Space Policy

Notes on Space Law and Policy

Derived from multiple sources. Please see bibliography at end of notes.

Important Lecture Themes

- "Space law" is international law, governed by treaties and custom
- "Space policy" is set by individual nations or subgroups within a nation, and typically applies only to a single nation or subgroup within a nation.
- Success of the Outer Space Treaty
- Failure of the Moon Treaty
- "Leadership" component to US national space policy

International Law

International law arises from several sources, chief among them being treaties and custom. Treaties seem an obvious example to the casual observer, and can be enacted bilaterally between two nations, or multilaterally between several countries often with the assistance of the United Nations (UN). They are signed, formal, legal documents. However, custom was the first player, and still an important one, in creating international law. Custom is defined as "general principles of international law not embodied in any treaty but observed, and considered binding, by civilized nations". In addition, commentaries from respected law critics are given due weight in defining international law, as well as resolutions adopted by the UN General Assembly, as they are seen as expressing an international consensus. And not to be neglected is the role of international politics, which at times contributes a large share to international law.

From the above, international law seems a vague and nebulous topic at best, and certainly appears to lack apparent enforcement mechanisms. Unlike violating the civil laws of a nation, there are relatively few expressly defined punishments for violating international law. Economic sanctions and embargoes are largely of symbolic importance, and certainly arresting the "offender" - usually an established nation well equipped with armies and munitions - is an impossibility.

Thus, nations are faced with unclear guidelines and unenforceable punishments that govern their interactions. But yet, more times than not, nations abide by the rules of international law. There are several reasons for this as well as reasons for breaking them from time to time:

> (a) A system of international law is in the general interest of all nations. It permits business to transact, travel to take place, and cooperation to ensue in health care areas.
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> (b) Cooperation among nations is imperfect because humans are involved. Humans tend to forget what was agreed upon from time to time, but the formality of a treaty helps to solidify what was agreed upon and serve as a base for negotiating good- and bad-faith disputes that may arise in the future.

(c) Nations guard their own interests, and will violate international law on occasion. Usually this is done very selectively, or else the offending nation faces isolation from the rest of the world for "crying wolf" too many times.

Where Does Space Begin?

One of the first problems early formulators of space law faced was the definition of where space began. How far up from the earth's surface did an object have to be located to be considered "in space" and thus subject to the laws for that arena? They considered first the von Karman line, an altitude approximately 53-62 miles above the earth's surface where aerodynamic lift is largely nonexistent. This would be the general boundary of airplane flight and thus air law, and it seemed a logical point at which to start the domain of space law. They also considered that below an altitude of 69 miles, sustained orbit is practically impossible. Yet, there are violations of these generalizations. The X-15, classified as an airplane, flew at altitudes higher than 62 miles, and satellites have orbited (at certain points in the orbit) lower than 69 miles. The definition which has evolved is as follows: any object that is in orbit about a planet is said to be in space. This definition falls under "custom", and has never been explicitly delineated in any treaty or other official document. Since there is no tangible black-letter definition, there is the possibility that the current custom of defining "in space" may change in the future to suit the needs of subsequent generations.

Consider the predicament of an aerospace plane, like President Reagan's proposed Orient Express. It would be both an airplane and a spacecraft. So would its passengers be considered "astronauts", and treated like "envoys of mankind" as astronauts are considered under the Rescue Agreement? (see below for information on the rescue agreement) Highly unlikely. This is just an example of some of the challenges that might lie ahead in defining, or choosing not to define, clear boundaries for where space begins.

The Space Treaties

The Limited Test Ban Treaty

Perhaps the first treaty to place guidance on the international norms of behavior in space was the Limited Test Ban Treaty of 1963. The treaty prohibits the explosion of nuclear devices in the oceans, the atmosphere, and outer space. The US, UK, and the Soviet Union signed this treaty. Other nuclear powers, such as France and China, did not sign the treaty.

Though on the surface this treaty may seem to be aimed at slowing down the nuclear arms race, it actually didn't accomplish that at all, as nuclear tests continued extensively underground by the US and the USSR. From a space point of view though, it was extremely critical to ensuring the success of future satellite missions. Nuclear explosions in space propagate radiation and electromagnetic pulses, which can effectively kill all

satellites within a distance of the explosion. Previous explosions at high altitudes caused extensive damage to satellites, and electronics on the ground, and created an artificial radiation belt that apparently persisted for years.

Outer Space Treaty (OST)

Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies. Entered into force on October 10, 1967. The Outer Space Treaty has been ratified by 95 States and signed by 27 others.

