Space Law: Background and Treaties

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All Space Programs Have Legal Implications

Some examples:

- Return to the Moon and Deep Space Exploration
  - Artemis Accords and the Outer Space Treaties
  - Space resources
- Long-Term Space Sustainability
  - Small satellite LEO constellations—near-term issues
  - Satellite servicing & RPO
  - ASAT tests
  - Avoiding debris/removing debris
- Private entities operating in space environment
- Planetary defense (near Earth objects)
Legal Questions

• What is State responsibility under the space treaties?
• How to regulate companies in space (or not):
  o Satellite servicing is not one question—many types from pictures to actively dock with satellites
  o Small Sats and constellations in LEO
    • Today it is a congestion issue
    • Future: sharing spaces, deorbit, debris potential
  o Resource mining and use—asteroids and Moon
  o Active debris removal responsibilities and cost
• Who is liable when satellites collide?
• Who owns the Moon? Resources?
• How do we settle disputes in space?
National & International Approaches to Solutions

• International: How nations implement their treaty obligations
  o Space is non-sovereign, but nations will need to occupy territory
    • Property rights—taking (obtaining?) and using space resources
  o Registration and Liability are national obligations
    • Registration has never been completely implemented
    • Liability is unlimited in time and amount, unlike any other industry
  o Managing Space—treaties, “soft law,” other int’l. agreements

• U.S. regulatory structure:
  o Regulatory system reform and the regulation of non-governmental activities today is scattered among various agencies
    • Interagency coordination ((NSC) exists but…
      o Transportation (DOT/FAA), communications (FCC/DOC), remote sensing (DOC/NOAA),
      o Mission authorization (under discussion)
  o Security, dual-use, export controls (DID/IC/DOS, DOC)
  o State laws (spaceports, etc.—DOT/FAA)
Does Space “Law” Exist?

• Yes
  o In form of international agreements
    • Treaties, U.N. Resolutions, MOUs, etc.
  o National law is needed to carry out treaty obligations
    • U.S. has most developed law at present
    • Nations can and do interpret treaties differently
    • Many space-faring nations have no specific space law, but fewer now than in the past.

• No
  o Very few actual legal cases have been formally adjudicated
    o Therefore, few legal precedents, but analogies exist to terrestrial legal history in other sectors.
  o Most issues are similar to other categories of law (contracts, intellectual property rights, bankruptcy, torts, etc.)
  o Many issues can be dealt with through other existing international agreements
Early Formation of General Principles of International Space Law

- U.S. – NASA Act of 1958—using space for peaceful purposes and for benefits to all mankind are clearly stated in the preamble to the Act.
- U.N. General Assembly Resolutions 1721 (1961) and 1802 (1962) established the general principles of international space law and formalized in the Treaty.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

### General Principles of the U.N. OST:

1. Peaceful purposes, benefits for all humankind
2. International cooperation is encouraged
3. Freedom of access and exploration
4. No sovereignty in outer space
5. State responsibility for actions in space
6. No WMDs to be placed in orbit or on celestial bodies
Space is Not the Same as Terrestrial Analogies

- There are some important differences in outer space with legal ambiguities
  - Physical realities of outer space
    - Near-zero gravity
    - Expense and difficulty of getting there
- Antarctica system of treaties is an example of similar treaty clauses
  - No sovereignty, but earlier claims are suspended, not removed
  - Some nations retain “grandfather” rights to specific areas
  - Mineral rights suspended for 50 years (from 1991 amendment)
- High Seas (UNCLOS) also has similarities
  - Non-sovereign
  - Limits on liability exist
  - Salvage rights exist (but only for non-government property)
  - Sea Bed (mining) similarities to space mining, but not identical
Where does space begin?

- Undefined with precision, but most recognize that it is about 100 km.
- Why does it matter?
  - What law to apply depends on who, if anyone, has jurisdiction
  - Type of liability depends on where you are
- Geographic approach
  - Similar to defining the high seas
- Functional approach
  - Pragmatic answer
- Future issues in law vs. practical business solutions
  - Commercial ventures want a low altitude to give “tourists” a certificate
  - Air Force has used a low altitude for years to award astronaut wings
  - Upcoming issue: use of high-altitude platforms
Whose Law Applies?

- The United Nations COPUOS
- International organizations
- International bilateral and multilateral agreements
- Jurisdiction of nations and courts
- Military jurisdiction
- No law ("the Wild West")?
Where does Space Law Come From?

