committee negotiates a treaty, the other seeking to leave room only for discussion of the relevant issues, as a prelude to negotiations.

The PAROS resolution is concomitant to the announcement, in April 1983, by the then American President Ronald Reagan, of his Strategic Defence Initiative project that was supposed to

39. "The CD and PAROS. A short History", UNIDIR Resources, April 2011.

40. Paul Meyer, "Diplomatic options for reinforcing Outer Space Security", Space Security Conference 2011, Geneva, 4 April 2011.

announce the obsolescence of nuclear weapons. This project responds to the technological progress made by the Soviets in the development of intercontinental missiles, potentially carrying nuclear warheads. The system provides for means of intercepting missiles from the ground (by kinetic or directed energy), but also from space (satellites from the constellation *Brillant Pebbles* equipped with interceptors). The Soviets unsuccessfully attempted to counter this project by invoking the ABM Treaty of 1972 prohibiting the deployment of antimissile systems in space. In August 1983, Yuri Andropov announced a unilateral moratorium on ASA testing,[41] 40 years before the American initiative of the same kind that fits into a different context. Later on, in 1999, the American President Bill Clinton envisages to build a limited antimissile shield by signing the National Missile Defence Act. Considering that the development of an anti-ballistic missile system will inevitably lead to an arms race in space, China proposes to re-establish the Ad Hoc Committee on Prevention of an Arms Race in Outer Space (PAROS),[42] dormant until that date. China then mentions "new developments"[43] related to the arms race. In 2001, the 11 September attacks speed up the developments related to missile defence. The American President George W. Bush, and his Secretary of Defence, Donald Rumsfeld, consider that these attacks bring to light the urgent need of the US for a missile defence system. The decision is taken to withdraw from the treaty limiting antimissile systems (ABM Treaty of 1972). The announcement is made on 13 December 2001, and comes into force from 13 July 2002. This means theoretically that the US can now restart missile defence programmes, and place offensive systems in space, as was envisaged with the SDI. The effect of this termination is to accelerate the emergence of the norm on the security of space-based activities, and to reactivate the PAROS

41. "The URSS and the Demilitarisation of Space", *Le Monde*, 20 August 1983.

42. "China: Draft decision on the re-establisment of an ad hoc committee on PAROS", CD/1576, 18 March 1999.

43. "Working paper: China's position on and suggestions for addressing PAROS at the CD", CD/1606, 9 February 2000.

initiative.[44] In fact, China and Russia jointly submit, in 2002, a working document on the PAROS initiative in order to develop a future international legal regime on the prevention of the deployment of weapons in outer space, the threat or use of force against space-based objects,[45] the project of the future PPWT Treaty (Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects). For a little more than ten years, the PAROS initiative has produced a number of papers, before its activities were slowed down, and then stopped. Since the CD operates on the basis of consensus between states, it can quickly be rendered inoperative. Besides, it also deals with other topics, – currently seven[46] – that are by definition highly strategic and, thus, sensitive for states, because they concern disarmament matters. What is more, this brings states to consider that progress on a subject within the CD is the condition for making progress on another one. States apply a logic of parallel negotiations.

This development permits to highlight the interweaving of subjects relating to anti-satellite missile testing with that of missile defence. The reactivation of the PAROS initiative at the CD, after a period of relative inactivity, is often linked to an American announcement on the development of missile defence.

> […] the space issues are taken by all these states, whether they be the Americans, the Chinese, the Russians, ourselves, in a strategic set made up of the nuclear issues of the missile defence, and the space issues. Ballistic ones generally.[47]

44. After a limited production of papers, the PAROS initiative through Member States publishes, from 2002 to 2021, 49 papers.

45. "China and Russia : Possible elements of the future international legal instrument on the prevention of deployment of weapons in outer space, the threat or use of force against outer space objects", CD/1679, 28 June 2002.

46. Nuclear disarmament, fissile materials, PAROS, Negative Security Assurances, New Types of weapons of mass destruction and new systems of such weapons, Comprehensive program of disarmament, Transparency in armaments.

47. Meeting at the Ministry for Foreign Affairs, 9 February 2011.

On 7 December 2020, the UNGA Resolution 75/36 is adopted at its 75th session, during which the prevention of an arms race in space is a point on the agenda.[48] This resolution, initially backed by the UK delegation, includes the sub-item entitled "Reducing space threats through norms, rules and principles of responsible behaviours" on the agenda of the 76th session of the UNGA (20-27 September 2021). That same day, the Resolution 75/37 is adopted by the UNGA. This resolution project, backed by Russia, consists in "envisaging the possibility to make the political commitment not to be the first ones to deploy weapons in outer space", while reminding that the CD is the only multilateral disarmament negotiating forum. The resolution places the sub-item entitled "No first placement of weapons in outer space" on the agenda of the 76tth session of the UNGA.

The first resolution opens the way to the constitution of the OEWG, while the content of the second resolution is discussed at the OEWG.

Alongside the actions undertaken within the traditional international institutions, other initiatives, on the sidelines of the latter, have been or are being taken to regulate space traffic, reduce risks and threats in outer space.

OTHER INITIATIVES

The European draft code of conduct for outer space activities

As early as summer 2007, the European Union (EU) puts forward the idea of a Code of Conduct (CoC) for Outer Space Activities. The promotion of this code becomes a priority for the French Presidency of the EU in the second half of 2008. In December of the same year, the Council of the EU officially issues the first version of its draft Code of Conduct for Outer Space Activities.[49] This code promotes the Transparency and

48. *Report of the Secretary-General on reducing space threats through norms, rules and principles of responsible behaviors (2021)*, UNODA, N2035440.pdf (un.org).

49. Document 17175/08, PESC 1697, CODUN 61, Brussels, 17 December 2008, Annex II.

Confidence Building Measures (TCBM),[50] but they are never explicitly linked to the arms race. The authors wished to circumvent the thorny issue of the definition of space weapons by focusing on the production of debris. This method has been chosen to get the support from the first space-faring power (which is achieved in January 2012), the US, without which this Code of Conduct would have little value. However, cyclically, the US does not want to be constrained by a mandatory text that could, de facto, limit their freedom of action in space. Focusing on debris is relevant, because there is a relative consensus among states to point at the anti-satellite missiles (ASAT) as the most urgent threat to be addressed in order to ensure the sustainable use of low Earth orbits and international security. The Code of Conduct, which became international (International Code of Conduct (ICoC)) with the support of the US, being a non-binding text, does not prevent this kind of shows of force, but prompts not to generate long-lived debris in orbit. The support for the code, under Barack Obama's presidency,[51] shows that the US now seems to consider that cooperation is more profitable for its interests than confrontation. A posteriori, certain French practitioners now consider that, beyond the support displayed in the speeches, the US has not put the means necessary to ensure that this code truly exists. Nevertheless, the adherence of the US to such a regime of non-binding norms can be seen as decisive, because it permits to convince even more countries. The US is thus the state described as "critical" (essential), without which a norm cannot spread ("[...] Critical states are those without which

50. Page 18 of this study.

51. Barack Obama's presidency in 2009 is favourable to a change in the international political orientation after that of George W. Bush. The practice of "militarist unilateralism" (Xavier Pasco, "De l'utilisation au contrôle de l'espace extra-atmosphérique", in Grégory Boutherin, Camille Grand (eds), *Envol vers 2025. Réflexions prospectives sur la puissance aérospatiale*, Centre for Strategic and Aerospace Studies, Paris, La Documentation française, 2011, p. 80) is evolving into "liberal internationalism" inspired by the practice of *smart power* (Suzanne Nossel, "Smart Power", *Foreign Affairs*, 83 (2), 2004, p. 131) applied to space.

the achievement of the substantive norm goal is compromise"[52]). This was confirmed on the ground: "The fact that the US supports this process has given it a boost, this is undeniable."[53]

In fact, following this support, Great-Britain, Australia, Japan or India declared themselves in favour of the ICoC. The support of a "critical state" is thus a condition for the spread of the norm.

Of course, it was also in the interest of the US to be part of the process of defining the code in order to shape it and make it consistent with the pursuit of its national interests. This is also a welcome alternative to the Chinese-Russian draft proposed to the states. It seems therefore possible at the time to convince a critical mass of states to embrace the idea of the CoC. In the EU, the European External Action Service (EEAS) is in charge of its spread and promotion. The true challenge for the EU is to gain the confidence of developing states, but the method chosen does not initially include them in the discussions. The EU reiterates here a method, for which it had already been blamed in the past, the one used to promote the Hague Code of Conduct Against Ballistic Missile Proliferation (HCoC), where the consultation of the so-called "non-aligned" states had been late. Consequently, the latter refused afterwards to participate in the consultations. For the ICoC, the multilateral meetings each time brought together about hundred states in places outside the conventional international fora: Kyiv and Bangkok in 2013, Luxemburg in 2014. The US did not wish to discuss this code in the United Nations, because they feared that they might lose control over its content. In 2015, however, given the lack of significant progress in the discussions, the latter were transferred to the United Nations but, in the summer of 2015, the failure of the discussions marked the end of the process.

The TCBM promoted in the ICoC are to be found again in other work conducted within or outside the UN. The failure of

52. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", p. 901.

53. Meeting at the European External Action Service, Brussels, 14 September 2012.

the CoC must be put into perspective, because something other than nothingness remains. Its provisions fuel discussions around the notion of space traffic management/coordination, those carried out within the COPUOS (the 21 guidelines of the LTSSA adopted in 2019 were in fact nourished by the ICoC), or those taking place within the groups of government experts on transparency and confidence-building measures in space in 2013.

Space Traffic Management/Coordination

The Space Traffic Management/Coordination is an initiative that aims to be, by definition, more comprehensive. It could aggregate all the results of the abovementioned initiatives. The first references to STM date back to the early 2000ies. Though the STM must be international to be valid, there are also regional conceptions, mainly that of the US[54] and that of the EU. Here too, it is generally dealt with from the point of view of safety, and the consequences of dangerous behaviours potentially generating debris. The evocation of the STM raises the question of governance in space.

According to the EU, "STM encompasses the means and the rules to access, conduct activities in, and return from outer space safely, sustainably and securely. The EU approach to STM proposes enhanced capabilities, norms and engagement while preserving EU interests in line with the respective competences of the Union and its Member States."[55]

By establishing technical standards and rules at regional level, the EU wishes to create a knock-on effect at international level. Through its Space Surveillance and Tracking (SST), it already gathers the capacities of about ten voluntary states that pool space surveillance data. In the US, The Department of Trade is in charge of developing a Traffic Coordination System for Space

54. "The Time for International Space Traffic Management is Now", Research Brief, Rand Corporation, 2023.

55. An EU Approach for Space Traffic Management (europa.eu).

(TraCSS). The purpose is to provide collision warning services on civil satellites in support of space surveillance data.

The European and American entities already work together, but are not interconnected. Both entities are working with commercial operators. These schemes permit to fuel international initiatives that are conducted in parallel (at UN level for example), as well as to be fuelled by them (LTSSA of the COPUOS, work of the United Nations Institute for Disarmament Research -UNIDIR, guidelines of the Inter-Agency Space Debris Committee -IADC, which gathers national space agencies, etc.).

The Group of Governmental Experts of the United Nations

The constitution of Groups of Governmental Experts (GGE) is a classical scheme of the United Nations. It is not limited to the space sector, but applies to many issues such as that dealing with cybersecurity or autonomous lethal weapons systems. The purpose of these ad hoc groups is to bring together between 10 and 25 experts, representing the international community and appointed by their government to exchange on a specific topic, and adopt, at the end, a report of recommendations. These GGE aim to ease discussions between states in support of concrete recommendations. Three GGE on outer space have met so far, with another one underway in 2024. Two themes emerge from the four GGE. The first one is that of the development of transparency and confidence-building measures for outer space activities (1991-1993 and 2011-2013), the second one is that of the development of a legally binding international instrument to prevent an arms race in space (2018-2019 and 2023-2024). With the exception of the first one, all the GGE have been created following a draft resolution tabled by the Russian Federation, often co-sponsored by other states. It is interesting to note the evolution over time of the number of votes for and against a GGE "Outer Space". The states' willingness to recreate this format in 2023-2024 erodes.

Date of the effective GGE	Vote for	Vote against	Abstention
1991-1993[a]	129	0	1[b]
2011-2013[c]	167	0	1[d]
2018-2019[e]	121	5	45
2023-2024	124	48	9

a. Draft resolution A/C.1/45/L.17, https://digitallibrary.un.org/record/103675.
b. US.
c. Draft resolution A/C.1/65/L.38, https://digitallibrary.un.org/record/692073 and votes: https://digitallibrary.un.org/record/694237.
d. US.
e. Draft resolution A/C.1/72/L.54.

- *The GGE of 1991-1993 on confidence-building measures in space (report A/48/305)*

The first GGE of 1991 deals with the transparency and confidence-building measures as part of the prevention of an arms race in space. Its report is issued in 1993.[56] It already highlights the risks related to anti-satellite weapons. Its recommendations went unheeded. In fact, the context of the Gulf War has shown that space applications had become absolutely essential to the planning and conduct of military operations. It can be assumed that the recommendations of the GGE have been possibly perceived as limitations to this freedom.

- *The GGE of 2011-2013 on transparency and confidence-building measures in outer space activities*

Ten years after the first GGE, the votes for a new edition almost win unanimous support.[57] This second GGE marks an important step in the sense that the report that emerged from the discussions has been adopted by consensus by all the participant

56. *Prevention of an Arms Race in Outer Space: Study on the application of confidence-building measures in outer space*, Report by the Secretary General, UN General Assembly (A/48/305), Oct. 15, 1993.

57. The group was created by Resolution A/RES/65/68, on 8 December 2010, on the basis of Resolution project A/C.1/65/L.38 of 15 October 2010.

states (A/68/189). At the 3rd session of the OEWG, a great number of delegations have referred to the content of this report. They considered that its content was still relevant and should be effectively implemented.

