Norms of Behaviour in Space Workshop

December 10 2019 | Washington DC
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Norms of Behavior in Space Workshop

Project on Emerging Governance Challenges

December 10, 2019
Washington DC

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1200-1230   WELCOME
Overview of the event
Personal introductions at tables

1230-1300   INTRO TALKS
Introduction to the global commons and global public goods &
methods to maintain them; policy analogs from Earth for space, and
their relevance to lunar applications. Lead by Christopher Johnson
and Jessy Kate Schingler.

1300-1310   Break

1310-1400   DISCUSSION & TABLE TALKS
Explore ideas raised in talks; report back to room

1400-1420   Break

1420-1530	**SCENARIOS GROUP ANALYSIS** *Different scenario or policy challenge at each table for discussion and provocation; report back to room*
1530-1545	Break
1545-1630	**PRIORITIES LOOKING FORWARD** *Collective process to determine what matters to all of us as we recognise issues raised today which need more attention into the future.*
1630-1700	**CLOSE & OUTCOMES SUMMARY** *Thanks and final thoughts*

Questions for introductions in small groups

1.   What are you concerned about in the industry and future of sustainable economies in space?

2.   What biases or different perspectives do you bring to this kind of topic, personally and professionally?

3.   What keeps you hopeful and constructive when things feel difficult and slow in this industry?

Introduction to Commons and Public Goods

Overview

1.   The Global Commons and Global Public Goods (5 minutes)

2.   Methods to Maintain the Commons and Public Goods (10 minutes)

3.   Norms (5 minutes)

Part 1.
The Commons and Public Goods*

*note, these are not legal terms, they are from sociology and economics

	Criteria 1. Others cannot be excluded from using ("non-excludability")	Criteria 2. One's use of it potentially creates rivalries with another's use ("rivalrous")	Examples
The Commons	✓	✓	classical example: the village common the ozone layer the climate system
Public Goods	✓	No. Consumption of the public good by one does not reduce the quantity available to others.	a stable climate system an unpolluted atmosphere The eradication of smallpox control over ebola outbreaks conservation of biological diversity stability of the international financial system GPS

The Commons
(sometimes called Global Commons)

Include: The high seas, fisheries on the high seas, the atmosphere*, the climate system, outer space*, Antarctica, the internet (according to some)

*Important caveat:
States have sovereignty over their airspace, but the atmosphere is nonetheless a commons <u>for some uses</u> such as air pollutants, greenhouse gas emissions, etc., in which all States can have an effect. Same is true for <u>uses</u> of outer space. Remember, this is not a legal term.

Public Goods

(sometimes called Global Public Goods)

Important Distinction: unlike the Commons, public goods require measures to produce and to maintain them.

Include: A stable climate system, an unpolluted atmosphere, GPS, eradication of smallpox, control of communicable diseases like Ebola and SARS, conservation of biological diversity, international financial stability.

Why this matters today: the distinction between the Commons and global public goods is important for any discussion of norms.

Public Goods continued

(Global) Public Goods are created/maintained through 3 different methods: Additive technology; best shot technologies; and weakest link technologies.

Additive technology: the production of the public good is the sum of contributions from different actors

Best shot technology: the public good is determined by the technology that produces the best outcome (*eg. cure for malaria*).

Weakest link technology: the overall production of the public good is only as good as the weakest link in the chain (*eg. building a dike to hold back floods; efforts to control an Ebola outbreak, etc.,*)

Public Goods continued

Many public goods require many States, or every State, to participate.

Part 2.
How to Establish and Maintain the Commons and Public Goods

Four methods (not mutually exclusive)
1. **Privatize:** State Sovereignty (1 actor does it)
2. **Regulate:** International Agreements
3. **Incentivize:** Economic and Market Forces
4. **Cooperate:** Voluntary cooperation measures and actions

1. **Privatise:** State Sovereignty

Privatize the Commons, in the belief that if we own something, we will take good care of it, and optimize use of it.

On the international level, this is the idea that each State is sovereign over its own territory, with near exclusive control over it.