The OST grew gradually out of a series of conferences on outer space law and several UN General Assembly declarations stating general principles for international activity in outer space. An ad hoc UN Committee on the Peaceful Uses of Outer Space (COPUOS) was established in 1959, and became a permanent UN committee shortly thereafter. In a COPOUS report of 1959, the committee took the position that some form of international administration over celestial bodies might be adopted.

Eisenhower addressed the UN General Assembly in 1960, proposing:

1. We agree the celestial bodies are not subject to national appropriation by any claims of sovereignty.
2. We agree that the nations of the world shall not engage in warlike activities on these bodies.
3. We agree, subject to verification, that no nation will put into orbit or station in outer space weapons of mass destruction. All launchings of spacecraft shall be verified by the UN.

In 1966 President Johnson suggested a treaty be developed containing the following elements:

1. The moon and other celestial bodies should be free for exploration and use by all countries. No country should be permitted to advance a claim of sovereignty.
2. There should be freedom of scientific investigation, and al countries should cooperate in scientific activities relating to celestial bodies.
3. Studies should be made to avoid harmful contamination.
4. Astronauts of one country should give necessary help to astronauts of another country.
5. No country should be permitted to station weapons of mass destruction on a celestial body. Weapons tests and military maneuvers should be forbidden.

After nearly a decade of debate in the UN, the OST was ratified and entered into force in 1967. The main points in the OST can be summed up as follows:

(a) Terrestrial sovereignty may not be extended to space or celestial bodies.

(b) No weapons of mass destruction shall be placed in orbit or on celestial bodies, or stationed in outer space in any manner; celestial bodies shall be used exclusively for peaceful purposes.

(c) Assistance and return of astronauts and space vehicles; notification of dangerous phenomena in outer space or on celestial bodies.

(d) Parties shall bear international responsibility for national activities in outer space.

(e) Parties to the treaty that launch or procure the launching of objects into outer space shall be liable for damages.

(f) Jurisdiction and control over personnel and objects are not affected by their presence in outer space or on celestial bodies.

(g) Parties to the treaty shall avoid harmful contamination of outer space, celestial bodies, and the environment of earth, and shall consult with other parties regarding potentially harmful experiments.

In order to understand why the treaty was considered such a success, it is important to understand a bit of the world climate at the time of its formulation. In 1966, the cold war was raging between the U.S. and the former Soviet Union and tensions were high. The new arena of space left many people on both sides speculating about its military applications, with particular emphasis on nuclear weapons deployment to earth targets from outer space. The Soviets had been consistently launching men and satellites into space for several years, while the U.S. was doing much the same with its Mercury and Gemini manned programs. About this time as well, both countries were well into planning for manned missions to the moon. It is also important to point out that the U.S. and the former Soviet Union were the superpowers at that time, in addition to being the only countries with space capabilities.

Bearing in mind the world climate at the time, and also considering the vast number of nations which signed on to the Outer Space Treaty, the OST was nothing short of an amazing achievement. The General Counsel to NASA when the treaty was put forth wrote:

"[A] remarkable endeavor of great significance to international law and politics has reached fruition. Nations often in conflict with one another and adhering to widely divergent political philosophies have agreed on the first Treaty of general applicability governing activity in outer space."

A noted space attorney offers the following as an explanation for this successful consensus of so many different nations:

"...many of the nations involved lacked a clear sense of their interests - both future and contemporaneous - in any particular space regime. Most of the participants had only hazy ideas of what would come to pass in the space field, and how it would affect their own destinies, and even the United States and the [former]

> Soviet Union seemed far more willing than usual to be persuaded by one another on most issues. Paradoxically, this comparative lack of specifically self-serving goals may be one reason why the Outer Space Treaty is viewed with such respect - approaching reverence at times - by so many. ... [T]he treaty can be said to represent a more general view of the interests of humanity instead of being merely a compromise among interested parties, shaped primarily by the balance of power. ... [T]he participants in the process leading up to the OST took a broader and longer view than is typical in international negotiations, and the OST does gain in legitimacy as a result."

But this wasn't to say that the countries involved in the treaty did not have private interests to protect as well. For example, the US was extremely concerned about continuing its ability to fly intelligence satellites.

In essence, the OST enjoyed such broad support and success because it was an extremely idealistic document which was formulated well in advance of large scale day-to-day operations in space. Thus, its creators could afford the utopian language contained therein which at times resembles the preamble to the U.S. Constitution in its highly idealistic nature:

> "The States Parties to this [Outer Space] Treaty,
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> Inspired by the greater prospects opening up before mankind as a result of man's [sic] entry into outer space,
>
> Recognizing the common interest of all mankind [sic] 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 degrees 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..."