- *The GGE of 2018-2019[58] in charge of studying new concrete measures for preventing an arms race in space as part of the establishment of a binding text*

This new GGE has been constituted following a proposal from Russia, which wished to evoke the PPWT. No consensus was reached on its report, as the US did not wish to validate it. Nevertheless, already in this report, some experts "have given high priority to the regulation of behaviours, notably by prohibiting different types of intentionally harmful or destructive acts. The emphasis was placed on the prohibition, in particular, of intentional acts that could result in the generation of long-lasting debris in Earth orbit."[59] This GGE has therefore enabled certain countries to "prepare for the discussions"[60] of the OEWG on the issue of the norms of behaviour. This was a non-anticipated effect of this GGE.

- *The GGE of 2023-2024*

On 13 October 2022, the Russian delegation tables a draft decision entitled "New concrete measures for preventing an arms race in space" (A/C.1/77/L.70).[61] The new GGE is created by the vote of the resolution A/RES/77/250 of 9 January 2023.[62] It should be composed of a maximum of 25 Member States, and

58. Set up by Resolution 72/250 of 24 December 2017, https://documents-dds-ny.un.org/doc/UNDOC/GEN/N17/468/87/PDF/N1746887.pdf?OpenElement.

59. Report of the Group of Governmental Experts on further practical measures for the prevention of an arms race in outer space, N1910533.pdf (un.org).

60. Talks with a practitioner from the Ministry for the Armed Forces, 2023.

61. https://documents-dds-ny.un.org/doc/UNDOC/LTD/N22/632/04/PDF/N2263204.pdf?OpenElement.

62. Resolution adopted by the General Assembly on 30 December 2022, further practical measures for the prevention of an arms race in outer space,

meets twice in 2023 and 2024. It is in charge of examining the fundamental elements of a legally binding international instrument to prevent an arms race in space, and, among others, the deployment of weapons in space, and to formulate recommendations on this matter. The resolution was passed by 124 votes to 48, with 9 abstentions.

This GGE is seen by Russia as a forum, within which it can, with like-minded countries, defend its draft binding text tabled at the CD, but not negotiated for several years. Certain states like France recall the recurrent criticism of this draft treaty, and, in particular, the fact that the "weapons in space" are never defined.[63] This GGE, whose number of votes against its creation is high, has few chances to deliver concrete benefits for safety in space. The EU, for its part, considers that the creation of a new GGE undermines the work conducted within the OEWG 2022-2023.[64]

It may, however, seem curious that a majority of states have all the same voted for the setting-up of this umpteenth GGE on the new concrete measures for preventing an arms race in space, knowing that the results of the latest (2018-2019) did not lead anywhere. In this regard, it seems, therefore, that certain countries continue to vote for these initiatives that are doomed to fail, and this, for almost three reasons.[65] The first one is that the country X conforms to its voting habits. X generally votes for this type of resolution, so the consequence of *path dependence*[66] is that X does not want to change its position, even though X may have demonstrated orally that it has evolved on this type of issue. The

A/RES/77/250, https://documents-dds-ny.un.org/doc/UNDOC/GEN/N23/004/96/PDF/N2300496.pdf?OpenElement.

63. United Nations, "The First Committee adopts 21 news bills, marked by the opposition between the Westerners, China and the Russian Federation", press release, 1 November 2022.

64. Ibid.

65. Talks at the Ministry of Europe and Foreign Affairs, 12 December 2022.

66. The notion of "path dependence" comes from historical institutionalism. Supporters of historical institutionalism seeks to explain how institutions structure the response of a given nation to new challenges (Paul Pierson, "Increasing Returns, Path Dependence, and the Study of Politics", *The American Political Science Review*, 94 (2), June 2000, p. 251-267).

second reason is that country Y does not wish to vote against an initiative that is *apparently* constructive. Finally, the third reason is that space-faring states, which are also interested in nuclear matters, foster the emergence of binding instruments (which the GGE wishes to deal with and promote). Nevertheless, Western states now assume to openly vote against this initiative.

Finally, Brazil, which had voted for the establishment of the GGE of 2018-2019, abstained for that of 2023-2024. This is not insignificant given the weight of this country in the international landscape, but also in the space landscape.[67] In fact, Brazil actively participated in the debates during the 3rd session of the OEWG. Chile also abstained.

The capacity of these fora to make significant progress has to be relativized. Albeit appointed by states, experts are supposed to adopt a neutral position during debates. Moreover, the discussions between experts (that are more technical in nature) are likely to transcend national allegiances and to harmonise certain strong political positions. They can sometimes have the merit of initiating a bottom-up approach by reaching a technical consensus, which can then lead to a political agreement.

If the GGE are more focused on the establishment of *measures*, the purpose of the OEWG is to establish *norms*. *Measures* aim at creating a favourable climate of confidence between states, like for example permit the exchange of information on national space doctrines, provide a list of points of contact in case of a problem,[68] or set up rapid communication channels. By contrast, *norms* must respond to actions creating deleterious effects

67. While not being, strictly speaking, a space-faring power, Brazil has developed an ambitious space policy since the 1970ies. To this end, it has acquired its own launch base (Alcantara) and launcher (VLS). The space programme has been significantly stepped down since 2003, when the explosion of a rocket on the ground killed 21 Brazilian engineers. Conversely, there are today eleven space-faring powers: the US, Russia, France, Europe, Japan, China, North Korea, South Korea, India, Israel, and Iran.

68. The implementation of a part of these measures is fostered by the initiative of the UNIDIR, which has set up the Space Security Portal on the voluntary basis of the States, https://spacesecurityportal.org/.

between states, namely creating a lack of understanding and/or misunderstanding (satellites coming closer to each other or even physical contacts between satellites), and being damaging to the space environment itself (creation of long-lived debris). The *norms* of behaviour have the ambition, when this is relevant, of becoming binding legal norms. This allows to overcome the opposition between *hard law* (binding) and *soft law* (non-binding).

The OEWG on Reducing Space Threats

The OEWG was formed following the UNGA Resolution 76/231 of 24 December 2021. It was approved with 163 votes for, 8 against, and 9 abstentions.[69] It is a non-perennial, time and space limited initiative that is open to all states contrary to the GGE. Its objectives are broken down into four points corresponding to four distinct sessions. The latter runs from May 2022 to August 2023. The group is in charge of a) drawing up an inventory of international legal frameworks and other normative frameworks regarding the threats related to the behaviours of states in space; b) examining the threats posed or to be posed by States to space-based means, as well as the measures, activities and omissions that could be considered irresponsible; c) formulating recommendations on possible norms, rules and principles for responsible behaviour with regard to threats posed by States to space assets, including, where appropriate, on how they could contribute to the negotiation of legally binding instruments, in particular with regard to the prevention of an arms race in space; d) submitting a report at its 78th session.

The Chair of this WG is a Chilean diplomat named Hellmut Lagos. The WG works on the basis of consensus. It is also responsible for organising informal discussions between groups of States in between official sessions. The first three sessions took place respectively in May, September 2022 and late January/early February 2023. The last session, which ended on 1 September, did not permit to adopt a report on the basis of consensus. This

69. N2133654.pdf (un.org).

UN format has the advantage of not reproducing the errors of the ICoC concerning the mode of consultation of State. It is not limited, inclusive in the sense of States, but also in the sense of international organisations that can theoretically speak at formal sessions or through written contributions.

Shortly before the start of the OEWG, in April 2022, the US unilaterally committed to respecting a moratorium on the destructive, direct-ascent anti-satellite (DA-ASAT) missile testing.[70] This unilateral initiative is about to become an international norm in the sense that it has been adopted in a UN Resolution[71] by 155 States for, 9 against, 9 abstentions and 20 non-voters. Besides, the US has been joined in their national commitment[72] by 34 States, including the EU, Canada, South Korea, Australia, Japan, the United Kingdom and Switzerland. Of course, this norm can be considered a norm of responsible behaviour. It has the advantage of serving both the fight against an arms race in space and the fight against the proliferation of orbital debris. However, this commitment is without risk for the US, symbolically positive, and technologically without any consequence, as they already master this capacity. More importantly, it permits to ensure that States that join the moratorium will not themselves carry out DA ASAT testing in the future. Moreover, in that way, they do not deny themselves to use anti-satellite missiles operationally, as they did during operation *Burn Frost*.[73] Finally, it has

70. We will refer to it, later in this study, under the reduced form of the acronym DA-ASAT. "[…] the United States seeks to establish this as a new international norm for responsible behavior in space. The Vice President also called on other nations to make similar commitments and to work together in establishing this as a norm, making the case that such efforts benefit all nations" (Fact sheet, Vice President Harris Advances National Security Norms in Space, The White House, 8 April 2022).

71. A/77/41 of 7 December 2022, Destructive direct-ascent anti-satellite missile testing : (un.org).

72. Laetitia Cesari, "Une nouvelle étape dans le désarmement spatial : le cas des tests de missiles antisatellites à ascension directe", paper 39/22, Strategic Research Foundation, 7 December 2022.

73. Dwayne A. Day, "Burning Frost, the view from the ground: shooting down a spy satellite in 2008", *The Space Review*, 21 June 2021.

to be noted that no American administration since George W. Bush, democrat or republican, has taken the decision to rejoin the ABM Treaty of 1972. The development of missile defence capabilities is thus preserved, because it is outside the scope of this moratorium. So, both in form and substance, the US, as good strategist, seems to have proposed this moratorium at the right time or *kairos*.

> The *kairos* marks the effort of human intelligence to dominate uncertain and contingent realities. Successful action means seizing the right opportunity. [...] The man of *kairos* is the one who knows how to seize opportunities and adapt to the complexity of the world. [...] If he possesses the art of acting at the right moment, it is because he has first previously made the right diagnosis.[74]

This can be one of the keys to the success of a norm, i.e. having a good understanding of the space landscape, of the alliances and divergences between States, and knowing how to propose a norm which, at the very moment it is proposed, can only be accepted by almost everyone.

74. Jean-Vincent Holeindre, "Thucydide et le bon stratège", *Annuaire français des relations internationales*, vol. XV, 2014, p. 79-80.

II. THE WORKING GROUP OF THE UNITED NATIONS ON REDUCING SPACE THREATS THROUGH NORMS, RULES AND PRINCIPLES OF RESPONSIBLE BEHAVIOURS, 3RD SESSION

The Working Group (WG) on Reducing Space Threats was divided into four sessions that were distinct in time. The first session was that of the setting-up of debates (9-13 May 2022). It dealt with the law applicable to space and the possible sources of legal inspiration such as maritime or air law. It has also been significantly fuelled by presentations of experts. The second session (12-16 September 2022) also made ample room for experts to express themselves on a variety of topics that were more precise and technical than during the first session, but the States did not express themselves massively. The third session (30 January – 3 February 2023) is the first that gave the floor almost exclusively to the States, even encouraging them to set up a discussion between representations. In this way, beyond statements prepared in advance, there have been spontaneous interactions. Statements made by the States dealt with the description and classification of actions and events perceived by them as threats. The fourth session (28 August – 1 September 2023) was more diplomatic, since the objective was to be able to adopt a report, which did not take place due to a lack of consensus between States.

The writer of this study, who attended the third session, was able to listen to and observe the debates. Additionally, several interviews were conducted. First with members from different departments of France's Ministry for Europe and Foreign Affairs (MEAE) and Ministry for the Armed Forces (MINARM); then, at international level, with representatives of the US, Brazil, and the Philippines. The first one is very active on the question of norms of behaviour, the second one is in favour of a binding treaty, but favourable to non-binding norms if nothing else, hoping that the latter will become, in the long run, binding norms. Finally,

the last one is a State belonging to the Non-Aligned Movement, which is favourable to non-binding norms as means, but considering a treaty as the ultimate objective. Several other delegations were called upon, but did not respond favourably to these requests.

Schematically, four groups of countries, which have made statements at this session, represent four different trends within the WG according to their degree of adherence to the objective of the OEWG:

- The "receptive" or "allies": France, the European countries, the US and like-minded countries, supporters of the approach based on non-binding norms of behaviour, without ruling out a binding text in the middle to long term;
- The "opponents": Russia, China and like-minded countries (Iran, Cuba, Pakistan, Syria), which reject the approach based on norms and push into adopting a binding legal treaty;
- The "distrustful": the intermediary or non-aligned States. They accept the idea of non-binding norms, while waiting, in the short to middle term, for discussions to draft a binding text (India, Brazil, Mexico, Chile, the Philippines, Nigeria, Singapore, Türkiye, Algeria, Egypt). Their approach within the WG is constructive. They seem to look for a third way between allies and opponents;
- The "indifferent", which, for the moment, have not voiced a position that would place them in the three previous groups. Their general position is to consider that space must be used for peaceful purposes (United Arab Emirates, Saudi Arabia).

This categorisation is a typical ideal. There are nuances within these groups. Interests may be different, and the degree of knowledge about the topic varying. Some representatives of the countries are experts in the space domain, others not. However, each group described above has a common denominator that permits to categorise it schematically. Finally, this categorisation only applies to the study of interactions within the third session of the OEWG.

Unsurprisingly, opponents are States that have voted against the establishment of this WG. In fact, the Resolution 76/231 of

24 December 2021 entitled "Reducing Space Threats through Norms, Rules and Norms of Responsible Behaviours" has been adopted by 150 votes for, 8 votes against (China, Cuba, Russian Federation, Iran, Nicaragua, Syrian Arab Republic, Democratic Popular Republic of Korea, and Venezuela), and 7 abstentions (Armenia, Belarus, India, Israel, Pakistan, Central African Republic, and Tajikistan).

[See Appendix 2.] Speaking times of opponents during the five days are much higher than those of the allies (45% against 28%). This seems to be a strategy of monopolisation of speech by the opponents, consisting in repeating similar arguments, but in different ways. The allies' interventions are short, but numerous.

On 31 January, the ratio of speaking time between allies and opponents is balanced (37% against 36%). On 1 February, opponents take the floor significantly (54% against 26% for the allies). This is related to the fact that the Russian delegation asked to add two topics to the agenda. On 2 February, ratio of speaking time between allies and opponents is balanced again (32% against 34%). That day is also marked by the longest speaking time for the distrustful over the five days (19%). Finally, on 3 February, opponents resume the offensive by taking the floor predominantly (52% against 25% for the allies). The main ideas of the opponents are being recalled once again during long interventions (China and Russia), between 10 and 20 minutes.