However, this approach focuses on the maximizing of rights (as against others), not of obligations (towards others). And, this approach focuses on maximizing their own immediate benefits, without attention to long-term effects and broader concerns.

- State Sovereignty is not going anywhere,
  but this approach along is insufficient in itself
  for a globalized world, or for the Anthropocene,
  or for the management of areas outside of State territory.

2. Regulate: International Agreements

International agreements between States: including hard, soft law, and voluntary commitments.

International agreements are essential, but will also be insufficient by themselves.

Regarding the Commons & Public Goods, <u>two major issues</u> exist with int'l agreements:
1. Free Riders
2. The Weakest Link / Pollution Haven

this means one actor may cancel out the work of all the rest

One way to face these problems is with provisions restricting trade with free rider/polluter havens.

One way to solve the pollution haven problem is that parties to agreements create special funds to assist non-parties to become compliant.

2. **Regulate:** International Agreements

For international agreements to be effective, there needs to be:

1. Effective monitoring of trade, or other activities, that affect the Commons / Public Good being regulated.

2. Review by the States Parties

3. Transparency of the Data

4. Systems in place to address issues of compliance (sanctions, and other measures)

- However, international agreements alone are also not sufficient.
- There are often too many actors, and change is too rapid, and administrative costs for implementing these agreements may be high.

3. **Incentivize:** Economic Instruments

Economic instruments establishing **fees attached to certain activities** or **quantitative limits**, with The Market efficiently allocating the rights to use limited items.

If properly designed, these can produce desired results efficiently, and with less administrative costs than other measures.

But how to arrange this? First come, first serve? Just whoever can afford them? Graduated, so that the last few cost a lot more? Lower prices for legacy users, or new users?

- However, economic incentive solutions alone are not sufficient.
- As with international agreements, verification and monitoring is crucial.
- Additionally, it is difficult to know beforehand what limits are 'sustainable', and these limits may need to be updated.

4. **Cooperate:** Voluntary Measures

Voluntary, individual action out to maintain a common good, because it is in their **long-term interest**, is **morally responsible,** and/or **enhances their reputation.**

What induces voluntary action?
1. **Positive sum game:** to achieve something that we could not achieve alone. (Example: weather data). Positive sum games are crucial for the production of public goods.
2. **Decreasing sum game:** to avoid a situation from getting worse. Regardless of legal obligations, actors participate to avoid worse outcomes.

4. **Cooperate:** Voluntary Measures
A bit more about this incentive, as it has many applications to the space domain.

1. **Decreasing sum game:** to avoid a situation from getting worse. Regardless of legal obligations, actors participate to avoid worse outcomes.

In the context of the village commons, villages have in incentive to sustain the commons because they do not want to the commons to lose its ability to sustain their enjoyment of it (grazing of sheep, or examples in the space domain)

To induce such cooperative behavior, actors need information about options available, benefits and costs, and the behavior of other actors.

Monitor and transparency are essential, as are measures to ensure compliance with necessary behavior.

Implicit in all this is that actors share the same value (respect/understanding of the worth of the commons/public good, desire to conserve it, and let others access it for their benefit.

These are long-term values.

Norms reflect such values.

The concept of a **community interest** is merely a shared interests of actors in a domain.

A **Community Interest** can serve as a **normative basis for any of the previous substantive measures** to address problems of the commons and public goods.