As with many documents of an idealistic nature, some critics have pointed out that "regard for the treaty may stem as much from sentiment as from any concrete benefits it provides". However, the rules of the Outer Space Treaty do actually contribute a fair amount to international understanding of conduct in the space environment, as well as provide a framework for future development of laws governing activities in outer space. Certain issues which were left vague (and later classified as "unresolved") in the OST were taken up in the Moon Agreement of 1979. But since the Moon Agreement has not found favor among the spacefaring nations of the day, the widely endorsed OST still remains the single most important international document governing activities in outer space.

Liability Convention

Convention on International Liability for Damage caused by Space Objects. Entered into force on September 1, 1972. It has been ratified by 80 States and signed by 26 others.

This is a major space law agreement that fleshes out the liability provisions laid out in the OST. It applies to both military and civilian space activities, and provides for:

- Absolute liability by launching states for damage caused by their space objects to objects on the earth or to aircraft in flight.
- Liability based on fault where the damage is to space objects of another launching state elsewhere that on the surface of the earth (ie. in space).

There has been one significant real world application of the liability convention. In 1978, a Cosmos 954 satellite powered by nuclear reactor and belonging to the USSR crash landed in Canada. Radioactive debris was scattered over Saskatchewan, Alberta, and the Northwest Territories. Both the US and Russia offered to help Canada with the cleanup. Canada accepted the US offer and denied the Soviet offer. But after the cleanup, the Canadian government sent the USSR a bill for Canadian $6M, as they thought they were entitled under the liability convention. The Soviet government only paid C$3M, believing that they offered to help in kind with the cleanup and should therefore not be obligated to pay the full amount. The implementation of the liability convention, as we see in this case, involves politics as much as it involves international law. And likely it will continue to be this way.

Rescue Agreement

Agreement on the Rescue of Astronauts, and Return of Astronauts and the Return of Objects launched into Outer Space. Entered into force on December 3, 1968. It has been ratified by 85 States and signed by 26 others.

This treaty suggests that astronauts are the envoys of mankind, and encourages nations to treat them as such. It provides for:

- The return of astronauts if they crash land on foreign territory
- The rescue of an astronaut if he/she is in trouble
- The return of space objects to their rightful owners is they emergency- or crash-land in foreign territory.

Registration Convention

Convention on Registration of Objects launched into Outer Space. Entered into force on September 15, 1976. It has been ratified by 40 States and signed by 4 others.

This treaty requires all launching states to keep a registry for objects launched from their territories or under their supervision, and report this registry to the UN from time to time.

Moon Agreement

Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. Entered into force on July 12, 1984. It has been ratified by 9 States and signed by 5 others.

The rules against extension of sovereignty to outer space and celestial bodies resolved a good deal of confusion regarding such matters. Certainly, prior to the OST entering into force, there had been considerable uncertainty regarding the ability of nations to claim sovereignty in space based on arriving at a particular place first, especially after the former Soviet Union planted a flag on the moon using an unmanned probe. However, there still remained some questions regarding outer space resource utilization and property rights. The Moon Agreement was an attempt to clarify the remaining problems.

The principle problems stemmed from the interpretations of provisions contained in Article XI. Below is Article XI of the Moon Agreement:

> "Article 11
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> (1) The moon and its natural resources are the common heritage of mankind, which finds its expression in the provisions of this Agreement, in particular in Paragraph (5) of this Article.
>
> (2) The moon in not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.
>
> (3) 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. The placement of personnel, space vehicles, equipment, facilities, stations, and installations on or below the surface of the moon, including structures connected with its surface or subsurface, shall not create a right of ownership over the surface or subsurface of the moon or any areas thereof. The foregoing provisions are without prejudice to the international regime referred to in Paragraph (5) of this Article.
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> (4) States parties have the right to exploration and use of the moon without discrimination of any kind, on the basis of equality and in accordance with international law and the provisions of this Agreement.
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> (5) States parties to this Agreement hereby undertake to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon as such exploitation is about to become feasible. This provision shall be implemented in accordance with Article 18 of this Agreement.

(6) In order to facilitate the establishment of the international regime referred to in Paragraph 5 of this Article, states parties shall 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 any natural resources they may discover on the moon.

(7) The main purposes of the international regime to be established shall include;

a) The orderly and safe development of the natural resources of the moon;

(b) The rational management of these resources;

(c) The expansion of opportunities in the use of those resources;

(d) An equitable sharing by all states parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries, which have contributed either directly or indirectly to the exploration of the moon, shall be given special consideration."

The Moon Treaty introduced the "common heritage of mankind [sic]" principle. This essentially said that the moon could not be appropriated or claimed by any individual or states parties, and Paragraphs 5 and 7d indicate that there will be an equitable distribution to all countries of the benefits of those lunar resources controlled by the future international regime. "Thus, even though national appropriation of the moon is prohibited, and even though the surface and the subsurface of the moon cannot become property of the various listed entities, numerous activities which are usually associated with appropriation and property rights are explicitly allowed."