CRITICISM AND DIFFERENCES OF OPINION ON THE CONTAINER

Schedule of the WG and participation of NGO

Before substantive discussions, the three groups of States have expressed themselves about the very existence of this WG and its functioning. The two questions of procedure relating to the agendas of the WG and to the participation of NGOs took up most of the first day (30 January 2023).

A revision of the schedule was requested by Russia, which wanted to include two topics (4 and 5), namely that of the norms, rules and principles relating to the prevention of the placement

of weapons in space, and that of the norms, rules and principles relating to the prevention of the use of force or the threat of use of force against space objects or their use. It has to be noted that these two topics are those backed by Russia and China in the CD and that they are related to their treaty proposal (PPWT). So, Russia and its allies use this WG to discuss themes that are usually tackled in the CD. The addition of the two themes has been approved by the other States without any difficulty. By contrast, no consensus was reached among States on the question of the curtailing of the participation of non-state entities. This question literally blocked the substantive discussions of the first day. The opponents requested that the NGOs participate in the work of the WG only *through* written contributions or during informal sessions. Conversely, allies and distrustful expressed themselves for the participation of the NGOs.

Though Resolution 76/231 clearly mentions the participation of the NGOs[1] in the discussions, Russia considers that, as the resolution has not been voted unanimously, there is no consensus among States on the question of the participation of NGOs, whereas this WG is based on consensus. Russia targets, without saying it, the International Committee of the Red Cross (ICRC). The latter was, however, able to voice its opinion.

Russia considers that the participation of these non-state entities could jeopardise the work of the States. These entities represent only 1% of the total duration of the third session.

> […] For the participation in discussions by non-governmental entities, we retain the right to reconsider this understanding in the case of abuse by non-governmental entities of this organization or if discussions have become destructive nor undermining cooperation or agreement on the final outcome, such attempts to undermine our work cannot be acceptable by such bodies [Russia].

1. "6. […] decides that the open-ended working group shall work on the basis of consensus, […] with the participation of intergovernmental organizations and other entities having received a standing invitation to participate as observers in the work of the General Assembly, as well as organizations and bodies of the United Nations, and with the attendance of other international organizations, commercial actors and civil society representatives, in accordance with established practice, and further decides that the Chair may also hold intersessional consultative meetings with interested parties to exchange views on the issues within the mandate of the open-ended working group."(A/RES/76/231, N2141722.pdf (un.org)).

A tug of war then begins between the Chair of the WG and Russia, which challenges his authority.

> […] the consensus is not without any limits. We have limitations, we cannot, based on consensus, decide things that go against the rules of procedure, and we cannot change the mandate of the group, and we can also not change the established practice [Chairmanship].

This explains why the chart of 30 January(Appendix 2) shows a speaking time of 48% for the opponents, versus 19% for the Chair of the WG, who had to respond systematically to each intervention of the opponents. The allies, as for themselves, made short interventions (25%) to support the Chair, and challenge Russia's attitude.

> Any attempts to exclude them [the non-state observers] from participating in our work are cynical, groundless and contrary to established practice.

The distrustful emphasized the relevance of the participation of non-state entities, which could provide their expertise.

> We believe that the NGOs and in particular the ICRC have made very relevant contributions to our work and any curtailing of this participation would weaken our substantive discussions. This participation does not mean any prejudice to the intergovernmental nature of this group, and we very much look forward to beginning our substantive discussions [Brazil].

The very principle of the non-binding norm

The opponents systematically bring up the draft Treaty to the the CD. It is considered the only solution to prevent rising tensions in outer space. In fact, for them, discussions in this WG

should not overshadow the ultimate objective of a new treaty negotiated at the CD. The WG's final report, if it contains norms, shall not be considered a document of substitution, and prevent progress in the CD. The norms-based approach "should not be taken for granted", with priority being given to the negotiation of a binding text in the CD (Iran).

However, the paradox can be underlined that at least one of the States calling for more binding principles did not ratify certain existing binding texts. For example, the Islamic Republic of Iran has "only" signed (and not ratified) the Outer Space Treaty, as well as the Convention on Registration of Objects Launched into Outer Space. And in fact, only one out of the nine space objects launched into outer space by Iran, of which four are still in orbit, has been registered.[2]

The distrustful, albeit recalling that the final objective consists in the emergence of a legally binding instrument, do not close the door to the principles of norms.

> […] we see that there is no inconsistency between soft laws, or the clarification of norms of responsible behavior, and this aspiration [legally binding instrument], and this is reflected in our positions, […] as well as in the various statements of ASEAN Member States at the first Committee and also in the OEWG, […] we see no dichotomy between soft law and norms of responsible behaviour and support for legally binding instrument [The Philippines].

So far, the Philippines has only signed, but not ratified the Outer Space Treaty. It has, however, committed to doing it through the Philippine Space Act.[3]

Nigeria supports the Philippine position, while specifying that, if an agreement on a binding legal instrument is not reached in the short term, it is useful to have norms. In that sense, Nigeria supports the joint contribution made by the Philippines

2. Online Index of Objects Launched into Outer Space, United Nations, Office for Outer Space Affairs, Search OSOidx (unoosa.org).

3. Republic Act N° 11363 or Philippine Space act, https://philsa.gov.ph/philippine-space-act/.

and Germany.[4] In this regard, diplomatically, this contribution between a State of the Non-Aligned Movement and a Western State is a strong signal sent to the other States. This permits to support the argumentation, according to which the establishment of norms of behaviour is not the idea of a "side" in particular, but serves the interests of all. This kind of initiative, what is more within the United Nations, avoids the pitfalls faced by the ICoC, which some have perceived as an instrument fitting into a "post-colonial" approach.[5]

THE CONTENT

The approach based on responsible behaviour

One of the recurrent criticism raised by opponents is that non-binding norms are based on behaviours. More precisely, the concept of responsible behaviour is seen as:

> subjective, vague and taken from social science literature [...] Being based on expectations rather than laws, [norms] better adapt to the political situation of one or several States, categorically oppose the conclusion of legal agreements to preserve their flexibility [Iran].[6]

India, as for it, underlines that the assessment of the behaviour is the central problem. Who carries out this assessment? With what space surveillance data? Who will have access to relevant data and information?

Finally, China opposes the approach based on behaviours to international law. For it, behaviours that respect international

4. AGNU, Recommendations on possible norms, rules and principles of responsible behaviours relating to threats by States to space systems Submitted by the Federal Republic of Germany and the Republic of the Philippines, https://docs-library.unoda.org/Open-Ended_Working_Group_on_Reducing_Space_Threats_(2022)/A_AC294_2023_WP1_GermanyPhilippines.pdf.

5. Talks with the representative of the Philippines, 31 January 2023.

6. 3rd meeting, 3+ Session, Open-ended Working Group on Reducing Space Threats, 31 January 2023, 3rd Meeting, 3rd Session Open-ended Working Group on Reducing Space Threats | UN Web TV.

law are the only ones that make sense, because, otherwise, this would mean that, even if a behaviour is lawful, it could be considered irresponsible. This, from the point of view of China and the opponents in general, jeopardises international law. They therefore advocate lawfulness in the face of the potential illegitimacy (or irresponsibility) of a behaviour.

Some allied States and opponents take as an example the "behaviours" linked to RPOs (Rendez-vous and Proximity Operation). For allies, albeit lawful, RPOs can be considered irresponsible, if a satellite approaches another one without its consent. For opponents, the RPO is unlawful pursuant to the Outer Space Treaty and its principle of due regard (Article IX), which is also to be found under the name of due diligence in Article X §2 of the Convention on International Liability for Damage caused by Space Objects (1971). Article IX defines it that way: the "States Parties to the Treaty [...] shall carry on all their activities in outer space [...], with due regard to the corresponding interests of all other States Parties to the Treaty." This principle is not exclusive to space law; it is also mentioned in the Law of the Sea (Montego Bay Convention, 1982) and air law. It is deliberately vague so that it can adapt to the various objects of the law, to which it applies. However, for China, it is necessary to define this general principle, but certainly not that of responsible/irresponsible behaviour, which would then only be a redundant approach or even an approach contrary to international law.

> On the issue of RPO, the French delegate said that RPO, the GSSAP RPO is legal. My recommendation to the French delegate is that, please clearly make some studies before reaching a conclusion. Because in the OST [Outer Space Treaty] we have the due regard obligation in the OST. GSSAP satellite while carrying out malicious RPO against the other satellites, do you think it is in violation of due regard obligation under the OST?[7]

7. 6th Meeting, 3rd Session, Open-ended Working Group on Reducing Space Threats, 1 February 2023, 6th Meeting, 3rd Session Open-ended Working Group on Reducing Space Threats | UN Web TV.

Some delegations also recalled that China was carrying out similar operations with its SJ-21 satellite. The American delegation recalled that, on this matter, China did not communicate at all, and that it could, therefore, be also misinterpreted by third States.

> Rather than learn about its functions and intentions through additional PRC transparency, the behavior of SJ21 was only detected by military, civil and commercial space situational awareness systems.[8]

In order to counter accusations of subjectivity concerning the definition of norms of behaviour, France underlines that the latter will have to be technical and not political.

Finally, several "opponent" have underlined that the genuine irresponsible behaviour in outer space is that to define it as an operational domain. They denounce, in the first place, the American superiority in outer space, but also all the United States' allies, which have also defined outer space as an operational domain (France, NATO, EU).

> The greatest threats related to outer space result from the ideology and policies that consider this domain as a new warfighting frontier and through actions and developments that are leading to weaponization of outer space, by no parameter this could be considered as a responsible behavior [Pakistan].

In some ways, this statement illustrates the fact that transparency must be reciprocal among States. In fact, here, the transparency of space policies and strategies of certain receptive or allied countries[9] is used against them by those, whose strategies are less transparent, but, sometimes, pretty much the same. The US, France or NATO countries consider outer space as a domain

8. 5th Meeting, 3rd Session, Open-ended Working Group on Reducing Space Threats, 1 February 2023, 5th Meeting, 3rd Session Open-ended Working Group on Reducing Space Threats | UN Web TV.

9. The US or France for example communicate a lot about their space policy and their defence space strategy.

of (military) operations,[10] making them the target of criticism from opponents. Conversely, Russia and China, for example, do not describe space as a domain of operations in their official documents. Nevertheless, they have demonstrated offensive capacities in outer space (Chinese anti-satellite missile launch in 2008, Russian anti-satellite missile launch in 2021, cyberattack against space-based infrastructures attributed to Russia in 2022, etc.).

The subjectivity induced by the notion of behaviour is also called into question by opponents when assessing the threat and intentions of *the other*. In itself, reciprocal distrust in space is simply an extension of the distrust that exists on Earth.

> Threat is a matter of perception; it is essentially subjective (or more precisely intersubjective). It is always constructed rhetorically [...], what rhetoric constructs in the construction of threat – what underpins the perception that certain kinds of material capabilities (or even actions) currently represent a threat – is a particular definition of a social relation within a wider network of other social relations.[11]

Another approach backed in full or in part by some States consists in considering that certain capabilities are to be prohibited/limited in order to prevent an escalation of tensions in space. From this point of view, the prohibited capabilities should only be used offensively. However, the possibility that a space-based system be civil, military, defensive and/or offensive exists. This amounts to wishing the prohibition of weapons in space, pet subject of the opponents, without the term space-based weapon being ever defined. This approach is that adopted by arms control (limitation of nuclear weapons), but it is not adapted to the space context.

Finally, a last approach, which is not exclusive of the others, consists in taking into consideration the *effects* produced as the consequence of an action. It could be considered simplistic, since

10. NATO, "NATO's approach to space", 23 May 2023.

11. Alex MacLeod, Dan O'Meara (eds), *Théories des relations internationales. Contestations et résistances*, Québec, Athéna Éditions, Centre for the Study of Foreign and Security Policies, 2nd ed., 2010, p. 252.

a "virtual"[12] or potential "threat" does not turn systematically into an action, and thus into tangible effects. Nevertheless, the effects-based approach has maybe the advantage of enabling the creation of concrete and immediate norms. In this regard, the American DA-ASAT moratorium has more to do with a norm targeting the produced effects rather than the behaviour or capabilities as such. This is in fact a recurrent criticism from the opponents to the moratorium, who consider that this norm does not prevent either the development of a so-called warlike rhetoric by the US, or the operational use of such capabilities.

It is therefore possible to say that proposals for norms relating to behaviour that could be seen as threatening are unlikely to succeed.

Conversely, many States, at the sessions of the OEWG, called for the liability of States in terms of space sustainability. This characterises an ethical approach to the problem that is reminiscent of the doctrine of *consequentialism*.

> This philosophical doctrine is based on the principle that it is the effects or, more precisely, the consequences attributable to an act that make it possible to judge the moral character of our behaviours and not the particular circumstances or the intrinsic nature of the act.[13]

The allies, opponents, distrustful and indifferent unanimously agree on the fact that outer space is not to be polluted or made unusable by the proliferation of debris. First of all, because all these States are themselves users of space. From the space-faring power to the user of space capabilities, States benefit from the use of space data for their development and national economies. Besides, to be officially against this idea would undermine

12. In reference to Raymond Aron's assertion that politics, in the case of relations between states, seems to mean "the mere survival of states in the face of the virtual threat created by the existence of other states", and that the first objective that political unity can aim for is survival, and therefore security (foreword by Raymond Aron to the 8th edition of Paix et guerre entre les nations [1962], Paris, Calmann-Lévy, 1984).

13. Alex MacLeod, Dan O'Meara (eds), *Théories des relations internationales,* p. 508.

the international image of the State in question. So, every norm proposal that would take this moral concern (that is not without economic stakes) as its goal could effectively become an international norm. In that sense, this is very similar to the idea that a political leader must comply with an "ethic of responsibility" (the fact that an actor takes into account the consequences of his acts), contrary to the "ethic of conviction" (which prompts the actor to act without thinking about the unfortunate consequences, or attributing the latter to human stupidity)[14] or, at least, give the impression that he complies with this ethic within an international forum such as the United Nations.