- International precedents established in national laws
- Aviation law
- International Geophysical Year (1958)
- Law of the seas—maritime laws
- Antarctica
- Defense and security agreements
- Nuclear security and non-proliferation regimes
- Telecommunications and ITU Convention
- Other
Some Common Misperceptions

• Space is a “public good”
  o A public good is “non-rivalrous” and “non-excludable;” space is neither

• Space is a “global commons”
  o Common problems to solve and common issues are treaty language, but space is not a “commons”
  o Space itself is not one thing

• Space is “congested, contested, and competitive”
  o For the most part, it is not.
  o But some orbits are getting quite crowded, some nations are infringing on security aspects, and private companies are increasing activities in outer space.
THE OUTER SPACE TREATIES
Committee on Peaceful Uses of Outer Space (COPUOS)

• U.N. concern after Sputnik in Oct. 1957
  o Established in 1959 with 18 members; work began in 1962
  o Now has 103 member nations and over 40 International Organizations with Permanent Observer status

• No law-making or adjudicative powers

• 2 committees: Legal and Science/Technical

• Forum for discussion of space legal and technical issues

• Drafts treaties and resolutions for approval by General Assembly
# THE OUTER SPACE TREATIES

<table>
<thead>
<tr>
<th>Treaty</th>
<th>Date Entered Force</th>
<th>Number of Nations Signing/Ratifying</th>
</tr>
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<tbody>
<tr>
<td>The Outer Space Treaty (OST)</td>
<td>1967</td>
<td>112 + 23 = 135</td>
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<tr>
<td>The Agreement on the Rescue and Return of Astronauts</td>
<td>1968</td>
<td>99 + 23 = 121</td>
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<tr>
<td>The Convention on Liability</td>
<td>1972</td>
<td>98 + 19 = 117</td>
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<tr>
<td>The Registration Convention</td>
<td>1976</td>
<td>72 + 3 = 75</td>
</tr>
<tr>
<td>The Moon Agreement</td>
<td>1984</td>
<td>18 + 4 = 22</td>
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</tbody>
</table>
Treaties

- The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (General Assembly resolution 2222 (XXI), annex)—adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967;

- The Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (resolution 2345 (XXII), annex)—adopted on 19 December 1967, opened for signature on 22 April 1968, entered into force on 3 December 1968;
Treaties (con’t)

- The *Convention on International Liability for Damage Caused by Space Objects* (resolution 2777 (XXVI), annex)—adopted on 29 November 1971, opened for signature on 29 March 1972, entered into force on 1 September 1972;

- The *Convention on Registration of Objects Launched into Outer Space* (resolution 3235 (XXIX) annex)—adopted on 12 November 1974, opened for signature on 14 January 1975, entered into force on 15 September 1976;

- The *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies* (resolution 34/68, annex)—adopted on 5 December 1979, opened for signature on 18 December 1979, entered into force on 11 July 1984.
U.N. Resolutions
(“soft law,” not legally binding)

- The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted on 13 December 1963 (resolution 1962 (XVIII));
- The Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, adopted on 10 December 1982 (resolution 37/92);
- The Principles Relating to Remote Sensing of the Earth from Outer Space, adopted on 3 December 1986 (resolution 41/65);
- The Principles Relevant to the Use of Nuclear Power Sources in Outer Space, adopted on 14 December 1992 (resolution 47/68);
- The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, adopted on 13 December 1996 (resolution 51/122).
U.N. Resolutions (con’t)

- **Application of the** concept of the “launching State,” adopted 10 December 2004, (resolution no. 59/115);

- **Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects**, adopted 17 December 2007, (resolution no. 62/101)

- **Safety Framework for Nuclear Power Source Applications in Outer Space**, (Endorsed by the COPOUS, 52nd Session, Publ. A/AC.105/934.)

- **Space Debris Mitigation Guidelines of the Committee on the Peaceful uses of Outer Space**, (U.N. General Assembly Resolution 62/217, 22 December 2007)
Outer Space Treaty

• Master document and basic principles
• Important Articles:
  o I—Freedom of scientific investigation, benefits for all nations; space shall be the province of all mankind; freedom of access for all
  o II—Space is not subject to national appropriation by claim of sovereignty, means of use or occupation or by any other means
  o III—International cooperation encouraged, linked directly to UN Charter and international law
  o IV—No weapons of mass destruction to be placed in orbit or on celestial bodies; Moon and other celestial bodies to be used exclusively for peaceful purposes
  o V—Astronauts are the “envoys of all mankind”
  o VI—States are internationally responsibility
  o VII—States are internationally liable
  o VIII—Registration; jurisdiction & control; ownership is terrestrial
  o IX—Cooperation and mutual assistance; environment; no harmful interference
Agreement on Rescue of Astronauts and the Return of Astronauts and the Return of Objects Launched into Outer Space (Refer to Article V of the OST)