The United States believed that this limitation on appropriation would be detrimental to its economy because it was contrary to the economic interests of the U.S. and of other countries with a free enterprise system. Senators at the time, being prodded by aerospace companies with interests in future resource mining on the moon, voiced their concerns to the Secretary of State, Cyrus Vance. Vance took an interpretation of the treaty that was typical of the US view at that time: that resource appropriation and ownership is actually permitted by the Moon Treaty, and that limitations on resource exploitation only apply to natural resources when they are in their natural place. However, many other people disagreed with the U.S. view. The other primary school of interpretation on Article XI was that it expressly did not provide anyone with the authority to remove natural resources from their place, and thus natural resources could not be owned by any states parties.

These two different ways of interpretation of the Moon Treaty resulted in two camps emerging: one which included the U.S., the former Soviet Union and other spacefaring nations; and one which included developing countries, particularly those lacking space capabilities.

Ultimately, this bifurcation on the interpretation of Article XI lead to the relative failure of the Moon Agreement, with failure being defined as no major space power (save France) having ratified the Agreement to date. Though the Moon Agreement is unlikely

to play a major role in the future, it is not irrelevant. It represents the New International Economic Order, or the mindset that wealth and standard of living should be more evenly distributed in the world. This is a trend which is gaining in popularity, and shows the important intellectual tendencies of the developing nations of the world. It should also be kept in mind that "the U.S.-[Russian] domination of space capability is by no means a permanent affair; other nations - some of whom have already signed the Moon Agreement - are trying to develop such a capability.

In conclusion, the Moon Agreement was born "almost entirely out of high academic ideals in advance of any practical commercial reality. True space law ... will evolve to meet the needs of practical commercial ventures. History teaches that the transition between academic and practical legal regimes can be gradual or traumatic, but that such transitions inevitably occur." Just not as we've seen to date with the Moon Treaty. In absence of any viable plans for lunar development commercially in the near future either by the US or any other nation, this is just as well.

U.S. Space Policy

Space policy has been around in the U.S. for nearly a half a century now, and will likely continue as long as there is government funding of space activities or space activities need to be regulated in some manner by the government (likely, forever!). Policies are usually
subject to shorter half-lives than international law. Policy changes can happen as often as the people in power change, and sometimes even more frequently than that.

While some US policies are technically "laws" – for example, anything the US Congress does is technically considered "law" by our form of government – the general practice is to call these directives generated by only one nation as "policies". We reserve the term "law" for the international treaties and agreements that are negotiated in a true multilateral nature encompassing many nations.

Many space-related policies have been enacted in the US over time. Some of these policies remain relevant and in practice for longer periods of time, while some fade from use rather quickly as the times change and the policy no longer is desirable. We could group them into several topical areas:

- Telecommunications
- Launch
- Global Positioning
- Remote Sensing
- General Commercial Space Activities
- National Space Policy

A Few Examples of Current US Space Policy

National Space Policy of 1996

The Clinton administration space policy was not finalized until September of 1996, three years after he took office. Space policy was just not high on Clinton's agenda. The policy received many positive responses from critics, and was praised as being very clear and articulate. The policy elucidates priorities and goals by sector: Civil, National Security, and Commercial. It also provides guidelines for intersector cooperation on the specific issues of:

- International Cooperation
- Space Transportation
- Space-based Earth Observing
- Export Controls, Tech Transfer
- Arms Control
- Space Nuclear Power
- Space Debris
- Government Pricing

If we look at the introduction to the policy, the second sentence of the document includes the word "leadership". There was great controversy over whether or not to specifically use the word "leadership" in this policy. The previous national space policy from 1989 stressed the US's leadership in space throughout the document. One can easily see how the notion of leadership and being "Number 1" can irk partners on international space endeavors, such as the space station.

Commercial Space Launch Act of 1984, Amended 1988

Originally written by Congress in 1984, this Act became more meaningful when indemnification was amended to the Act in 1988. This limited the liability of companies for damages caused to US property and individuals in case of a launch accident, and said the government would cover damages in excess of a certain amount. It is conceivable that without this indemnification the commercial launch industry may never have really blossomed.

The creation of the Act also spawned the creation of the Office of Commercial Space Transportation with the FAA. This is the group that licenses commercial launches. It currently employs about 3 dozen people.

Commercial Land Remote Sensing Act of 1984

This act provided for the commercialization of remote sensing data, and the ability of commercial and non-government entities to own and operate remote sensing satellites. A few notable stipulations:

- Licenses would be required

- US would not license remote sensing satellites that were in conflict with the national security interests of the US.
- Pricing for data had to be uniform

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