



Space Law: A Conversation on Space Resources

Brumley Speaker Series

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Today's itinerary

- So you want to mine resources off planet!
- Legal issues
 - Space law? Say what?
 - Where does it come from?
 - What does it encompass?
- Commercial implications of mining off-Earth
 - What does all this mean to the private sector?
 - Crawl, walk, run, dance
 - Exploration & Use
 - ISRU
 - Are we there yet?



Photo credit: NASA



What is Space Law?

- “The cumulative body of national and international legislation, directives and regulations, treaties, agreements and conventions, created to enable, manage, and regulate or restrict activities in or related to outer **space**” Stephen E. Doyle
- Four characteristics according to Eilene Galloway, Grande Dame of space (and space law):
 - National
 - International
 - Applies to area
 - Applies to functions performed in that area



How has space law developed?

- Space Law has developed in four interrelated phases:
 - Phase 1: Developed concepts from 1910 to 1957
 - Phase 2: Established basic principles from 1957 to 1966
 - Phase 3: Developing rules and regulations to manage expanding spaceflight activities since 1957
 - Phase 4: Developing rules and regulation for extra-terrestrial human settlements and activities



International: fora

- COPUOS (Committee for the Peaceful Uses of Outer Space)
 - 4th Committee UN
 - 2 subcommittees:
 - Science & Technical Subcommittee
 - Legal Subcommittee
 - Consensus
 - Committee discusses issue until settled without putting it to a vote.
 - Gets people talking
 - Equal say
 - Diluted language and issues
 - COPUOS was the first UN committee to adopt a consensus methodology.
- International Telecommunications Union (ITU)
- Conference on Disarmament (1st Committee UN)



International: Treaties

- Legal obligations
- Outer Space Treaty
 - 1967
 - Treaty of Principles (Magna Carta of Space)
 - Exploration and use for the benefit of all humankind (Article I)
 - Theme of international cooperation
 - Adopted already existing international law
 - Other four treaties built upon its framework as gaps became apparent. Technology drives this law.
 - **All begin w reiteration of OST's basic principles**
 - List found in supplemental materials at back of deck



International: OST excerpts

- Outer Space Treaty, excerpted articles:
 - Article I (space freedoms)
 - Exploration & use for the benefit and in the interest of all countries
 - Article II
 - Outer space is not subject to national appropriation by claim, use, occupation, or any other means
 - Article VI
 - Starting point for private activities in space
 - Contemplates space activity by governmental agencies or by non-governmental entities
 - Assigns to state parties international responsibility for treaty compliance by either state actors or the private sector.
 - **Non-governmental activities in space require a state's authorization and continuing supervision.**



International: OST excerpts

- Article VIII
 - Do countries on Earth even have any say over events/actions off-Earth?
 - Quasi-territoriality
 - State Parties on whose registry space object is listed shall retain jurisdiction and control over such object and personnel while in outer space or on a celestial body.



International: OST excerpts

- Outer Space Treaty, excerpted articles:
 - Article IX
 - Guided by principle of cooperation & mutual assistance
 - Due regard for the corresponding interests of other State parties
 - Avoid harmful contamination & adverse changes to Earth environment
 - Avoid harmful interference with activities of other States
 - duty to notify if you are the actor
 - right to consultation if you are the actee
 - Article XII
 - ALL stations, installations, equipment and space vehicles on the Moon and other celestial bodies
 - Open to representatives of other States Parties to the OST
 - Basis of reciprocity
 - Reasonable advance notice of a projected visit
 - Appropriate consultations and maximum precautions
 - ASSURE SAFETY
 - Avoid interference w normal operations in visited facility



COSPAR Guidelines

- Forward contamination
 - People and things from Earth contaminating outer space
 - Categories I - IV of the guidelines representing increasingly more stringent control
- Backward contamination
 - People and things from outer space contaminating Earth
 - Category V of the guidelines
- NASA Interim Directives July 2020
 - One for the Moon, one for Mars
 - Moon is no longer one size fits all for COSPAR type classification



Domestic law: US

- the national piece

- Examples

- Communications Act of 1934 (telecommunications)
 - Space Act of 1958 (formed NASA)
 - Commercial Space Launch Act of 1984 (launch)
 - Land Remote Sensing Policy Act of 1992 (commercial remote sensing)
 - Commercial Space Launch Amendments Act of 2004 (launch)
 - Commercial Space Launch Competitiveness Act of 2015 (omnibus)
 - Office of Space Commerce!!!
 - Title IV allowing private sector to harvest, mine, transport, sell resources



crawl, walk, run, dance

- Lunar Gateway (crawl)
 - outpost, human factors
- Artemis (crawl -> walk)
- EO Space Resources (walk)
- Artemis Accords (walk)
- NASA Request for Quotes (walk)
- Osiris-ReX (walk)
- And what about Elon & Mars?
 - Starship status (run -> dance)
 - Needs a launch license and reentry license and ???
 - **Not there yet...**