- Article 1
  - Does this Agreement apply only to Astronauts?
    - No—words are: “personnel of a spacecraft”
    - Compare to OST “astronauts are envoys of mankind”
    - Note U.S. sub-orbital law says: “space flight participants”
    - Immediate notification of launching authority required—1st Duty
- Article 4
  - Prompt and safe return to representatives of launching authority
- Article 5
  - Return of component parts and space objects—costs to be borne by launching authority
Convention on International Liability for Damage Caused by Space Objects
(Refer to Article VII of the OST)

• Article I
  o Definition of launching state
    • One who launches, procures a launch, or launches from their territory or facility
  o Definition of space object
    • ...includes component parts of a space object as well as its launch vehicle and parts thereof.
Convention on International Liability for Damage Caused by Space Objects

• **Article II**
  - Launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft flight.

• **Article III**
  - Fault liability with damage, if the damage is elsewhere than on the surface of the Earth
Registration Convention

(Refer to Article VIII of OST)

• Each State is responsible for keeping records and reporting to the UN its objects placed in orbit
  o Not necessarily consistently defined among States
  o Oriented toward space “objects” with launch information required but secondary
  o Voluntary submission, no effective enforcement for accuracy or timeliness
• No record of ownership or title to objects is involved
  o Has no commercial application
• But it can be important in identifying the state responsible if there is a conjunction or accident
Questions and Issues on Registration

• Who is responsible for registering what?
• When is registration recorded and sent to U.N.?
• Are the launch vehicle and satellites to be registered separately?
• How many times should the launch vehicle be registered when on one mission?
• Issue of cubesats and small satellites with short lifetimes
• Does space debris have to be registered?
  o What is status of a bolt that falls off of an RLV in space and is labeled “made in USA”? (i.e. is it a space object?)
  o All space objects may end up as debris, but not all debris may be a space object according to the current definitions.
Agreement Governing The Activities of States on the Moon and Other Celestial Bodies
(Refer to Article IV of the OST)

• Article 1
  o Definitions
    • Includes orbits around the Moon
    • Excludes extraterrestrial materials reaching earth by natural means

• Article 6
  o Freedom of scientific investigation--basis of equality
  o Rights to remove samples from moon …and use mineral and other substances in quantities appropriate for the support of their missions.
Agreement Governing The Activities of States on the Moon and Other Celestial Bodies

• Article 11
  o Common heritage; no national appropriation
    • Compare to Art. 4: province of all mankind
  o No resources shall become property of any governmental, non-governmental, or international organization
  o Right to exploration...on basis of equality
    • Does this mean equal distributions?
    • See 11.7.d--equitable sharing of benefits derived from resources
  o States may create an international regime for moon
Other Legal and Policy Initiatives

• U.N. Conf. on Disarmament (1st Committee), meets in Geneva

• Codes of Conduct
  o Hague Code of Conduct on Ballistic Missile Proliferation (2002) and GA Resolution of 2013
  o MOU on Ballistic Missile Notification (2000)
  o Artemis Accords (U.S. bilateral agreements) (2020-22)

• TCBM’s (Transparency, Confidence Building Measures)

• National Law
  o U.S. most complete (and complex) of all nations
    • NASA, CSLA (DOT), NOAA, Export Controls (DOS, DOC, DOD), FCC, Other
Means of Enforcement and Methods for Dispute Resolution

- Diplomatic negotiations
- National laws that implement commitments
  - Treaties, MOUs, Codes of Conduct, Guidelines
- Other relevant national laws
  - Tort, criminal, contract, etc.
- Claims Commission under the Liability Convention
- International Court of Justice
- U.N. Security Council
- Suits in local courts
- Binding Arbitration for Commercial Disputes
International Governance

• Is it possible?
• Is space the first order of priority
  o E.g. agriculture, water, migration, drug and weapon traffic, terrorism, other international economic/civil issues
• Who would govern?
• What would be governed?
  o Access, debris, weaponization, resources, traffic, liability, other?
• What governing mechanisms exist now:
  o ITU for telecommunications
  o ICAO for international aviation
  o WMO, WIPO, WTO, NAFTA
  o Are they effective? Are elements of them useful for a space model?
• Role of insurance companies for commercial space
Outer Space Treaty

• Article VI
  o 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
  o 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.