It will be seen, in Chapter IV, that the doctrine of the consequentialism is also used by non-state actors to promote the sustainability of space.

The responsibility of States in the uses of commercial satellites

Though the subject was not explicitly on the agenda, the question of the use of commercial satellites for military purposes reappeared many times in the statements of the "opponents", calling into question the direct responsibility of the "allies" for this use in the war in Ukraine. More generally, the use by the US of commercial connectivity satellites (Starlink of SpaceX) on territories, where they have not been authorised, has been denounced by the "opponents" (Iran). China did not make any statement on that particular point, but it has not, however, authorised SpaceX to provide its Starlink service to Chinese citizens on its territory.

In the presence of the main protagonists, the war in Ukraine has been addressed within the OEWG under the prism of the provision of commercial space capabilities for military purposes to a third State, i.e. Ukraine, a State without sovereign space capabilities and a State at war. This has created tensions, especially between Russia and the "allies". It recalls, in some respects, the deleterious atmosphere of 2014, following the invasion of

14. Max Weber, *Le savant et le politique*, Paris, Plon, 1959.

Crimea by Russia. Even back then, the geopolitical context has worked against the ICoC.

As early as the second session of the OEWG, Russia stated that commercial satellites used for military purposes in Ukraine might constitute legitimate targets for retaliation:

> Namely, the use by the United States and its allies of the elements of civilian, including commercial, infrastructure in outer space for military purposes. It seems like our colleagues do not realize that such actions in fact constitute indirect involvement in military conflicts. Quasi-civilian infrastructure may become a legitimate target for retaliation.[15]

During the third session, Russia held the US and NATO countries responsible for the use of commercial satellites for military purposes in Ukraine:

> […] the US and NATO countries are actively participating, alongside the Ukrainian Armed Forces, in the conflict, which is a threat to Russia's security. What is even more important is the experience gained, which can be used in other regions of the world and acquire a global dimension, which is likely to affect the interests of a majority, if not, of all Member States.[16]

Similarly, Iran has condemned the transport of Starlink terminals on its soil, without SpaceX having obtained from Tehran the corresponding authorisation:

> Consequently, the Islamic Republic of Iran holds the US Government responsible for such unlawful and irresponsible operation by its SpaceX Corporation as private company. It is not secret that Starlink is not merely a civilian project and has military objective as an element for militarization and integration of an armed race in outer space to threaten national security of states; therefore, the Islamic Republic of Iran reserves its inherent right to respond in accordance with international law and the charter of United Nations to any threat posed or wrongful

15. Statement by the Head of the Russian Delegation K.V.Vorontsov at the second session of the Open-Ended Working Group established pursuant to UNGA resolution 76/231, 12 September 2022).

16. Speech by the representative of the Russian Federation, https://media.un.org/en/asset/k1z/k1zn6prxc3.

> act against its national sovereignty and its territorial integrity, the conduct and action of constellation companies.

The use of commercial satellites for military purposes is not new. In fact, in 1991, the US said that the Gulf War was the "first space war",[17] since satellites were massively used during the conflict. In 2022, the war in Ukraine is considered by certain American observers as the first theatre of space operations in history.[18]

What may seem "new" is the massive use of commercial space capabilities by a State having, on the other hand, no credible sovereign space capabilities. The Ukrainian Armed Forces are using space telecommunication, intelligence and reconnaissance services to plan and conduct military operations. Before the war, Ukraine already used space applications, but it has been encouraged to "militarise" its uses through its engagement in the war in Ukraine. This, apparently, posed a problem to SpaceX, which decided to limit the performances of Starlink on the Ukrainian front line. It remains to be seen whether or not this limitation of capacities was coordinated with the American government.

Russia holds the US publicly responsible pursuant to Article VI of the Outer Space Treaty (International Responsibility of States). When it considers that commercial satellites are legitimate military targets, it bases itself on the use by Ukrainian Armed Forces of these space applications. In fact, connectivity satellites are used to guide drones, optical/radar/infrared observation satellites to track and target Russian troops, adjust artillery fires and assess their effects, while being complemented by electromagnetic intelligence. From a legal point of view, there is absolutely no doubt that commercial satellites, the "goods", used by the Ukrainian Armed Forces serve military purposes. In fact, goods

17. M.-M. de Maack, "La guerre du Golfe ou l'introduction des moyens spatiaux dans l'art de la guerre", in *Guerres mondiales et conflits contemporains*, 4 (244), 2011, p. 81-94.

18. David T. Burbach, "Early lessons from the Russia – Ukraine war as space conflict", Atlantic Council, 30 August 2022.

that can be considered as military objectives are defined as follows by International Humanitarian Law (IHL):

> In so far as objects are concerned, military objectives are limited to those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage.[19]

According to this paragraph, satellites of the Starlink constellation may constitute lawful targets. However, Russia does not recognise the applicability of IHL to space. The Russian rhetoric uses the term "legitimate target" and not "lawful target". The hypothesis would be to deduce from it that Russia uses this term only in reference to the right of self-defence enshrined in the Charter of the United Nations, Chapter VII, Article 51.

In response to Russia's statements, the US holds the latter responsible for the purchase of satellite imagery from Chinese companies:

> I would ask our Russian colleagues when they go and seek commercial satellite imagery from foreign countries to the same rules apply because it is known to the United States that Russian entities have purchased imagery from Chinese Companies that they have used in their conflict in Ukraine, so I hope as our Russian colleagues accuse the United States of these issues that we all consider that all countries are doing this and therefore we should take into account that.[20]

International law applicable to space

In space, international law applies, namely: the Charter of the United Nations, the law on neutrality, and space law. The applicability of IHL, or the law on armed conflicts in case of an armed

19. United Nations, Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), Chapter III, Art. 52, §2.

20. Statement by the representative of the US, 3rd Meeting, 3rd Session, Open-ended Working Group on Reducing Space Threats, 31 January 2023.

conflict in space, divides the international community. The latter consists in establishing rules in order to limit the harmful effects of armed conflicts on property and civilian populations. In this particular case, Russia, Iran and China do not recognise the applicability of IHL in space. They have expressed their point of view many times during the OEWG. For Russia, it is not relevant to ask whether IHL applies or not to space, since there will be no use of force in space. For China, the argumentation is similar. The States "would send a wrong message", if they discussed the applicability of IHL in space, though the "objective of the OEWG is to discuss ways of preventing armed conflict in space."[21]

What may seem paradoxical in Russia's stance is to recognise commercial satellites as targets, but not to consider that this constitutes a use of force or a threat of use of force in space. Besides, when Russia wishes to attack commercial satellites, it is, first and foremost, because they effectively contribute to the Ukrainian Armed Forces' military action. In so doing, it invokes, without saying so, IHL rules.

Finally, attacking a satellite in space could be construed as armed aggression and call for a response from the State that bears international responsibility for the targeted satellite. Until now, States have seen to it that their attacks were considered to be below the threshold of armed aggression through the use of cyber or electromagnetic attacks. In the case of the cyber attack of 24 February 2022 on the connectivity service, ViaSat KA-SAT, used by the Ukrainian Armed forces, and albeit officially attributed by the US and the EU to Russia on 10 May 2022, there have not been a priori any response in space. The attack has not been conducted on the satellite itself, but on the user terminals on the ground. Almost 40,000 of them had to be replaced, because the attack made them unusable.

The OEWG considers space in its entirety. Of course, current issues revolve around the near-Earth environment, currently

21. Statement by the representative of China, 3rd Meeting, 3rd Session, Open-ended Working Group on Reducing Space Threats, 31 January 2023.

the most populated one. The Moon and other celestial bodies were also possibly mentioned in it, because they are included in the provisions of the Outer Space Treaty of 1967. At this stage, issues tackled in this WG are not – yet – facing the cislunar space (space between the Earth and the Moon and Moon orbits), the Moon itself or other celestial bodies, or, at least, not with such an intensity. One thinks, for example, of the collective definition of responsible behaviour, the militarisation of the cislunar space or the Moon, applicable international law, and the taking into consideration of a potential on-site conflict. However, given current trends, prospective scenarios envisage such developments in the future.[22] Programmes to return to the Moon are being rolled out, and the first steps of the reconquest are materialising. Moreover, the US already proposes norms of responsible behaviour for the Moon and other celestial bodies through its Artemis Accords. They are conceived at the same time as the development of the lunar capacity programme. The American Artemis Accords and programme are conducted in parallel to that of China, called International Lunar Research Station (ILRS).

22. This is the case for example of the prospective scenario Space of the Red Team Defense season 3, video of the scenario on line: https://www.youtube.com/watch?v=O7uQ-spxX6I&t=25s.

III. NORMS OF BEHAVIOUR APPLICABLE TO THE MOON AND OTHER CELESTIAL BODIES

THE CONQUEST OF THE CISLUNAR AND LUNAR SPACES BY THE US AND CHINA

The Moon is the object of many state and private desires. This general movement is driven by the space-faring nations, the US and China. *Mutatis mutandis*, the Moon race is, once again, a reality. Its nature is, however, slightly different from that during the Cold War. If prestige remains a common denominator, the willingness to settle down permanently on the Moon is motivated by political, technological and economic interests. The birth of two concurrent projects divides schematically the international scene into two blocs. A nuance needs to be made in the sense that certain States do not join any of the two initiatives, or join both of them, which necessarily questions their positioning. This reconquest is similar to the conquest of a territory, even if the latter is legally prohibited by the Outer Space Treaty. This raises the question of the establishment of norms, even before the Moon is effectively "inhabited".

It may be useful to recall briefly the steps of this reconquest. It is, first and foremost, political and motivated by the "fear" of the US to be downgraded compared with the Chinese progress in this field. In fact, shortly after the first Chinese inhabited flight on 15 October 2003, the US declares that it wants to come back to the Moon by 2004. The then American President, George W. Bush Junior, entrusts NASA with the task to send men to the Moon as early as 2018 and to prepare the inhabited mission to Mars. This reconquest of the Moon was part of the NASA's more global programme on the future of human spaceflight, called *Constellation*. However, in 2010, the new American President, Barack Obama, decides to stop the lunar programme following the reading of the "Augustine Committee's",[1] which empha-

1. The Review of US Human Space Flight Plans Committee, more commonly called "Augustine Committee" after its chairman, Norm Augustine, refers in

sises the non-sustainability of the project. Strongly criticised, the American President later reverses his decision to cancel the programme and grants the budget needed for the development of a heavy-lift launcher, Space Launch System (SLS), able to carry a capsule (ORION) with astronauts inside. The objective is to reach the International Space Station, the Moon, then Mars. At the same time, in January 2019, a Chinese rover lands on the hidden face of the Moon, where the US itself has never gone. China no longer appears as a similar replacement for the USSR, but as a peer competitor able to overtake the US.

This "space race" is, however, to be nuanced, because, even if American and Chinese ambitions are the same, the means implemented are not. The technological advance of the US remains undeniable. Nevertheless, this "race" seems to have stepped up the tempo of lunar operations, at least in the speeches. In fact, on 13 October 2020, the Artemis Accords, with seven already established partnerships (Australia, Canada, Italy, Japan, Luxemburg, the United Arab Emirates (UAE) and the United Kingdom), are revealed to the general public. Through these accords, Donald Trump's Republican administration wants to send astronauts to the Moon in 2024 for a long-term exploration, that will be followed by inhabited flights to Mars and other destinations. The project to create a space station as an outpost (gateway) for the conquest of the Moon is an international and commercial project. It comes with the hope for commercial exploitation of the Moon and celestial bodies. In fact, as early as 2015, President Barack Obama makes possible, through the Obama Space Act, the exploitation of space-based resources by private companies. The first States to join the Artemis Accords adopt similar national laws (UAE, Luxemburg, Japan), but the US wants as many countries as possible to adhere to its programme. The objective of the Artemis Accords is to "define a common vision by means of a

2009 to the work of experts members appointed by the White House. They were in charge of assessing the options of the inhabited space programme of the US, and notably reviewing the programme to return to the Moon *Constellation* (planning and budget) backed by the previous administration.

concrete set of principles, guidelines and exemplary practises to improve the governance of the civilian exploration and use of outer space with a view to moving the Artemis programme forward."[2] The reference to norms is present in paragraph 5 under the sub-theme of interoperability: "Signatories commit to making reasonable efforts to use current interoperability norms for space-based infrastructures, establishing norms, when they do not exist or are inappropriate, and complying with these norms." France joined these agreements on 7 June 2022. In March 2024, 36 States (including the US) have signed the Artemis Accords. It should be noted that no intra-EU discussion has taken place on whether or not to adhere to these agreements, which, however, might run counter to a truly European initiative in space exploration. Likewise, some States, including European States, which have not (yet) joined, consider that they pose certain problems in terms of space law. In March 2024, the European States having signed these accords are Italy, Luxemburg, France, Poland, Romania, the Czech Republic, Spain, Germany, the Netherlands, Bulgaria, Portugal and Greece.

For its part, in March 2021, China gave concrete form to its international project by signing a similar agreement with Russia for the construction of the ILRS. The ambition is to set up a first scientific base on the Moon as early as 2028. The project of the Chinese Space Agency would have already established official cooperation with Russia, Pakistan, the UAE, Venezuela, South Africa, and Azerbaijan. It also claims that negotiations on agreements are underway with other countries and organisations (Malaysia, Argentina, Brazil, etc.).[3] Finally, some organisations and institutions have already joined the project: the States of the Asia-Pacific Space Cooperation Organisation, namely, besides China, Bangladesh, Iran, Mongolia, Pakistan, Peru and Thailand, but also a Swiss company, nanoSPACE AG,

2. https://www.nasa.gov/specials/artemis-accords/img/Translated-Versions-of-the-Accords.pdf.

