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General Principles Related to PAROS

A backgrounder prepared for the
United Nations Group of Governmental Experts on
Further Practical Measures for the Prevention of an Arms Race in Outer Space

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The following is a collection of rules and norms, found in both legal and political international instruments that relate to outer space activities. Whilst other provisions may exist, these are generally regarded as forming the contours of the global space governance framework. It does not include national laws and policies.

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Legal Instruments

The following are excerpts from instruments of a legally binding nature.

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies *Adopted by the General Assembly (GA) in resolution 2222 , opened for signature on 27 January 1967, entered into force on 10 October 1967* *The 1967 Outer Space Treaty (OST) is the foundational instrument for all space laws and policies. It largely consists of general principles that are broad in scope*	ARTICLE I: … 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 is no official definition, or delimitation, of "outer space". It has been an Agenda item for the Committee on the Peaceful Uses of Outer Space (COPUOS) for several decades now, but with no agreement on a precise definition. Some recognise 100km as the limit, but this is not widely recognised.*
	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 co-operation and understanding.	*This provision ensures that all existing and, arguably, subsequent international law applies to activities in outer space, and in particular the UN Charter.*
	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 IV is an "arms control" provision, and is unique as one of the only explicit arms control provisions for outer space in existence.* *This provision is not intended to cover nuclear weapons or weapons of mass destruction (WMDs) passing through space on a ballistic missile, whose trajectory would necessarily have to pass temporarily through outer space.* *There is no official definition of "peaceful purposes" in outer space. It is generally accepted that military activities can be for "peaceful purposes".*
	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 co-operation 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… A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer	*There is no generally accepted definition of "harmful interference" in the context of the OST, though the International Telecommunication Union (ITU) does have a definition for their purposes within the Radio Regulations (see below).*

	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.	
Charter of the United Nations *Signed on 26 June 1945 at the conclusion of the UN Conference on International Organization, and came into force on 24 October 1945*	ARTICLE 2(4): All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.	*While there is no generally accepted definition or conceptual delimitation of "threat or use of force" as applied to outer space activities, terrestrial concepts will still apply.*
	ARTICLE 51: Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of this right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security.	*There is presently little guidance on how the concepts of "self-defence" or "armed attack" can be applied in outer space. However, a group of experts meeting in Australia hopes to have the Woomera Manual available soon in order to shed light on this matter.*
Convention on International Liability for Damage Caused by Space Objects *Adopted by GA resolution 2777 on 29 November 1971 and entered into force on 1 September 1972*	ARTICLE I: (c) the term "launching State" means: (i) A State which launches or procures the launching of a space object; (ii) A State from whose territory or facility a space object is launched. (d) the term "space object" includes parts of a space object as well as its launch vehicle and parts thereof.	*Whilst it is unlikely that the Liability Convention would be applied between two belligerent States, it is yet unclear whether it might be applied to neutral third-parties that suffer damage as a result of conflict.*
Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water *Signed at Moscow on 5 August 1963, and came into force on 10 October 1963*	ARTICLE I: 1. Each of the Parties to this Treaty undertakes to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control: (a) in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas; or (b) in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted.	*This treaty bans any nuclear detonation in outer space. It was later supplemented by the OST, which also prohibits the placing in orbit of nuclear weapons.*

Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques *Adopted by GA resolution 31/72 on 10 December 1976, opened for signature at Geneva on 18 May 1977*	ARTICLE I: 1. Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party. 2. Each State Party to this Convention undertakes not to assist, encourage or induce any State, group of States or international organization to engage in activities contrary to the provisions of paragraph 1 of this article.	*The wording in this clause indicates that the intended behaviour must be against another State. It can only, therefore, act as a limitation during open conflict and not as a limitation on testing. That being said, this Convention arguably places a limitation on the destruction of satellites and the creation of long-lived debris.*
	ARTICLE II: As used in article 1, the term "environmental modification techniques" refers to any technique for changing - through the deliberate manipulation of natural processes - the dynamics, composition or structure of the Earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.	*The use of the term "deliberate" implies that "intent" is required for this treaty to apply.* *It should be noted that this Convention included references to "peaceful purposes" but did not seek to define the term.*
Constitution of the International Telecommunication Union *As amended and adopted by the Plenipotentiary Conference (Guadalajara, 2010) and entered into force on 1 January 2012*	ARTICLE 45: Harmful Interference 1. All stations, whatever their purpose, must be established and operated in such a manner as not to cause harmful interference to the radio services or communications of other Members or of recognized operating agencies, or of other duly authorized operating agencies which carry on a radio service, and which operate in accordance with the provisions of these Regulations.	*Though not officially stated, it is likely that the ITU Radio Regulations would not prevent a State from using jamming capabilities under Article 51 of the UN Charter. See below for the definition of "harmful interference".*
	ARTICLE 48: Installations for National Defence Services 1. Member States retain their entire freedom with regard to military radio installations. 2. Nevertheless, these installations must, so far as possible, observe statutory provisions relative to giving assistance in case of distress and to the measures to be taken to prevent harmful interference, and the provisions of the Administrative Regulations concerning the types of emission and the frequencies to be used, according to the nature of the service performed by such installations.	*The extent of the term "entire freedom" has not yet been explicitly defined, but it must be read in context of the UN Charter. A particular use of radio installations that cause "harmful interference" might be seen as falling under either Article 2.4 or Article 51 of the UN Charter.*
Radio Regulations of the ITU, *as it appears in the 2016 Edition*	RR1.169: harmful interference: Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with Radio Regulations (CS).	*The Radio Regulations are a supplement to the ITU Constitution and are regularly revised by the World Radiocommunication Conference.*

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies *Adopted by GA resolution 34/68 on 18 December 1979, entered into force in June 1984*	ARTICLE 3: 1. The moon shall be used by all States Parties exclusively for peaceful purposes. 2. Any threat or use of force or any other hostile act or threat of hostile act on the moon is prohibited. It is likewise prohibited to use the moon in order to commit any such act or to engage in any such threat in relation to the earth, the moon, spacecraft, the personnel of spacecraft or man-made space objects. 3. States Parties shall not place in orbit around or other trajectory to or around the moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the moon. 4. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration and use of the moon shall also not be prohibited.	*The Moon Agreement is largely overlooked because of its relatively low number of ratifications (18) and signatories (4). None of the "space-faring nations"—namely those capable of building and launching their own spacecraft—are Parties, and only France is a signatory. This instrument raised considerable concerns among UN member States, particularly in regard to the further elaboration of arms control provisions.*
Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems *Signed on 26 May 1972, abrogated on 13 December 2001*	ARTICLE V(1): Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.	*While this treaty is no longer in force, it is an example of how the US and Soviet Union were able to incorporate references to space-based technology and include verification measures.*
	ARTICLE XII: 1. For the purpose of providing assurance or compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law. 2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article. 3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.	

UN General Assembly Resolutions

While not constituting treaties or legally binding instruments *per se*, resolutions can help establish and elaborate international law.

Definition of Aggression *Adopted by GA resolution 29/3314 without a vote on 14 December 1974*	ARTICLE I: Aggression is the use of armed force by a State against the sovereignty, territorial integrity or political independence of another State, or in any other manner inconsistent with the Charter of the United Nations, as set out in this Definition.	
	ARTICLE II: The First use of armed force by a State in contravention of the Charter shall constitute prima facie evidence of an act of aggression…	
	ARTICLE III: Any of the following acts, regardless of a declaration of war, shall, subject to and in accordance with the provisions of article 2, qualify as an act of aggression: (d) An attack by the armed forces of a State on the land, sea or air forces, or marine and air fleets of another State.	*"Outer space" and "space objects" are not specifically mentioned but could be seen as being a natural extension of a State's armed forces.*
Prevention of an Arms Race in Outer Space *Adopted by GA resolution 72/26 by vote of 182 in favour, none against and three abstentions on 4 December 2017*	*Calls upon* all States, in particular those with major space capabilities, to contribute actively to the objective of the peaceful use of outer space and of the prevention of an arms race in outer space and to refrain from actions contrary to that objective and to the relevant existing treaties in the interest of maintaining international peace and security and promoting international cooperation; …	*This resolution has been passed with near-unanimous votes each year since 1981.This excerpt is from the most recently adopted text.*
Transparency and confidence-building measures in outer space activities *Adopted by GA resolution 72/56 without a vote on 4 December 2017*	1. Stresses the importance of the report of the Group of Governmental Experts on Transparency and Confidence-building Measures in Outer Space Activities, considered by the General Assembly on 5 December 2013;	*This resolution has been adopted since 2005, with near-unanimous support. This excerpt is from the most recently adopted text.*
	2. Encourages Member States to continue to review and implement, to the greatest extent practicable, the proposed transparency and confidence-building measures contained in the report, through the relevant national mechanisms, on a voluntary basis and in a manner consistent with the national interests of Member States;	
No First Placement of Weapons in Outer Space Adopted by GA *resolution 72/27 by vote of 131 in favour, four against and 48 abstentions on 4 December 2017*	5. Encourages all States, especially space-faring nations, to consider the possibility of upholding, as appropriate, a political commitment not to be the first to place weapons in outer space;	*This resolution was first put forth in 2014 and has been adopted with significant support since. This excerpt is from the most recent adopted text.*

