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U.S. Laws, International Law and International Cooperation regarding Use of Outer Space Resources and Development of Moon Bases

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Space Law and Policy Strategies for Building Moon Bases and Exploiting Space Natural Resources
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Session 2: Legal Strategies for Developing Moon Bases under International Cooperation

Presentation Goals:

- Some basic legal principles and policies.
- Principle objective: raise some areas for consideration for the international community – government, industry, civil society, etc. – to consider as we move forward into space.
- The presenter believes that international cooperation, in various forms, is key to progress.
- Must emphasize that I am not necessarily presenting the views of the USG or even my personal views, rather raising possibilities for discussion in the international community.

The views expressed in these slides are personal to the presenter and do not necessarily represent the views of NASA or the United States Government.

Overview

1. International Law
2. United States Law
3. 1967 Outer Space Treaty in the Twenty-First Century
4. Use of Outer Space Resources & Building a Moon Village
   - Touch on a few ongoing commercial activities that involve returning to the Moon within the next few years
   - Highlight several possible ways forward legally
5. Conclusion

1. International Law

- 1967 Outer Space Treaty
- 1968 Rescue & Return of Astronauts Agreement, 1972 Liability Convention and 1975 Registration Convention.

Not as familiar to the space law and policy community:

- 1945 United Nations Charter
- International law broadly (space law is a subset)

2. United States Law

Title IV of the Space Resource Exploration and Utilization Act of 2015:
Space Resource Exploration and Utilization Act of 2015

- This legislation is the first US law *or law of any state* to expressly address commercial space mining.

- President required to "facilitate commercial exploration for and commercial recovery of space resources by United States citizens; discourage government barriers to the development in the United States of economically viable, safe, and stable industries for commercial exploration and recovery of space resources *in manners consistent with the international obligations of the United States* and promote the right of United States citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, *in accordance with the international obligations of the United States.*"

United States Law (cont'd)

- The key provision states that "a United States citizen *[person or company]* engaged in commercial recovery of an asteroid resource or [any other] space resource under [this law] shall be entitled to any asteroid resource or space resource obtained … and [to] sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States."
- Final provision states that "it is the sense of Congress that by the enactment of this Act, the United States does not thereby assert sovereignty or sovereign or exclusive rights or jurisdiction over, or the ownership of, any celestial body [includes the Moon].

IISL View of 2015 US Law

- I will not discuss the IISL Position Paper, Professor Tanya Masson, who was Executive Director of the IISL in 2015, is on the panel and can speak to this, if people have questions.

- International Institute of Space Law (IISL) December 2015 Position Paper, the IISL Board stated that, “in view of the absence of a clear prohibition of the taking of resources in the Outer Space Treaty one can conclude that the use of space resources is permitted. Viewed from this perspective, the new United States Act is a possible interpretation of the Outer Space Treaty. Whether and to what extent this interpretation is shared by other States remains to be seen.”

- The IISL Board further stated that “this [conclusion] is independent from the claim of sovereign rights over celestial bodies, which the United States explicitly does not make (Section 403). … The Act thus pays respect to the international legal obligations of the United States and applicable law on which the property rights to space resources will continue to depend.”

Other National Laws

- In August 2017, 2016, Luxembourg's new space law entered into effect.
  - The law provides an "efficient legal and regulatory framework … that ensures stability and guarantees a high level of protection for investors, explorers and miners."
  - Luxembourg is the first European state to offer a domestic legal framework on the exploration and use of space resources.
  - *More expansive than US law - companies that have offices in Luxm. obtain benefits of the Luxembourger law.*
- *As **Dr. Scott Pace** noted earlier, the recent Japanese space law is particularly noteworthy in that it contains great flexibility. Under this law the Government of Japan can regulate many of the activities under discussion today, although it has not yet acted to do so.*
- The United Arab Emirates is far along in it's consideration of an expansive space law. Experts believe the law will be enacted in 2018.
- Will other States follow suit? Will there be consistency among these laws? What would be best ways to encourage consistency and that the laws are complementary?

Consideration in Different Fora

- UNCOPUOS Legal Subcommittee
  - *Agenda Item - Potential Legal Models for activities in exploration, exploitation and utilization of space resources*
- Hague Space Resources Governance Working Group
  - *Prof. Masson will speak to.*
- Bilateral discussions
- Elsewhere?