3. Andrew Jones, "China to establish organization to coordinate international moon base", *Space News*, 28 April 2023, and "China attracts moon base partners, outlines project timelines", *Space News*, 29 June 2023.

the International Lunar Observatory based in Hawaii, and the National Astronomical Research Institute of Thailand (NARIT).[4]

ARTEMIS PROGRAMME AND ACCORDS

The Artemis programme is a capacity-building programme, in which each member nation participates materially according to its competences. The Artemis Accords are a corpus of principles for cooperation in the civil exploration and use of the Moon, Mars, comets, and asteroids for peaceful purposes. The whole project is therefore international, but established through bilateral agreements.

At the official launch of the agreements, the press release states:

> Fundamentally, the Artemis Accords will help to avoid conflict in space and on Earth by strengthening mutual understanding and reducing misperceptions. Transparency, public registration, deconflicting operations – these are the principles that will preserve peace.[5]

Among the principles contained in these accords, two are potentially questionable, namely that on the exploitation of resources of celestial bodies and that on the determination of safety zones.

In fact, in paragraph 10, the Artemis Accords recognise the lawfulness of the extraction and use of space resources. They, however, point out:

> Signatories affirm that the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty, and that contracts and other legal instruments relating to space resources should be consistent with that Treaty.

4. Andrew Jones, "Azerbaijan signs up to China's international moon base project", *Space News*, 8 October 2023.

5. 13 October 2020, https://www.nasa.gov/press-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords.

In paragraph 11, and in accordance with interference prevention, the Accords establish temporary "safety zones". These safety zones result directly from the "exclusion zones" mentioned by NASA as early as 2011. This recommendation aimed to avoid that artefacts that are already present on the Moon are being damaged by the new ones landing on it, the lunar dust raised during vehicle manoeuvres being particularly aggressive for equipment. If the term had been *security*, it would have referred to check and control measures to protect activities from hostile acts. The fact remains that, if safety zones are presented as temporary, this principle is already a point of friction between States. Some of them consider it to be contrary to existing norms. They fear a territorialisation, and thus an appropriation, without naming it, of the Moon, whereas such an action is banned by space law. This feeling is reinforced by the announcement of the creation of permanent or long-lasting facilities, which, de facto, run counter to the principle of non-appropriation. Some experts consider, however, that the determination of safety zones might respond to Article IX of the Outer Space Treaty, which allows States to undertake inter-state consultations, when the activity of one of them disturbs that of the other one (principle of due regard previously mentioned in this study).

The Artemis Accords give a new role to NASA. In fact, Nasa's administrator under Donald Trump, Jim Bridenstine, considered that the American Space Agency had to play a diplomatic role by requiring States wishing to join the Artemis programme to accept the norms of behaviour that go with it, and thus the Artemis Accords.

> NASA has a major role to play in all aspects of the DIME model [Diplomatic, Information, military and Economic power] other than military […]. It gives us an opportunity to engage in dialogue, maybe have a sweetener for a trade deal.[6]

6. Jeff Foust, "Bridenstine ties international cooperation on Artemis to norms of behavior in space, *Space News*, 6 May 2020.

The Artemis Accords are a non-legally binding political commitment, in which compliance with the provisions of the Outer Space Treaty is repeatedly reiterated. They did not stir up the anger of the Chinese authorities, which have, more or less, the same projects for the Moon (resource exploitation, gateway to other celestial bodies). For the moment, no document similar to the Artemis Accords has been issued for the Chinese project. However, this could be the case soon, inasmuch as the Chinese project is becoming a true international project like that of the US through the growing number of bilateral agreements.

FRANCE'S POSITION

On 7 June 2022, the President of the French National Centre for Space Studies (CNES), Philippe Baptiste, signs the Artemis Accords on behalf of France. France is also signatory to the Moon Agreement (29 January 1980). The latter takes the form of a treaty, and is therefore binding. So, if this signature does not constitute ratification, it does, all the same, commit the country not to go against the object and purpose of the agreement. But this Moon Agreement recognises the Earth's natural satellite and its "natural resources" as the "common heritage of mankind" (Article 11, §1) and, as such, commits the States to creating an "international regime to govern the exploitation of the natural resources of the Moon, as such exploitation is about to become feasible" (Article 11, §5). Moreover, "Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person" (Article 11, §3).

The Moon's natural resources cannot therefore be traded. The commercial exploitation of the Moon's resources having currently a highly hypothetic effectivity, one could argue that this has contributed to France's decision to join these agreements. However, some States seeing the contradiction between

these two agreements (Moon Agreement – binding – vs Artemis Accords – non-binding) have decided to withdraw from the first one (page 18 of this study).

For France, this constitutes an evolution of its position. It had not yet clearly positioned itself on the question of the commercial exploitation of the Moon's resources. So far, it had championed a multilateral approach that consisted in placing this theme on the agenda of the COPUOS. The question of whether or not France should accede to these agreements has been the subject of discussions at national level, especially between the CNES, the Ministry for Europe and Foreign Affairs (MEAE), the Ministry for the Armed Forces (MINARM), and the industry.

It seems that France has been approached very early by the US to join the Artemis Accords. Diplomats are generally not favourable to it, arguing that "normalisation should not override international negotiation."[7] Besides, at that time, in 2019, the programme did seem credible. Moreover, the American presidency, embodied by Donald Trump, had no affinities with France. Conversely, France still maintained a willingness to turn to China and Russia for future cooperation. Finally, the logic of the Artemis Accords is contrary to the traditional diplomatic position of France, an advocate of multilateralism. These agreements may be perceived as reinforcing a "bloc logic". On the contrary, CNES and the industry have prompted the French authorities to join these agreements. They saw in them opportunities for significant technological developments. France through the European Space Agency (ESA) was already part of the Artemis missions for the Lunar Gateway project, but for ESA, it was an inter-agency collaboration with NASA.

The Biden presidency brings about a change in the French position. The latter adopts a more inclusive rhetoric with regard to the Artemis Accords. In the speeches, these agreements should enable like-minded countries to speak with one voice at the COPUOS, and it does not oppose the UN Working Group on Space resources.

7. Talks at the MEAE, 10 January 2023.

France's and other EU countries' membership (Italy is the first European country to join the accords) highlights the lack of common position of the EU on this kind of initiative. Germany did not necessarily understand the French position. In fact, France seemed to defend quite widely the notion of non-appropriation of space, to the point that it construed the "safety zones" as an appropriation. "There was between France and Germany a mutual understanding to say that "safety zones" are a violation of the non-appropriation principle, or, at least, they make more flexible an important principle of international law."[8]

It seems that the French position has evolved according to the expertise requested within the different departments (MEAE, MINARM, CNES, etc.), finally concluding that there was no contradiction between the traditional French position and its accession to the accords.

However, Germany felt a little bit surprised by the French signature, even if it had been informed prior to the formal signature. The German decision-makers have taken the time to assess the benefits for their country of joining these agreements. Last May, the questions were those: "is there still something to win, if we sign the accords now? Is the cake already divided up and are there any accords?"[9]

Germany finally joined the agreements on 14 September 2023.

THE WORKING GROUP (WG) ON LEGAL ASPECTS OF SPACE RESOURCE ACTIVITIES

The idea of this WG was backed as early as 2019 by the Legal Subcommittee of the COPUOS, but the Covid-19 crisis did not permit the States to effectively create the group before 2021. It came together in 2022 and adopted its five-year work plan (i.e. until 2027).

The mandate of the WG mentions that the latter[10]:

8. Talks with the German liaison officer at Space Command, 23 May 2023.
9. Idem.
10. Working Group on Space Resources (unoosa.org).

> a) gathers information on space resource exploration, exploitation and utilisation activities, in particular scientific and technical innovations and current practices, given their innovative and evolving character;
>
> b) studies the legal framework that currently governs these activities, in particular the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, and other applicable UN treaties, while taking into account the other instruments in question, where appropriate;
>
> c) analyses the advantages of continuing to develop a framework governing these activities, notably by complementing it with new international governance instruments;
>
> d) develops a set of recommended basic principles governing such activities, given the need to ensure that they are conducted in accordance with international law and in a safe, sustainable, rational and peaceful manner, for consideration and consensus by the Committee and possible adoption by the General Assembly in the form of a resolution on the subject or other action;
>
> e) determines the points that should be deepened by the committee, and recommends measures to be taken, e.g. the development of rules or norms governing the space resource exploration, exploitation and utilisation activities, as well as related activities and the sharing of resulting advantages.[11]

One can wonder to what extent this WG will have any influence, when it will deliver its report in 2027, i.e. seven years after the Artemis Accords, four years after China's bilateral agreements with its partners as part of the ILRS project, and two years (according to the current schedule) after the human return to the Moon.

Moreover, the two current and future space-faring nations, the US and China, have no interest in the emergence of an international regime applicable to space resources. The latter might jeopardise, by curtailing it, the commercial or non-commercial exploitation of space resources. From this point of view, China

11. A/RES/76/231, N2141722.pdf (un.org).

virtual non-reaction to the Artemis Accords shows that it cannot criticise, what it intends to do itself. Finally, as previously seen, the US, Luxemburg, the UAE and Japan have developed national laws authorising the exploitation of the Moon's and other celestial bodies' resources. So, for these States, lunar space resource management must remain a national issue, not an international one. The only possible option would be that principles arising from this WG do not call into question national laws and pre-existing agreements, and/or that the WG develops, at best, non-binding rules of good conduct. Therefore, the "US is using this GGE to have the principle of resource exploitation accepted."[12] "This will permit to mitigate future positions on the Long-Term Sustainability of Outer Space Activities (LTS)."[13]

The French institutions called upon for the WG on space resources are the Ministry of Higher Education and Research (MESR), CNES, the Ministry of Economy, Finance and Industrial and Digital Sovereignty/DirectorateGeneral for Entreprise (DGE) and the MEAE (Directorate for Legal Affairs and Directorate for Economic Diplomacy). Regarding the OEWG, France was represented by the MEAE and the MINARM.

12. Talks with a legal expert of the MEAE, 2 February 2023.
13. Talks at the MEAE, 10 January 2023.

IV. LEARNING AND NORMALISATION PROCESSES

CONFRONTATION OF METHODS

As mentioned at the beginning of this study, the process of learning or co-constituting norms follows a three-stage cycle, according to the Finnemore and Sikkink concept: emergence, cascade, internalisation. As this study focuses on the emergence and cascade, two "methods" need to be distinguished in the light of the two cases proposed for study, i.e. norms of responsible behaviour for low-Earth orbit and those for the Moon and other celestial bodies. In both cases, the mechanism at work during the first stage, that of the emergence of the norm, is achieved through the persuasive work carried out by state or non-state "norm entrepreneurs". "Norm entrepreneurs attempt to convince a critical mass of States (norm leaders) to embrace new norm."[1]

Emergence of the norm in low-Earth orbit and persuasion

The norms embraced by what Finnemore and Sikkink call the "critical States" would be more likely to be shared by the greatest number of people. In the space domain, the "critical States" are, today, the American space superpower, and China.

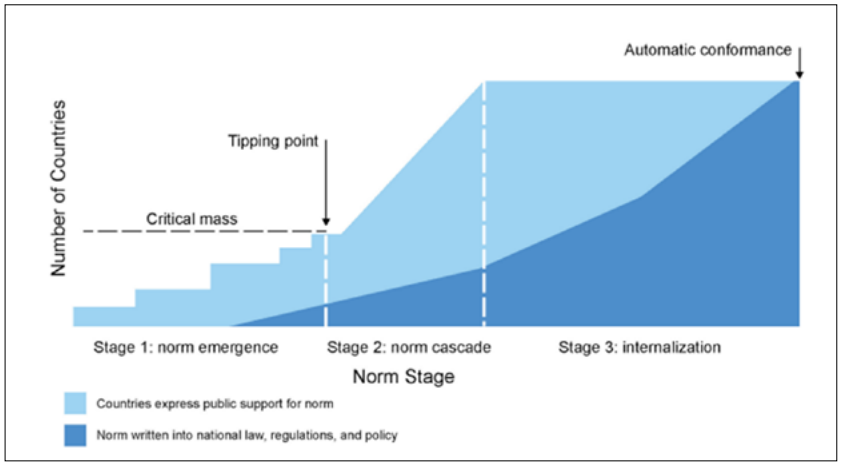
> Norms embraced by strong players are simply much more likely to be reproduced through the greater number of opportunities offered to powerful states to persuade others of the validity of their point of view.[2]

1. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", p. 895.
2. Ann Florini, "The evolution of international norms", *International Studies Quaterly*, Blackwell Publishing Limited, 1996, p. 375.

This sets in motion a virtuous process for the State, which backs "its" norm and disseminates it to the point of provoking a "norm cascade."[3] Norm cascade can be defined as "a dynamic of imitation as the norm leaders attempt to socialize other states to become norm followers."[4]

Beyond allies and like-minded countries, the "critical States" must convince intermediary States of the validity of their norm, if they want the norm to disseminate. The purpose is to reach a *critical mass* of favourable States.

> […] We argue that the primary mechanism for promoting norm cascades is an active process of socialization intended to induce norm breakers to become norm followers.[5]



Source : Michael P. Gleason, *No Haven For Misbehavin': a Framework For Verifying Space Norms*, The Aerospace Corporation, Center for Space Policy and Strategy, March 2022.