Voluntary Norms

The following instruments are voluntary in nature and have varying degrees of implementation, through national measures. Nevertheless, they provide terms and approaches that have been found to be useful in regards to space activities.

Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space *Endorsed by the GA in GA resolution 62/217 on 22 December 2007*	GUIDELINE 4: Avoid intentional destruction and other harmful activities Recognizing that an increased risk of collision could pose a threat to space operations, the intentional destruction of any on-orbit spacecraft and launch vehicle orbital stages or other harmful activities that generate long-lived debris should be avoided. When intentional break-ups are necessary, they should be conducted at sufficiently low altitudes to limit the orbital lifetime of resulting fragments.	*This guideline can be applied to "anti-satellite tests", which constitute the intentional destruction of on-orbit spacecraft*
The Hague Code of Conduct Against Ballistic Missile Proliferation *Signed in The Hague in November 2002, added to the UN GA Agenda by GA resolution 59/91*	ARTICLE 2. Resolve to respect the following Principles: f) Recognition that states should not be excluded from utilising the benefits of space for peaceful purposes, but that, in reaping such benefits and in conducting related cooperation, they must not contribute to the proliferation of Ballistic Missiles capable of delivering weapons of mass destruction; g) Recognition that Space Launch Vehicle programmes should not be used to conceal Ballistic Missile programmes; h) Recognition of the necessity of appropriate transparency measures on Ballistic Missile programmes and Space Launch Vehicle programmes in order to increase confidence and to promote non-proliferation of Ballistic Missiles and Ballistic Missile technology;	*The Hague Code of Conduct presently has 139 subscribing States, though it does not include all major "space-faring nations"*
	ARTICLE 3. Resolve to implement the following General Measures: a) To ratify, accede to or otherwise abide by: o The Outer Space Treaty o The Liability Convention o The Registration Convention … d) To exercise the necessary vigilance in the consideration of assistance to Space Launch Vehicle programmes in any other country so as to prevent contributing to delivery systems for weapons of mass destruction, considering that such programmes may be used to conceal Ballistic Missile programmes…	
Missile Technology Control Regime *Formed in 1987 by the G-7 industrialized countries—Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States*	1. The purpose of these Guidelines is to limit the risks of proliferation of weapons of mass destruction (i.e. nuclear, chemical and biological weapons), by controlling transfers that could make a contribution to delivery systems (other than manned aircraft) for such weapons.	*The Missile Technology Control Regime (MTCR) now has 35 partner countries, with the Republic of India the most recent country to join in 2016.*
	3. In the evaluation of transfer applications for Annex items, the following factors will be taken into account:	