1967 OST in the 21st Century

- Vision in 1967 – broad strokes, general principles, flexible.
- Left room for technology developments & still provides fundamental necessary underpinnings.
- "Magna Carta" for Outer Space.
- Let technology drive legal developments

What does the future hold with respect to resource utilization and other activities on celestial bodies, including the Moon?

Companies presently planning to send small robotic missions to the Moon --

- Five GLXP finalists: [GXLP ended this month with no winner.]
  - SpaceIL (Israel), a non-profit organization, with a SpaceX Falcon 9 launch, its goals are to make an educational impact and to create an "Apollo Effect" for the next Israeli generation;

  Moon Express (US), with three Rocket Lab USA (New Zealand) launches, ***intends to open up the Moon's vast resources for humanity*** and establish new avenues for commercial space activities, it was the **only team to have received authorization from a national government (the USG)** to fly its mission;

  - Synergy Moon (International), team member Interorbital Systems is launch provider, team consists of up individuals from over 15 countries on six continents, the team's mission is to make manned orbital travel, personal satellite launches and Solar System exploration cost effective and accessible);
  - TeamIndus (India) will launch on the Indian Space Research Organization (ISRO)'s Polar Satellite Launch Vehicle (PSLV) from the Satish Dhawan Space Centre;
  - HAKUTO (Japan), will rideshare with TeamIndus which will carry its four-wheeled rover to the Moon, HAKUTO's ultimate goal is to explore holes that are thought to be caves or 'skylights' into underlying lava tubes which could lead to important scientific discoveries and possibly identifying long-term habitats to shield humans from the Moon's hostile environment.
- Astrobiotic (US) and PTScientists (Germany).

What does the future hold with respect to exploration of and building a Moon Village on the Moon?

- United States - National Space Policy Directive 1, signed by the President in December 2017, provides for a US-led, integrated program with private sector partners for a human return to the Moon, followed by missions to Mars and other destinations. It calls for NASA to "lead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion and to bring back to Earth new knowledge and opportunities." The effort will effectively organize government, private industry, and international efforts toward returning humans to the Moon.

- Dr. Woerner spoke earlier today about his and ESA's views of a "Moon Village." The United States is not looking to build a Moon Village for the foreseeable future.

International Legal Steps

- Is the current international regime sufficient to regulate present activities? Future activities? US Government's position is that the current international regime is sufficient.
- International law questions: What needs to be addressed? The following critical issues? Others?
  - Goes almost without saying, ensuring peaceful purposes. (from OST) and other principles enshrined in the Outer Space Treaty.
  - Ensuring that 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. (from OST)
  - Ensuring that outer space is free for exploration and use by all States. (from OST)
  - Ensuring freedom of scientific investigation. (from OST)

(more)

Legal steps (cont'd)

(Continued)

- Safety.
- Provision of assistance in cases of distress. (From OST & Astronaut Rescue and Return CV)
- Prevention of harm to persons.
- Prevention of harm to others' equipment and activities.
  - Including "harmful interference."
- Mechanisms to address liability. (from OST)
- Protection of privacy of activities.

- Newer issues:
  - Protection of intellectual property rights.
  - Settlement of disputes (state-to-state, company-state, company-company).

Legal steps (cont'd) (US view)

- The US view is that existing international law is sufficient to cover existing and many future activities. Domestic law is necessary in many states to effectively implement it.
  - Eileen Galloway presented a paper in 1958 at the Hague in which she cautioned that unless we study legal problems "in conjunction with the developing facts of science and technology … our interplanetary thinking will be earthbound by tradition and precedent at a time when creative predictions should enable us to keep international law in pace with scientific achievement."
- The Outer Space Treaty has served as a framework within which States have cooperated to address new capabilities and activities in outer space. The United States is confident that it will continue to do so well into the 21st century.

Legal steps (cont'd)

Should gaps arise in the future, there are various ways to address the gaps, all with advantages and disadvantages, including:

Professor Aoki just spoke about several of the following mechanisms.

- Multilateral treaty(ies).
- Bilateral and regional treaties.
- Non-binding "rules of the road," such as UNGA resolutions and multilateral guidelines developed in other fora.
- Contracts. (I think this mechanism will become increasingly more important. It USG and other states' use of contracts and contracts among private companies & in activities w/ US and foreign companies)
- Using a combination of mechanisms.

Option: International Telecommunication Union

I emphasize again that the following potential approaches are not USG positions, rather they are approaches I think are worth considering.

Member States of the International Telecommunication Union use treaties, agreements and resolutions for allocation of radio-frequency spectrum and satellite orbit resources.