Some States, the ones we have called the "distrustful", like Brazil, the Philippines, Nigeria, etc., without being "norm breakers", can be norm followers. They do not seem to follow the logic of "overthrowing the [current] international order", but, first

3. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", p. 902.
4. Ibid., p. 895.
5. Ibid., p. 902.

and foremost, of seeking to put in place systems that will enable the long-term viability of space to be operationalised: "It is not a western imposed model. We are true believer of the international order."[6]

For these States, it seems that their motivations for joining a norm lie in the pressure for conformity, the desire to enhance international legitimation, and the desire to enhance their "self-esteem."[7]

To ease this persuasion between the formal sessions of the OEWG, some meetings create opportunities for States' representatives to debate (not to mention the informal sessions organised by the Chair of the OEWG). For example, certain think tanks such as the Secure World Foundation (SWF) are places for meetings and exchanges between participating States. Other "facilitators" affiliated to a government are also socialisation places, such as the Wilton Park, an entity in support of the UK Foreign, Commonwealth & Development Office, equivalent to the French MEAE. In fact, it was during one of these sessions that the idea of a joint paper between Germany and the Philippines was born.[8] Writing a joint paper does not create a norm, but this can be considered as a process in several steps. In fact, the second joint paper between Germany and the Philippines has been co-sponsored by Nigeria, and mentioned in the Joint Declaration of the Association of Southeast Asian Nations (ASEAN).[9] This

6. Talks at the OEWG with the representative of the Philippines (Political-Security [Disarmament, Non-Proliferation, and Arms Control] and Development Affairs Officer Permanent Mission of the Republic of the Philippines to the United Nations in Geneva), Geneva, Switzerland, 31 January 2023).
7. "The exact motivation for this second stage where the norm "cascades" through the rest of the population (in this case, of states) may vary, but we argue that a combination of pressure for conformity, desire to enhance international legitimation, and the desire of state leaders to enhance their self-esteem facilitate norm cascades" (Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change").
8. Talks at the OEWG with the representative of the Philippines, Geneva, Switzerland, 31 January 2023.
9. Statement: https://docs-library.unoda.org/Open-Ended_Working_Group_on_Reducing_Space_Threats_-_(2022)/ASEAN_Statement_OEWG3-Space.pdf.

"group" was then extended to 34 States at the fourth session of the OEWG.[10]

Since it is unlikely that the "allies" and the "opponents" reach, one day, a consensus, it is necessary to attempt to rally the "distrustful" and the "indifferent" in order to constitute the "critical mass", which is estimated at about 60 States (one-third of the 193 States in the world).

> […] although it is not possible to predict exactly how many states must accept a norm to "tip" the process, because states are not equal when it comes to normative weight, empirical studies suggest that norm tipping rarely occurs before one-third of the total states in the system adopt the norm.[11]

It thus becomes crucial to study each intermediary State that can potentially rally the proposed norm(s), but also to assess the power of persuasion they themselves have on other States. So, the Philippines believes that "it is possible to move forward with the moderate countries of the Non-Aligned Movement."[12]

Moreover, "normative persuasion alone is insufficient to drive the socialization process […] Material incentives and opportunities for political advancements thus play a crucial role in making elites susceptible to the socializing efforts of the hegemon."[13]

Persuasion must therefore be part of a wider policy towards the country to be persuaded. The Philippines, for example, has enjoyed military cooperation with the US since 1951; it also benefits from "the largest envelope of financial aid for military purposes in the region"[14] and has recently signed a new agreement

ASEAN is made up of Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam.

10. PHL_STATEMENT_–_Opening_Joint_Statement.pdf (unoda.org).

11. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", p. 901.

12. Talks with the representative of the Philippines at the OEWG, Geneva, Switzerland, February 2023.

13. G. John Ikenberry, Charles A. Kupchan, "Socialization and hegemonic power", *International Organization*, 44 (3), Summer 1990, p. 293.

14. Marjorie Vanbaelinghem, *La sécurité des Philippines, Coopérations de défense et alliances*, Report 106, IRSEM, April 2023.

with the US to allow American soldiers unrestricted access to four new military bases in the Philippines.[15] Material incentives prompt normative socialisation.

Similarly, the "distrustful" that have signed up to China's New Silk Roads project will be harder to persuade by the "allies", especially those that have received the most financial or material aid (infrastructure) from China. Egypt, for example, joined the New Silk Roads initiative in 2014 and is multiplying all kinds of partnerships with China. At the same time, it is a space-faring State with strong ambitions. As well as being the first African country to own a satellite (1998), it has also been home to the African Space Agency in Cairo, within its future "Space City", since January 2023. Its partnership with China also extends to the space sector. It benefits from Chinese expertise to develop its space industry, particularly in the field of high-resolution optical satellites. China is expected to finance a satellite assembly plant within its Space City. In Decembre 2023, Egypt joins China's ILRS moon base initiative.

For France and its allies, persuading India seems to be the most achievable and the most fruitful in terms of the potential knock-on effect on other States. India is a member of the Non-Aligned Movement, and a space-faring power. At the OEWG, it did not appear to support the positions defended by the "allies". Nevertheless, these statements raised some relevant points. Hence the decision to count it among the "distrustful" rather than the "opponents". This position may well change. France, which has had a strategic partnership with India since 1998, renewed it in July 2023. In the roadmap for the "25th anniversary of the Franco-Indian strategic partnership to 2047: towards the centenary of Franco-Indian diplomatic relations",[16] the space partner-

15. Sébastian Seibt, "Les Philippines, une prise de choix pour les États-Unis dans leur guerre d'influence avec la Chine", France 24, 2 February 2023.

16. "25th anniversary of the France-India strategic partnership: towards the centenary of Franco-Indian relations", Presidency of the French Republic, 04360c3dde42351fdba26bf27fc3669816e08917.pdf (elysee.fr).

ship (in particular) has been significantly strengthened.[17] India also joined the Artemis Accords and programme in June 2023. From a space point of view, India is moving somewhat away from its historical political position of non-alignment. For the moment, these recent developments have not been reflected diplomatically at the final session of the OEWG. India was one of the States that abstained from voting in favour of the creation of the OEWG. Then, during the discussions, it statements expressed its scepticism towards the notion of responsible behaviour, arguing it was subjective and there was a problem of verification (and therefore of access to space surveillance data) of the responsible or non-responsible character in space. This last argument, that of verification, is also a real problem that can prevent "cascading" adherence to one or more norms of responsible behaviour. In order to address this, it may be worth considering setting up an international framework for sharing space surveillance data.

> For a norm that constrains freedom of action to take root globally, states must have assurance that other states are exercising the same level of restraint, especially in a core national security realm such as space. In fact, a norm's wide acceptance rests upon states' abilities to confirm other states' reciprocal restraint.[18]

For many countries, the success factor of a norm, i.e. its successful passage from the emergence stage to those of dissemination and internalisation, depends on the possibility of its effective *verification*. Several models may exist, but confidence in the data remains the key. This system could then enable multiple States to publicly denounce irresponsible behaviour. It is not a question

17. In particular: operational installation of a joint satellite-based maritime surveillance system, start of the manufacturing process of a Franco-Indian thermal infrared satellite Trishna, and new cooperation as part of space surveillance (protection of the Franco-Indian satellites in orbit against collision risks). Source: CP059-2023 - Inde (cnes.fr).

18. Michael P. Gleason, "No Haven For Misbehavin': A Framework For Verifying Space Norms", The Aerospace Corporation, Center for Space Policy and Strategy, March 2022, p. 6. The document also details the different framework models possible to enable verification through the sharing of space surveillance data.

of the "allies" setting up a system "among themselves" (a number of bilateral agreements already exist between the US and about twenty partner countries), nor of convincing opponents to have confidence in the data. Rather, it is a matter of convincing the "distrustful", or even the "indifferent", to have confidence in an international system and to be able to rely on it to denounce irresponsible behaviour. The portal on space security set up by UNIDIR in partnership with the SWF could be a first step in this direction. This is a website in the form of an interactive database on which volunteer States can communicate their policy, strategy, legislation or internal organisation relating to the space sector. The aim is to encourage the exchange of information between States, promote transparency and build confidence.

Finally, it could be argued that a strong position of the European Union could have a positive effect on promoting norms of behaviour in space. But this seems difficult for two reasons. Firstly, the EU Member States seem unable to agree on a binding common position. Although the EU made joint statements at the OEWG, behind the scenes, disagreements persist. Secondly, any current European initiative would suffer from an a priori given past mistakes. The Hague Code of Conduct Against Ballistic Missile Proliferation (HCoC)[19] and the proposed Code of Conduct for the Security of Space Activities have not met with unanimous approval, particularly among emerging States. Some of them feel that they were consulted too late in both cases. Even if the HCoC is a success (143 participating States to date), unlike the ICoC, which never formally existed, some States such as Brazil have still not joined it, believing that the initial approach was biased.[20]

The OEWG's multilateral initiative is therefore welcomed by emerging States. The norm can thus be co-constituted, and socialisation can develop. Socialisation can be defined as "the process

19. Notification regime that complements the MTCR. The initiative dates back to 2002. The HCoC is a multilateral transparency and confidence instrument. The States commit to it on a voluntary basis.

20. Talks with the representative of Brazil, OEWG, Geneva, Switzerland, February 2023.

through which national leaders internalize the norms and values orientations espoused by the hegemon and, as a consequence, become socialized into the community formed by the hegemon and other nations accepting its leadership position."[21]

The objective of adopting a report by consensus at the end of the OEWG was not achieved. Nevertheless, "it doesn't matter."[22] For the Philippines representative, norms can be working documents, joint declarations, etc. This "corpus" will gain legitimacy through the use and references that other States and private players can make of it. The use of a norm by States may even give the impression over time that it is self-evident, eventually conferring on it a customary value. This may be the case, for example, with the self-imposed constraint resulting from the US unilateral commitment on DA-ASATs, mentioned earlier in this study (pages 28). The UNGA Resolution[23] on this norm of responsible behaviour calls on States to make a similar commitment. Although the resolution was approved by 155 States almost a year ago, no State other than an ally/receptive State has made a similar national commitment.

The emergence of the norm, and persuasion, on the Moon and other celestial bodies

The Artemis Accords bypass international bodies. In fact, these agreements were written and promoted bilaterally without any multilateral action on the subject having been initiated upstream. The WG's report on the legal aspects of activities relating to space resources will not be published until 2027, and will deal only with the legal aspects. The approach adopted here by the US is not the same as that promoted for low-Earth orbit.

21. G. John Ikenberry, Charles A. Kupchan, "Socialization…", p. 289.

22. Talks with the representative of the Philippines at OEWG, Geneva, Switzerland, February 2023.

23. Resolution A/C.1/77/L62, First Committee, UN General Assembly, 77th Session, Destructive direct-ascent anti-satellite missile testing, Prevention of an Arms Race in Space, 13 October 2022.

> At the same time, they seek to modify international law by unilateral declaration by producing a fait accompli (the normative power of the fait accompli), and seek allies to do so.[24]

This 'fait accompli' or 'pre-emptive' method is a fruitful American strategy. It has met with a degree of success because the agreements are backed up by a high-value-added capacity-building programme. This is the first time cooperation on a capacity-building programme has been made conditional on adherence to normative agreements. As a result, "There is a disturbing link between programmatic cooperation and acceptance of governance principles with broader implications. […] This conditioning of cooperation through acceptance of space governance principles is a rather unusual development, underscoring that the Artemis Accords can be seen as a US diplomatic tool using the Artemis programme as a lever to push US position on the international scene."[25]

States do not see the Artemis Accords as constraints – for the time being – but rather as an opportunity to join an industrial programme with very high added value. Besides, some of the countries that have already joined the Artemis Accords have not yet given sufficient thought to the normative aspects of a perennial conquest of the Moon and other celestial bodies. The opportunity offered to the industries of the States concerned to "move upmarket" is a very strong incentive to join the accords without paying particular attention to the content: "The Artemis Accords are a bit like the "conditions of use" that you validate without ever reading them."[26]

The prestige that this programme can confer on the States joining it, as well as the possibility of making it an element of national cohesion, may also have played a role. The Artemis

24. German liaison officer at the Space Command, May 2023.

25. Artemis Accords: What implications for Europe? », ESPI Briefs 46, European Space Policy Institute, 23 November 2020.

26. Talks with a representative of the American Department of State at the OEWG, Geneva, Switzerland, February 2023.

Accords are an American interpretation of the Outer Space Treaty, endorsed by a number of States that decide to join them for various reasons. The greater the number of States that sign up to these agreements, the fewer dissenting voices there are.

THE ROLE OF NON-STATE "NORM ENTREPRENEURS"

In the two cases mentioned – norms for low-Earth orbit and norms for the Moon and other celestial bodies – the role of *norm entrepreneurs* is fundamental. They act upstream of the emergence of the norm, help put the subject on the political agenda, play an active part in the stage of dissemination of the norm through persuasion, and possibly downstream when the norm is internalised. There are many of them, and it is beyond the scope of this paper to examine them all.

> Norm entrepreneurs are critical for norm emergence because they call attention to issues or even "create" issues by using language that names, interprets, and dramatizes them.[27]

Through their discourse and language, they interpret and shape a certain vision of the space landscape. They may be governmental or non-governmental actors: think tanks, commercial players, associations, scientific (space agencies, some of which are represented in ad hoc committee such as the one dedicated to space debris (IADC)) or non-scientific ones. Norm entrepreneurs relay their beliefs via "organisational platforms."[28] They meet at major international events such as the annual International Astronautical Congress (IAC), which brings together the entire space community, but also at conferences, symposia and diplomatic events such as the OEWG, in which the SWF is very active. They promote the development of norms of responsible

27. Martha Finnemore, Kathryn Sikkink, "International Norm Dynamics and Political Change", p. 897.

28. Ibid., p. 898.

behaviour (SWF,[29] Project Plougshares,[30] Outer Space Institute, etc.), of technical norms (from the International Standards Organisation known as "ISO standards"), exchanges of information (Space Data Association,[31] Global Satellite Operators Association)[32] to the benefit of satellite operators.

For the benefit of political decision-makers in particular, norm entrepreneurs are tasked with producing "usable scientific knowledge [...]. This term refers to any precise information used by politicians and decision-makers. This information must be accurate and politically compliant for its users."[33] They influence the placement on the political agenda of issues relating to their area of interest. When their knowledge and interests meet those of politicians, the two can work together. All these "experts" then form a space *community*.[34] Their analyses are also requested by the political authorities:

> Although political elites retain power in the decision-making process, they are increasingly justifying their decisions on the basis of the technical analyses of the experts, with whom they form a coalition.[35]

29. Recent publication: "Global Counterspace Capabilities Report, An Open source Assessment", Secure World Foundation, 2023, https://swfound.org/counterspace/.

30. We will read with great interest their report on the OEWG: Jessica West, "The Open-Ended Working Group on Reducing Space Threats. Recap of the Third Session January 30 to February 3, 2023", *Ploughshares*, June 2023, and "Preserving outer space for peaceful use", A conversation with Victoria Samson, *The Ploughshares Monitor*, 44 (2), summer 2023.