	A. Concerns about the proliferation of weapons of mass destruction; B. The capabilities and objectives of the missile and space programs of the recipient state; C. The significance of the transfer in terms of the potential development of delivery systems (other than manned aircraft) for weapons of mass destruction; D. The assessment of the end use of the transfers, including the relevant assurances of the recipient states referred to in sub paragraphs 5.A and 5.B below; E. The applicability of relevant multilateral agreements; F. The risk of controlled items falling into the hands of terrorist groups and individuals.	
	4. The transfer of design and production technology directly associated with any items in the Annex will be subject to as great a degree of scrutiny and control as will the equipment itself, to the extent permitted by national legislation.	
	APPENDIX "Payload": The total mass that can be carried or delivered by the specified rocket system or unmanned aerial vehicle (UAV) system that is not used to maintain flight. Note: The particular equipment, subsystems, or components to be included in the "payload" depends on the type and configuration of the vehicle under consideration.	*The MTCR distinguishes between different types of missiles and "Space Launch Vehicles" (SLV) based on the payload onboard. According to the Appendix, an SLV "Payload" includes:* *a. Spacecraft (single or multiple), including satellites;* *b. Spacecraft-to-launch vehicle adapters including, if applicable, apogee/perigee kick motors or similar manoeuvring systems and separation systems.*
The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies *Initial elements adopted in The Hague on 19 December 1995, entered into force 1996*	DEFINITIONS: "Spacecraft": Active and passive satellites and space probes. "Spacecraft bus" Equipment that provides the support infrastructure of the "spacecraft" and location for the "spacecraft payload". "Spacecraft payload" Equipment, attached to the "spacecraft bus", designed to perform a mission in space (e.g., communications, observation, science). "Space-qualified" Designed, manufactured, or qualified through successful testing, for operation at altitudes greater than 100km above the surface of the Earth. Note A determination that a specific item is "space-qualified" by virtue of testing does not mean that other items in the same production run or model series are "space-qualified" if not individually tested.	*The Wassenaar Arrangement was established to promote transparency and greater responsibility in the international transfer of conventional arms and dual-use technology, including certain types of space-related tech. This Arrangement has more than 40 participating States, including the Republic of India, the Russian Federation and the United States.*

	CONTROL LISTS - Dual-Use Category 9 – Aerospace and Propulsion: 9.A.4: Space launch vehicles, "spacecraft", "spacecraft buses", "spacecraft payloads", "spacecraft" on-board systems or equipment, and terrestrial equipment, as follows: Space launch vehicles; "Spacecraft"; "Spacecraft buses"; "Spacecraft payloads" incorporating items specified by 3.A.1.b.1.a.4., 3.A.2.g., 5.A.1.a.1., 5.A.1.b.3., 5.A.2.c., 5.A.2.e., 6.A.2.a.1., 6.A.2.a.2., 6.A.2.b., 6.A.2.d., 6.A.3.b., 6.A.4.c., 6.A.4.e., 6.A.8.d., 6.A.8.e., 6.A.8.k., 6.A.8.l. or 9.A.10.c.; e. On-board systems or equipment, specially designed for "spacecraft" and having any of the following functions: 1. 'Command and telemetry data handling'; Note For the purpose of 9.A.4.e.1., 'command and telemetry data handling' includes bus data management, storage, and processing. 2. 'Payload data handling'; or Note For the purpose of 9.A.4.e.2., 'payload data handling' includes payload data management, storage, and processing. 3. 'Attitude and orbit control'; Note For the purpose of 9.A.4.e.3., 'attitude and orbit control' includes sensing and actuation to determine and control the position and orientation of a "spacecraft". N.B. For equipment specially designed for military use, see ML 11.c	
	CONTROL LISTS - Munitions List: ML11. Electronic equipment, "spacecraft" and components, not specified elsewhere on the Munitions List, as follows: a. Electronic equipment specially designed for military use and specially designed components therefor; Note ML11.a. includes: a. Electronic countermeasure and electronic counter-countermeasure equipment (i.e., equipment designed to introduce extraneous or erroneous signals into radar or radio communication receivers or otherwise hinder the reception, operation or effectiveness of adversary electronic receivers including their countermeasure equipment), including jamming and counter-jamming equipment; b. Frequency agile tubes;	

	c. Electronic systems or equipment, designed either for surveillance and monitoring of the electro-magnetic spectrum for military intelligence or security purposes or for counteracting such surveillance and monitoring; d. Underwater countermeasures, including acoustic and magnetic jamming and decoy, equipment designed to introduce extraneous or erroneous signals into sonar receivers; e. Data processing security equipment, data security equipment and transmission and signalling line security equipment, using ciphering processes; f. Identification, authentification and keyloader equipment and key management, manufacturing and distribution equipment; g. Guidance and navigation equipment; h. Digital troposcatter-radio communications transmission equipment; i. Digital demodulators specially designed for signals intelligence; j. "Automated Command and Control Systems". N.B. For "software" associated with military "Software" Defined Radio (SDR), see ML21. b. Global Navigation Satellite Systems (GNSS) jamming equipment and specially designed components therefor; c. "Spacecraft" specially designed or modified for military use, and "spacecraft" components specially designed for military use.	