- ITU - 193 Members States (all UN states except Palau) and about 800 non-voting private sector entities (large & small companies, academic institutions, R&D institutions.
- International spectrum and use of orbital slots is based on "regulatory" procedures for notification, coordination and registration. A primary goal of these procedures is to prevent or remedy "harmful interference" by Member States in the use of spectrum or orbital slots by other Member States. *[In US, private entities regulated by Federal Communications Commission (FCC).]* World Radiocommunication Conferences (WRCs) can agree with or overturn RRB decisions.
- As new technologies develop and governmental and business models changes, rules for spectrum and orbital slot uses change through amendments to the relevant agreement (Radio Regulations) and lower-level Resolutions at the WRCs.

Option: 1987 MTCR

[rest of options looked at in chronological order of adoption]

1987 Missile Technology Control Regime

- The Missile Technology Control Regime (MTCR) is not a legally binding agreement, rather it is an informal political understanding among States that seek to limit the proliferation of missiles and missile technology. The MTCR currently has 35 Members and a number of additional states have committed to meeting its standards.
- The MTCR aims to limit the spread of missiles and other unmanned delivery systems (and the transfer of missile-related technology without disrupting legitimate trade) that could be used for that could be used for chemical, biological, and nuclear (WMD) attacks.

1987 MTCR (cont'd)

- A 2004 UN Security Council Resolution termed the proliferation of delivery systems for WMD a "threat to international peace and security" warranting mandatory action; required all UN Member States to have controls on the proliferation of delivery systems; and implicitly endorsed the MTCR control lists as a component of national control lists.

- Significance: Under the UN Charter, the Security Council (UNSC) has the authority to determine the existence of a threat to international peace and security, as well as to decide on measures to maintain or restore them, acting on behalf of all Member States. The 2004 UNSC Resolution is an example of where a UNSC decision bound Member States who were then required to use domestic law to carry out the UNSC decision. This is a potential way forward to create obligations on UN Member States regarding future space science, exploration and settlement *of space*, once a critical mass of states agree on norms through voluntary mechanisms.

Option: 1996 Space Benefits Declaration

1996 UNGA 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

- Principles include:
  - States are free to determine all aspects of their participation in international space cooperation … on an equitable and mutually acceptable basis. Contractual terms in such cooperative ventures should be fair and reasonable and they should be in full compliance with the legitimate rights and interests of the parties concerned as, for example, with intellectual property rights.
  - International cooperation should be conducted in modes that are considered most effective and appropriate by the countries concerned, including, inter alia, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral; and international cooperation among countries in all levels of development.
- Significance: UNGA resolution. Its principles remain core in space cooperation today, *e.g.,* recognition that such cooperation should be fair and reasonable, recognition of the importance of IP rights, and recognition of various types of cooperation, including international cooperation that involves commercial entities.

Option: 2002 Hague Code of Conduct es

Hague Code of Conduct against Ballistic Missile Proliferation (HCOC)

- 138 states participate in the HCOC, *shows broad acceptance of many more countries then those with ballistic missile capabilities.* The HCOC is the result of efforts of the international community to curb ballistic missile proliferation worldwide and to further delegitimize such proliferation. Members commit to pre-launch notification of ballistic missile and SLV launches and to submission of an annual declaration about their country's relevant policies.
- The Signatories to the Code recognized that "states should not be excluded from 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."
- Significance: *developed outside of the UN system* non-UN non-binding "rules of the road" for 138 states.

Option: 2018 COPUOS LTS Guideleines

- The COPUOS Science and Technical Subcommittee has worked on **guidelines addressing the safe and responsible use of space**, given that near-Earth space and the electromagnetic spectrum are limited natural resources that are under increasing pressure from the steady growth in the number and diversity of space actors.
- Twelve guidelines were adopted by COPUOS in 2016 and nine more were adopted by the STSC in February - to be adopted by COPUOS and then UNGA.
  - Guidelines address, among other things, use of radio spectrum and orbital regions, space weather and space debris.
  - These consensus-based discussions include established and emerging space actors, private corporations, and non-governmental organizations (NGOs) and represent a wide variety of all those who utilize space or are affected by space activities.
  - David Kendall, Canadian Chairman of COPUOS, said while the guidelines themselves carrying no legal force, they can be incorporated into national laws and regulations.
- Significance: COPUOS is an effective broad-based forum doing important work, however, its processes are often slow.

Conclusion

- Thank you for your time.
- I look forward to your questions and discussion with other members of this panel.
- For further information, please contact:

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