Norms and Analogs in the Lunar Context

Frameworks

- Economics → Norms?
- **Norms:** ~voluntary agreements between diverse, self-determined actors.
- Many of our early lunar activities will be focused on resources and coordination.
- ∴ can look to resource management and public choice theory as useful **analogs** for thinking about the incentives necessary to develop effective norms.
  - Even outside of market activity
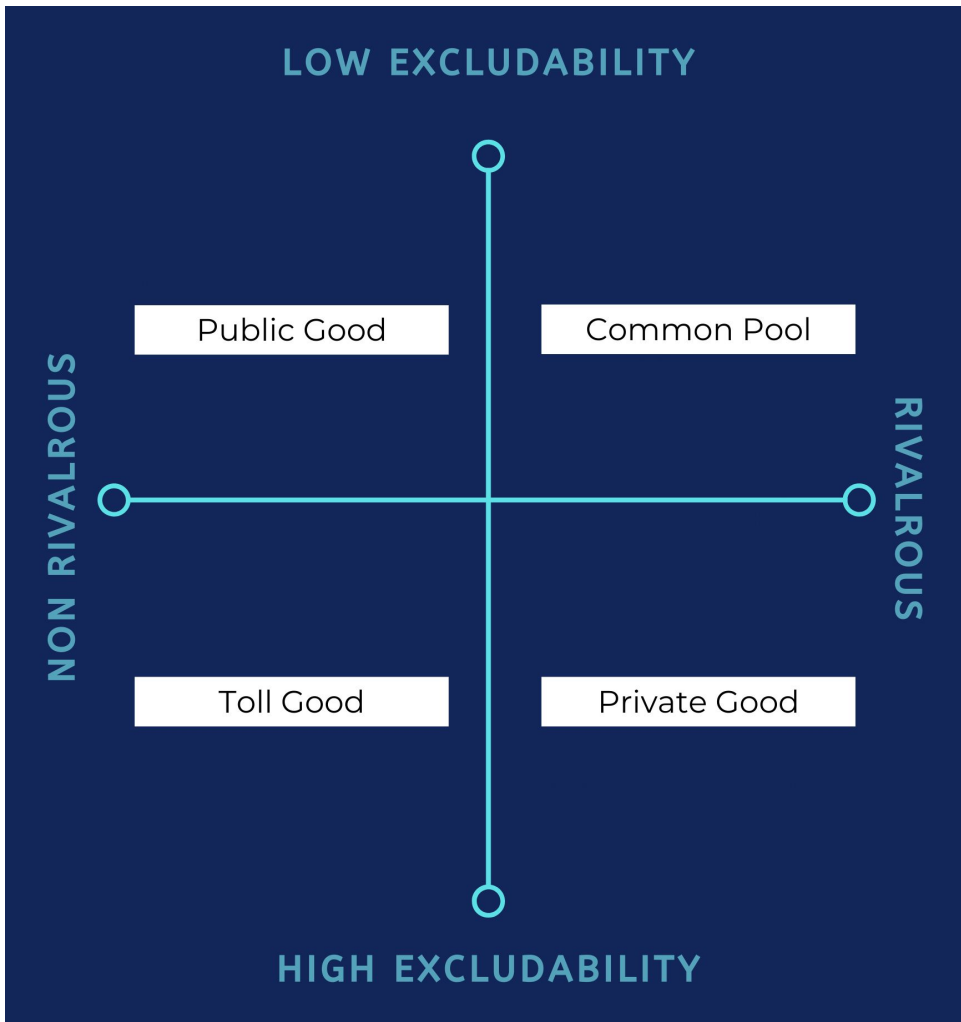
Economic Goods Matrix

Framework for mapping resource characteristics.

Really each axis is a spectrum.

Good types vs. Management Regimes

- **Constitutional choice rights:** who gets to have a say
- **Collective choice rights:** participating in governance (having your say)
- **Operational rights:** using the resource.
- Good <> Resource fit.
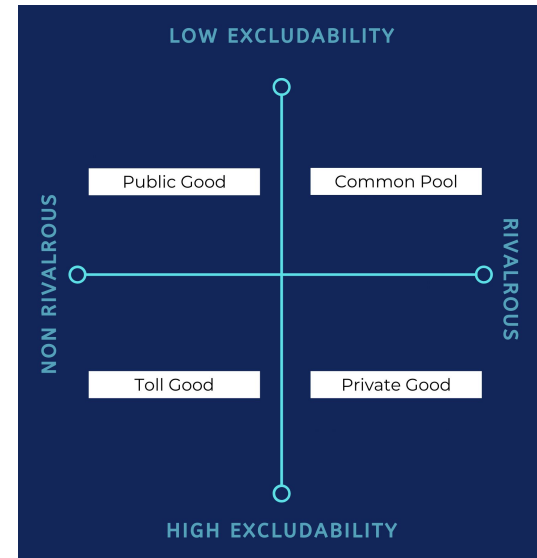
Bundles of Rights

Management regimes are made up of different bundles of rights. For a common property regime:

Access: The right to enter a defined physical property.