31. https://www.space-data.org/sda/.

32. Code of Conduct on Space Sustainability, GSOA, November 2023, https://gsoasatellite.com/wp-content/uploads/GSOA-Code-of-Conduct-Paper.pdf.

33. Peter M. Haas, "Le pouvoir et la vérité", *Les Courriers de la planète*, 71, p. 46-49.

34. That can be described as epistemic. For more details, read Béatrice Hainaut, "Émergence et promotion de la norme sur la sécurité des activités spatiales", doctoral thesis in Political Science (International Relations), Paris II – Panthéon-Assas University, 2017.

35. Sabine Sarugger, "L'expertise : un mode de participation des groupes d'intérêt au processus décisionnel communautaire", *Revue française de science politique*, Presses de Sciences Po, vol. 52, 2002/4, p. 378.

To defend their ideas, they usually rely on *counterfactual operations*. These consist of "imagining a world in which this decision [negative for the common good] would not have been taken, and comparing these two trajectories with each other."[36] In promoting norms of behaviour in low-Earth orbit, reference is, for example, often made to the risk of "Kessler syndrome", to illustrate the irresistible increase in the orbital population if no measures are taken to reduce debris. Donald Kessler is an American astrophysicist and NASA scientist. He played a major role in identifying the problem of orbital debris and politicising it in the 1990ies. He gained a certain visibility among experts and scientists thanks to an article he wrote in 1978 setting out his diagnosis and conclusions regarding the proliferation of debris caused by collisions between artificial satellites, ultimately forming a "debris belt". His scientific paper is peppered with diagrams, some of which predict an increase in the amount of debris as a result of future collisions in orbit. His model shows a critical situation in 2020 if nothing is done. His study problematises what until then had been a condition: the proliferation of debris in orbit. It explains that the quantity of space debris could reach a threshold where they will themselves produce others, triggering a chain reaction leading to the end of human exploitation of space. The reduction of the scientific demonstration to the name of "Kessler syndrome", a pure cause and effect relationship, can be understood by "laymen" (as opposed to "experts") without having to mobilise advanced scientific knowledge. This 'simplification', resulting from a scientific theorisation of the problem, determines its potential for dissemination throughout the world. This has enabled to reach a level of generalisation and conceptualisation that has encouraged its spread.[37] Its "syndrome" still shapes and conditions all

36. Ariel Colonomos, "Raison et justification morales dans les relations internationales", *Revue internationale des sciences sociales*, 191, 2007/1, p. 123-135.

37. Theoretisation of models as dissemination factor is an approach developed by the sociology of neo-institutionalist organisations, which focuses on the theorisation of solutions. Here, we will focus on the *theorisation of a problem*, but the effects described in terms of dissemination remain the same.

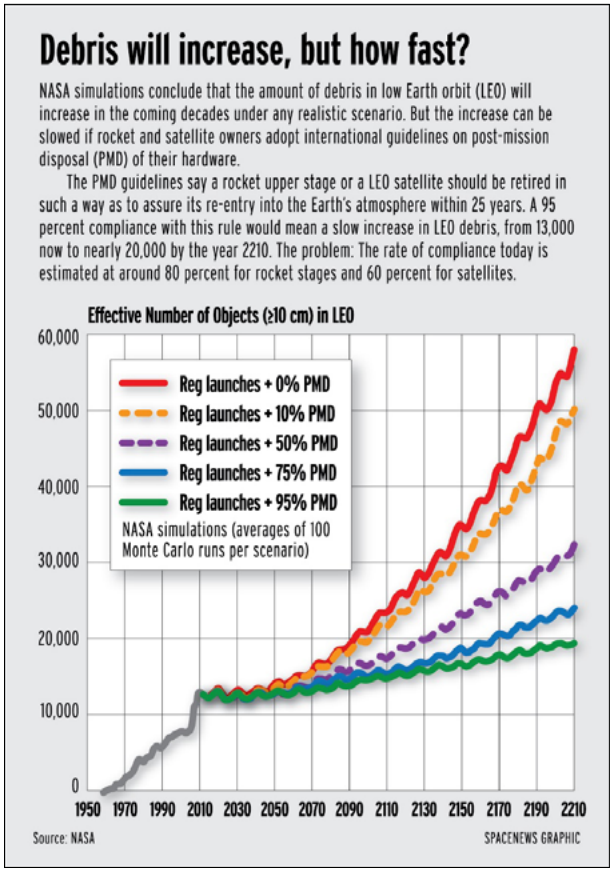
debates on orbital debris. Yet since 1957, of the millions of space objects in orbit, there have been fewer than 15 known collisions, "so why do people worry?"[38] Nevertheless, the probability of an in-orbit collision has to be weighed up against the dramatic consequences for all the satellites orbiting nearby. In addition, of course, we cannot ignore the fact that the orbital population is increasing, and that the congestion of *certain* orbits will be a reality in the medium term. Counterfactual operations do not necessarily mean that they contain false information, but they must be systematically questioned (for example: by whom are they carried out? for whom? On the basis of what data?)

For activities concerning the Moon, a group of experts has recently been set up (2021). This is the Global Expert Group on Sustainable Lunar Activities (GEGSLA) from the Moon Village Association, a non-governmental organisation based in Vienna, Austria. This group of experts wants to be inclusive and international. It affirms to be made up of members from space agencies, governments, industry, other non-governmental organisations, research centres and universities. SWF is one of its members. This group is active. In fact, on the sidelines of the 60th COPUOS meeting in February 2023, the GEGSLA published a document entitled Recommended Framework and Key Elements for Peaceful and Sustainable Lunar Activities[39] of no less than 68 pages. Chapter 3 in particular focuses on norms for lunar activities. In addition to existing norms, the document also lists proposals for new norms.

38. Mark Albrecht, Paul Graziani, "A Serious Problem Solved By Hard Work, Not Hysteria", *Space News*, 25 April 2016, p. 22-23.

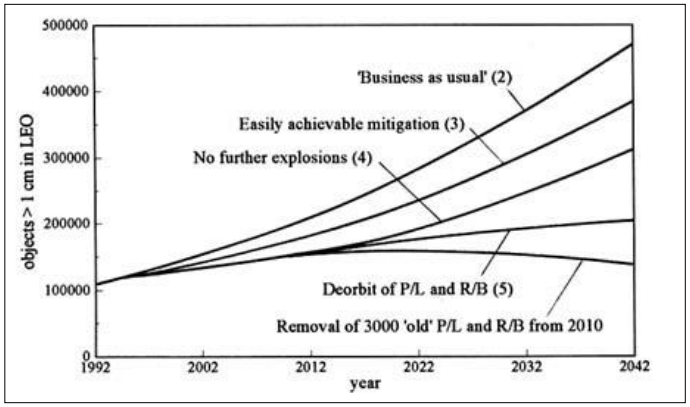
39. https://moonvillageassociation.org/download/recommended-framework-and-key-elements-for-peaceful-and-sustainable-lunar-activities/.

Examples of scenarios of increase in the orbital debris population according to actions taken to limit them



Source: Peter B. de Selding, "Orbital Debris Experts Call for Space Junk Removal Missions", *Space News*, 26 April 2013.

Predicted effect of debris reduction measures over fifty years on space object population



Source: National Research Council, *Orbital Debris: A Technical Assessment*, Washington, DC, The National Academies Press, 1995, https://doi.org/10.17226/4765.

At the end of the report, the list of contributors is individual, by name. The introductory remarks inform that the contributors did not take part on behalf of their organisation. This seems to be a challenge, given that some of the contributors have made statements on behalf of their countries within COPUOS or the OEWG, or even have responsibilities within their national space agencies.

The report begins by taking stock of the current situation before detailing its norms-based approach:

> The current lack of coordination mechanisms for lunar activities represents a serious challenge for future missions and could lead to dangerous conflicts.[40]
>
> Norms are established by international law, national legislation or policy, but also by the common acceptance that a certain behavior is desirable or a good practice. Although based on precedents, norms can also be ambitious and adapt to changing public perceptions of ethical behavior.[41]

40. Glafki Antoniou, *Recommended Framework and Key Elements for Peaceful and Sustainable Lunar Activities*, GEGSLA, *Foreword*, p. 1.

41. Ibid., Chap. 3, "International Legal Norms for Lunar Activities", p. 12.

Norm entrepreneurs thus play on the *morality* of decisions taken to reduce or not risks and threats in space. "Norm entrepreneurs are transformed into moral entrepreneurs and form genuine moral epistemic networks."[42]

While realistic theory of international relations rules out any morality on the part of States (guided by Reason), neoliberalism makes it possible to consider the use of moral justification by a State. Thus, even if discussions on the safety of space activities are entirely relevant in view of international tensions and the plausible congestion of orbits in the years to come, the use of discussion forums by States enables them to indict other States on moral grounds (indictments embodied in formulas such as "it's not right to pollute space", "it's not right to consider space as an area of conflict", etc., heard at the OEWG).

Thus, "these indictments, which use the register of science as well as that of imagination, constitute a criticism that leads to a redefinition of the notion of responsibility, both for the State and for companies, as well as to the shaping of an international surveillance regime with a liberal bias, the aim of which is virtuous self-regulation (the happiest of panopticons)."[43]

42. Ariel Colonomos, "Raison et justification morales...".
43. Ibid.

CONCLUSION

The growing number of state and non-state actors in space prompts to better coordinate space activities to avoid accidents. In addition, inter-state competition and tensions on Earth are projected, in a different way, into space. Under the combined effect of these two factors, risks and threats are multiplying. Current legal texts do not seem to be sufficient to regulate these "new" interactions. Other, essentially non-binding, norms are therefore being promoted by norm entrepreneurs and supported by certain States within international forums such as the OEWG.

The work of the OEWG is to focus on reducing space threats through norms, rules and principles of responsible behaviour. The definition of each of these terms is in itself problematic. The solutions proposed by "allies" and "opponents" differ. Ultimately, it is the "distrustful" on whom the efforts of "allies" and "opponents" crystallise. It is not just a question of normative persuasion, but also of material incentives to conform to a particular political position.

The US is currently the most active in promoting norms of responsible behaviour. It promotes them at both national and international levels. Its ultimate objective is to preserve its superiority in space.

In earth orbit, the US is seeking to create stability in space, rather than maintaining the status quo, which is impossible today in the face of developments in the sector. Instability would mean a total absence of regulation in space, resulting in an increase in risks and threats to American space assets. Yet American power is massively dependent on the use of space. Stability depends on the possibility of accepting a corpus of norms that could lead to the creation of an international regime, which, all things considered, would remain under American influence.

As far as norms on the Moon and other celestial bodies are concerned, the American offensive consists in securing a sufficient number of international partners (a critical mass in terms of number and quality) that legitimise its project for the perennial

installation and exploitation of resources of the Moon and other celestial bodies. The capability programme and the corpus of norms are one and the same.

In both cases, the US is establishing itself as a normative power, imposing a particular political agenda in order to guarantee its interests in space.

In short, the 2022 National Security Strategy sums up the US' objectives:

> America will maintain our position as the world's leader in space and work alongside the international community to ensure the domain's sustainability, safety, stability, and security. We must lead in updating outer space governance, establishing a space traffic coordination system and charting a path for future space norms and arms control.[1]

The main opponents of these non-binding norms promoted by the "allies" are Russia, China and their like-minded partners. They are strongly opposed to the norms of responsible behaviour in earth orbit and are promoting their idea of a new treaty. The underlying idea is to curb American technological, economic and commercial power as much as possible. With regard to the Artemis Accords, China is adopting a wait-and-see stance, without officially condemning the American initiative. The assumption is that China has the same objectives (but not with the same means) with regard to the Moon and other celestial bodies as the US. For the time being, therefore, China will remain a spectator to these developments, even though it hopes to have a physical presence on the Moon as early as 2035.

1. *National Security Strategy*, The White House, Washington, October 2022, p. 45.

APPENDICES

APPENDIX 1

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

The States Parties to this Treaty,

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development,

Desiring to contribute to broad international cooperation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

Believing that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples,

Recalling resolution 1962 (XVIII), entitled "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", which was adopted unanimously by the United Nations General Assembly on 13 December 1963,

Recalling resolution 1884 (XVIII), calling upon States to refrain from placing in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction or from installing such weapons on celestial bodies, which was adopted unanimously by the United Nations General Assembly on 17 October 1963,

Taking account of United Nations General Assembly resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace or act of aggression, and considering that the aforementioned resolution is applicable to outer space,

Convinced that a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, will further the purposes and principles of the Charter of the United Nations,

Have agreed on the following:

Article I

The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.

Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.

There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.

Article II

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.

Article III

States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.

Article IV

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 manoeuvres 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.

Article V

States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of their space vehicle.

In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.

States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts.

Article VI

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, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States Parties to the Treaty participating in such organization.

Article VII

Each State Party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.

Article VIII

A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.

Article IX

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.

Article X

In order to promote international cooperation in the exploration and use of outer space, including the Moon and other celestial bodies,

in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States.

The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned.

Article XI

In order to promote international cooperation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary General of the United Nations should be prepared to disseminate it immediately and effectively.

Article XII

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. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

Article XIII

The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the exploration and use of outer space, including the Moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including cases where they are carried on within the framework of international intergovernmental organizations.

Any practical questions arising in connection with activities carried on by international intergovernmental organizations in the exploration and use of outer space, including the Moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organization or with one or more States members of that international organization, which are Parties to this Treaty.

Article XIV

1. This Treaty shall be open to all States for signature. Any State which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force upon the deposit of instruments of ratification by five Governments including the Governments designated as Depositary Governments under this Treaty.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Treaty, the date of its entry into force and other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article XV

Any State Party to the Treaty may propose amendments to this Treaty. Amendments shall enter into force for each State Party to the Treaty accepting the amendments upon their acceptance by a majority of the States Parties to the Treaty and thereafter for each remaining State Party to the Treaty on the date of acceptance by it.