Application: space resource exploration and use

- OST Article I (1967) vs. OST Article II
 - Exploration and use for the benefit and in the interest of all countries
 - No national appropriation ... use or occupation or any other means
- CSLCA of 2015
 - Title IV: space resources can be owned
- International Community: Hague Space Resources Governance Working Group (ongoing since 2016)
- Moon Village Association 2018
- NASA Regulatory and Policy Committee recommendations to the NASA Advisory Council 2019 (Principle 7)
- Work at UN COPUOS Legal Subcommittee 2020/21
 - Possible WG, possible agenda item



Application: space resource exploration and use

- Executive Order on Encouraging International Support for the Recovery and Use of Space Resources
 - Underscores commitment to OST
 - Building on 2015 legislation; clarifying goals and intentions
 - Role of UNCOPUOS in developing best practices
 - Safety is fundamental
 - No golf charlie!
 - Go forth and prosper/engage in joint statements, bilaterals, and multilaterals



Application: space resource exploration and use

- Artemis Accords
 - Bilateral requirement for Lunar Gateway, partnering with NASA
 - Grounded in the Outer Space Treaty
 - Peaceful purposes, transparency, interoperability, release of scientific data (principle 7, anyone?), protecting heritage, extract and use resources, deconflict activities (OST Article IX), behave consistently with UNCOPUOS Space Debris Mitigation Guidelines
 - US + 7 like minded countries (AU, CAN, IT, Japan, Lux, UAE, UK)
- NASA Request for Quotations
 - To purchase 50 to 500 grams of lunar regolith
 - From one or more private companies; not limited to US
 - Effect on norms development



Supplemental materials

- Reference materials to follow
- Links:
 - [Lunar Gateway](#)
 - [NASA Advisory Council recommendations Fall 2019](#)
 - [Hague Space Resources Governance Working Group](#)
 - [Moon Village Association](#)
 - [Artemis Accords](#)
 - [NASA to purchase "Moon Rocks" September 2020](#)
 - [Starship](#)



Declaring the need for Space Law (fyi and reference)

- 1910 – Emile Laude, French Air Law journal article
- 1926 – V.A.Zarzar, Russian high altitude air law paper
- 1932 – Vladimir Mandl, Monograph on space law
- 1936 – U.A. Korovin, Moscow paper, then a French journal article
- 1946 – Arthur Clarke (UK), BIS paper
- 1948 – John Cobb Cooper (US), NWC
- 1951 – John Cobb Cooper, Mexico City lecture
- 1951 – Oscar Schachter, Hayden Planetarium paper



Recommending the substance of Space Law

- 1932 – Vladimir Mandl, survey Monograph
- 1936 – Eugene Korovin, Russian air law article
- 1946 – Arthur Clarke (UK), BIS paper
- 1951 – John Cobb Cooper, Mexico City lecture
- 1951 – Oscar Schachter, Hayden Planetarium paper
- 1952 – Alex Meyer, Third IAC, Student
- 1952 – Edgar Danier, French journal article
- 1952 – Oscar Schachter. JBIS article



Recommending the substance of Space Law

- 1953 – Welf Heinrich, Göttingen dissertation
- 1953 – Andrew Haley, ARS Speech in NY (founder metalaw)
- 1953 – Joseph Kroell, French journal article
- 1954 – George Sterling, ARS paper Washington DC
- 1954 – Aldo A Cocca, Argentine journal article
- 1954 - Aldo A Cocca, Fifth IAC paper, Innsbruck
- 1955 – Cyril E.S. Horsford, JBIS article



Recommending the Substance of Space Law

- 1956 – C.W. Jenks, *Int'l & Comp. Law Q.*, article
- 1956 – Cooper, et al, ASIL annual meeting
- 1956 – 7th IAC, Pépin, Cocca, Haley et al.
- 1956 – Riochi Taoka, 3rd JALS General Assembly
- 1957 – 8th IAC , Pépin, Cocca, Haley et al.
- 1957 – Adm. C.M. Ward, JAG journal article
- 1957 – Yeager & Stark, *Proceedings US Naval* 1
- 1957 October 4 launch of Sputnik



United Nations Developments

- 1958 UNGA Res 1348 – created *ad hoc* UNCOPUOS
- 1959 UN Doc # A/4141 – Report of *ad hoc* COPUOS
- 1959 UNGA Res 1472 – created 24 member UNCOPUOS
 - 1960 was a year of organization and study in UN
- 1960 Secretariat staff unit for space was established
- 1961 1st COPUOS Report submitted to UNGA
- 1961 UNGA Res 1721 – Increased COPUOS to 28
- **1962 UNGA Res 1802 Int'l Cooperation in Outer Space**
- 1963 UNGA Res 1962 Declaration of Principles
- 1966 UNGA Res 2222 Promulgated 1967 OST (eif 10/10/1967)



Relevant Major Treaties

- 1963 Treaty Banning Nuclear Testing
- 1967 UN Outer Space Treaty
- 1968 Rescue and Return Agreement
- 1972: Liability Convention
- 1975 Registration Convention
- 1979 Agreement on the Moon
- Treaty status here: [UNOOSA treaty status](#)



coordinates

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