Article XVI

Any State Party to the Treaty may give notice of its withdrawal from the Treaty one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

Article XVII

This Treaty, of which the Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall

be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

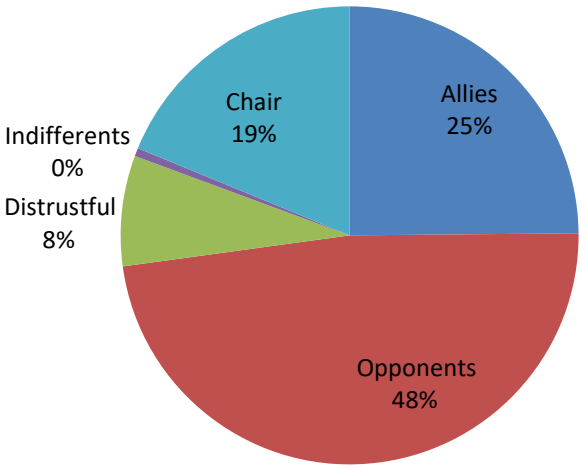
IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty.

DONE in triplicate, at the cities of London, Moscow and Washington, D.C., the twenty-seventh day of January, one thousand nine hundred and sixty-seven.

APPENDIX 2

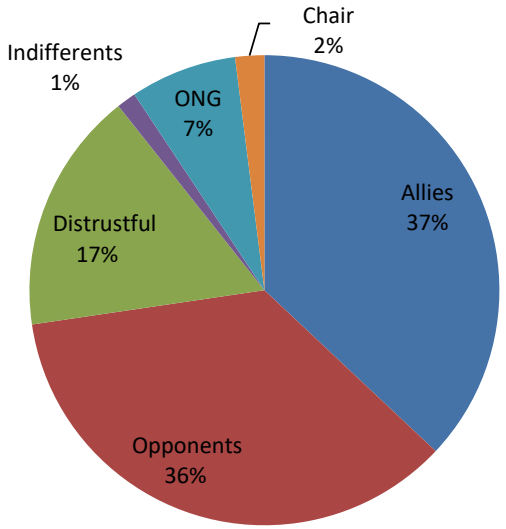
Speaking times for the groups of States at the OEWG, 3rd session[1]

30 January 2023

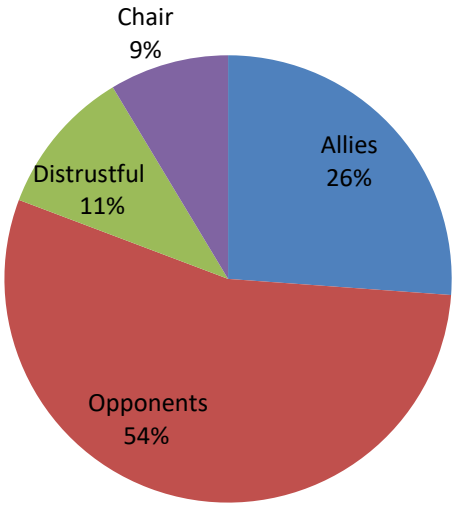


1. These percentages are calculations carried out after a quantitative assessment by the writer of the speaking times of each group concerned. These assessments were made based on the video recordings of the sessions on the official site of the United Nations (UN Web TV, https://media.un.org/en/asset/k1v/k1v3it06b2).

31 January 2023



1 February 2023



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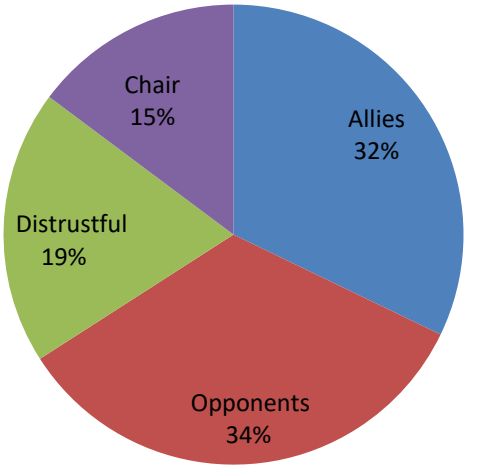
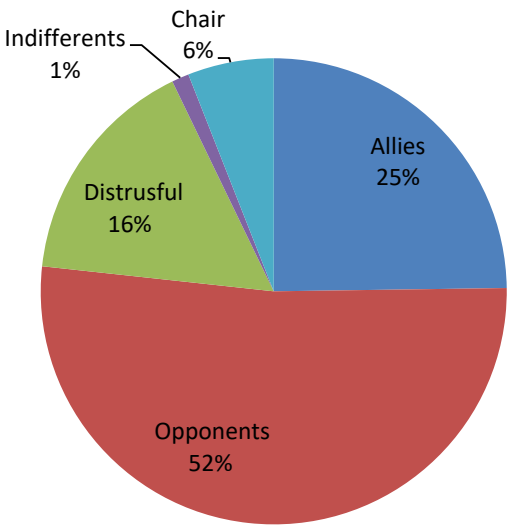
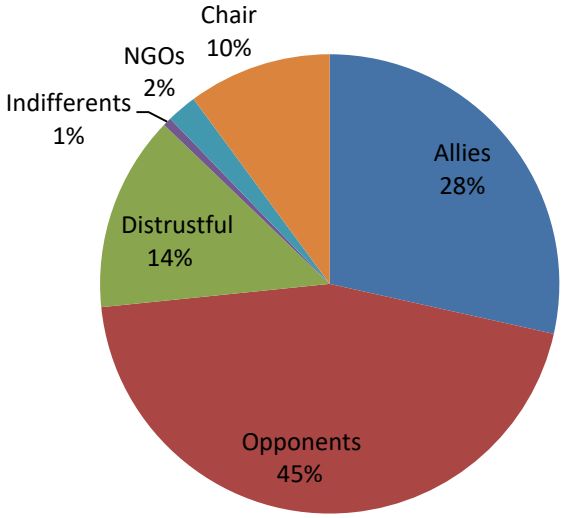


3 February 2023



Total of 5 days



SELECTIVE BIBLIOGRAPY

ARON Raymond, *Paix et guerre entre les nations*, Paris, Calmann-Lévy, 2004.

"Artemis Accords: What implications for Europe?", ESPI Briefs 46, European Space Policy Institute, 23 November 2020.

"Audition, à huis clos, du général de division aérienne Philippe Adam, commandant de l'espace sur les enseignements du conflit ukrainien, Compte rendu de la Commission de la défense nationale et des forces armées", Assemblée nationale, 14 December 2022.

BURBACH David T., "Early lessons from the Russia – Ukraine war as space conflict", Atlantic Council, 30 August 2022.

CESARI Laetitia, "Une nouvelle étape dans le désarmement spatial : le cas des tests de missiles antisatellites à ascension directe", Note 39/22, Fondation pour la recherche stratégique, 7 December 2022.

COLONOMOS Ariel, "Raison et justification morales dans les relations internationals", *Revue internationale des sciences sociales*, 191, 2007, p. 123-135.

FABRE Hubert, *L'usage de la force dans l'espace : réglementation et prévention d'une guerre en orbite*, Bruxelles, Bruylant, 2012.

FEREY Amélie, "Vers une guerre des normes ? Du *lawfare* aux opérations juridiques", Études de l'IFRI, Focus stratégique 108, April 2022.

FINNEMORE Martha, SIKKINK Kathryn, "International Norm Dynamics and Political Change", *International Organization*, 52 (4), autumn 1998.

FLORINI Ann, "The evolution of international norms", *International Studies Quaterly*, Blackwell Publishing Limited, 1996.

GADDIS John Lewis, "Learning to Live with Transparency: The Emergence of a Reconnaissance Satellite Regime", in *The Long Peace: Inquiries into the History of the Cold War*, New York, Oxford University Press, 1987, p. 195-214.

GALBREATH Charles S., "Building US Space Force Counterspace Capabilities: An Imperative for America's Defense", Mitchell Institute Policy Paper, vol. 42, June 2023.

GUITTON Alice, "Maîtriser le milieu spatial, une nécessité stratégique et opérationnelle", *Revue Défense nationale*, 835, December 2020, p. 6.

GLEASON Michael P., "No Haven For Misbehavin': A Framework for Verifying Space Norms", The Aerospace Corporation, Center for Space Policy and Strategy, March 2022.

"Global Counterspace Capabilities Report, An Open source Assessment", Secure World Foundation, 2023.

GROUART Serge, *La guerre en orbite. Essai de politique et de stratégie spatiales,* Paris, Economica, "Bibliothèque stratégique", 1994.

GRUSELLE Bruno, "La défense antimissile dans l'espace : l'ultime frontière ?", UNIDIR, 2007.

HAINAUT Béatrice, "L'utilisation de l'espace extra-atmosphérique comme ressource de puissance mobilisée par les États dans leurs jeux de pouvoir interétatiques", in Sophie Wintgens and Gregory Piet (eds), *La*

puissance : débat autour des jeux et des enjeux du pouvoir, Éditions de l'Université de Liège, 2011.
HAINAUT Béatrice, "Les drones prennent de la hauteur : de l'utilisation des *unmanned space vehicle*", in Grégory Boutherin, Emmanuel Goffi, Jérôme de Lespinois, Sébastien Mazoyer, Christophe Pajon (eds), *Les drones aériens : passé, présent et avenir. Approche globale*, Paris, La Documentation française, "Stratégie aérospatiale", 2013, p. 447-457.
HAINAUT Béatrice, *Émergence et promotion de la norme sur la sécurité des activités spatiales*, PhD in Political Science, Université Paris II Panthéon-Assas, 2017.
HARRISON Todd, "International Perspectives on Space Weapons", Center for Strategic and International Studies, May 2020.
HOLEINDRE Jean-Vincent, "Thucydide et le bon stratège", *Annuaire français des relations internationales*, vol. XV, 2014, p. 79-80.
IKENBERRY G. John, KUPCHAN Charles A., "Socialization and hegemonic power", *International Organization*, 44 (3), summer 1990.
KESSLER Donald J. and COUR-PALAIS Burton G., "Collision Frequency of Artificial Satellites: The Creation of a Debris Belt", *Journal of Geophysical Research*, 83 (A6), 1 June 1978.
KRASNER Stephen D., *International Regimes*, Ithaca/Londres, Cornell University Press, 1982.
MACLEOD Alex, O'MEARA Dan (eds), *Théories des relations internationales. Contestations et résistances*, Québec, Athéna Éditions, Centre d'études des politiques étrangères et de sécurité, 2nd ed., 2010, p. 252.
MCCLINTOCK Bruce *et al.*, "The time for international Space Traffic Management is Now", Research Brief, Rand Corporation, 2023.
MOLTZ James Clay, *The Politics of Space Security Strategic Restraint and the Pursuit of National Interests*, Stanford, Californie, Stanford University Press, 2008.
National Security Strategy, The White House, Washington, October 2022.
PASCO Xavier, "L'espace et les approches américaines de la sécurité nationales (1958-2010)", *L'information géographique*, vol. 74, 2010/2, p. 85- 94.
PASCO Xavier, "L'espace extra-atmosphérique : un espace commun en voie de privatisation ?", *Stratégique*, 123, 2019, p. 215-223.
SOURBÈS-VERGER Isabelle, "Conquête spatiale et relations internationales", *Annuaire français des relations internationales*, vol. IX, July 2008.
Stratégie spatiale de défense, Ministry for the Armed Forces, 2019.
VILLAIN Jacques, "La militarisation de l'espace", in *L'espace, un enjeu terrestre*, La Documentation française, "Questions internationals", 67, April 2014.
WEBER Steven and DRELL Sidney, "Attempts to Regulate Military Activities in Space", in Alexander L. George, Philip J. Farley and Alexander Dallin (eds), *US-Soviet Security Cooperation: Achievements, Failures, Lessons*, Oxford, Oxford University Press, 1988, p. 373-431.
VANBAELINGHEM Marjorie, *La sécurité des Philippines, Coopérations de défense et alliances*, Report 106, IRSEM, April 2023.
WEBER Max, *Le savant et le politique*, Paris, Plon, 1959.

WENDT Alexander, "Anarchy is What State's Make of It: The social construction of power politics", *International Organization*, 46 (2), 1992, p. 391-425.
WEST Jessica and ORTEGA Almudena Azcárate, "Space Dossier 7 – Norms for Outer Space: A Small Step or a Giant Leap for Policymaking?", UNIDIR, Geneva, 2022.
WEST Jessica, "The Open-Ended Working Group on Reducing Space Threats. Recap of the Third Session January 30 to February 3, 2023", *Ploughshares*, June 2023.
WEST Jessica, "Preserving outer space for peaceful use", A conversation with Victoria Samson, *The Ploughshares Monitor*, 44 (2), summer 2023.

REPORT – No. 110

ESTABLISHING NORMS OF BEHAVIOUR IN OUTER SPACE

FROM THE EARTH TO THE MOON, AND BEYOND

Béatrice Hainaut, PhD

The ongoing space revolutions (change in the relationship between state and private partners, access to space technologies eased for many players, technological developments, etc.) modify risks and threats space users are confronted with. It would be useless today to try to describe with certainty the space landscape of tomorrow, as developments are rapid and the consequences of the latter more or less known, understood and mastered.

Despite these uncertainties, it seems essential, for most of space-faring actors, to establish new norms in order to ensure the long-term sustainability of space, i.e. to perpetuate its use to be benefit of all. For this purpose, binding and non-binding norms are promoted through a number of initiatives with different formats like the Open-ended Working Group of the United Nations on Reducing Space Threats through Norms, Rules and Principles of Responsible Behaviours, which gathered between May 2022 and September 2023 in four distinct sessions.

The purpose of this study is to analyse the mechanisms for the emergence and dissemination of norms of behaviour in space, be it for earth orbits, the cislunar space or the Moon. It also depicts the role and influence of each state and non-state actor in the promotion of these norms.

IRSEM, École militaire
1, place Joffre, case 38 - 75700 Paris SP 07
irsem.fr

IRSEM
INSTITUT DE RECHERCHE STRATÉGIQUE DE L'ÉCOLE MILITAIRE