Withdrawal: The right to obtain the ''products'' of a resource (e.g., catch fish, appropriate water, etc.).[5]

Management: The right to regulate internal use patterns and transform the resource by making improvements.

Exclusion: The right to determine who will have an access right, and how that right may be transferred.

Alienation: The right to sell or lease either or both of the above collective-choice rights.

OST and the Commons

- We often refer to space as a "commons."
- In this context it refers to key shared agreements around *management*.
  - Our friends Article I and Article II
- Narrows the container
- But doesn't help us understand the nature of the activities or resources being managed.
- That's because they are quite diverse.
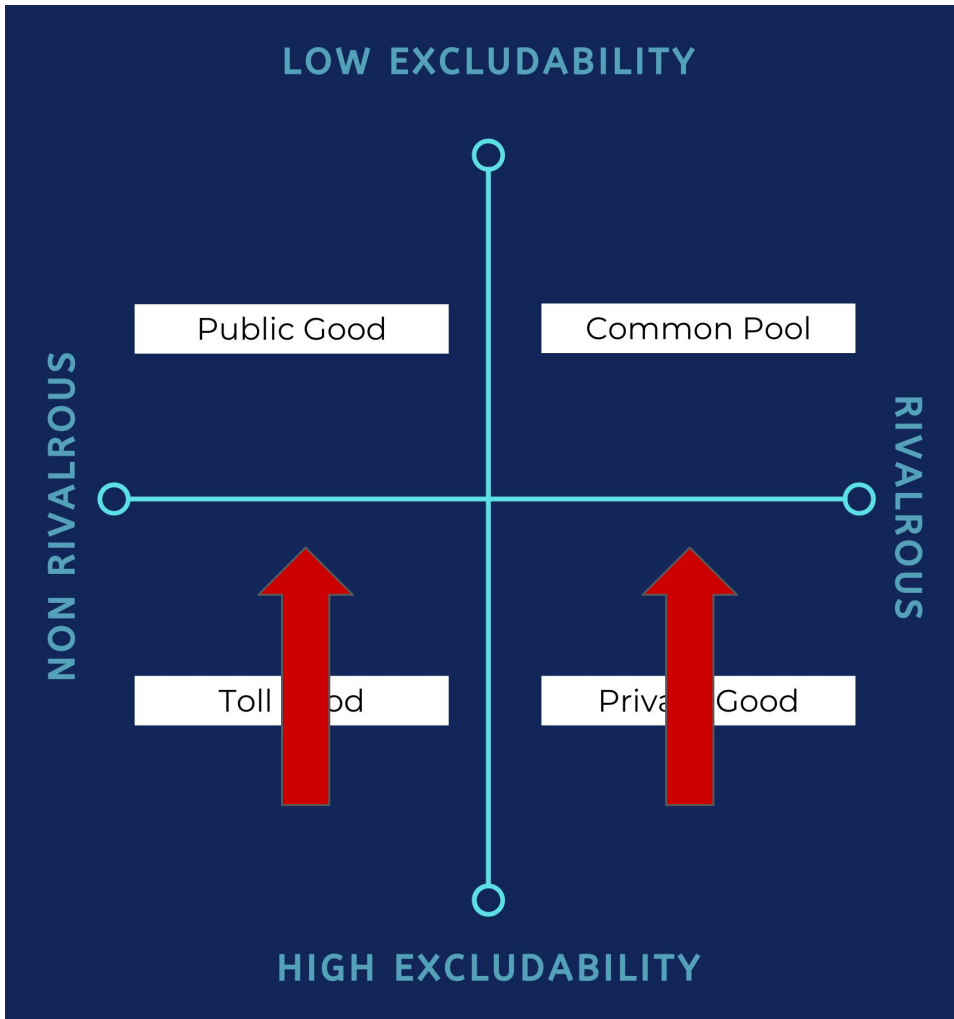
Good types vs. Management Regimes

Results of OST as an framing management regime.
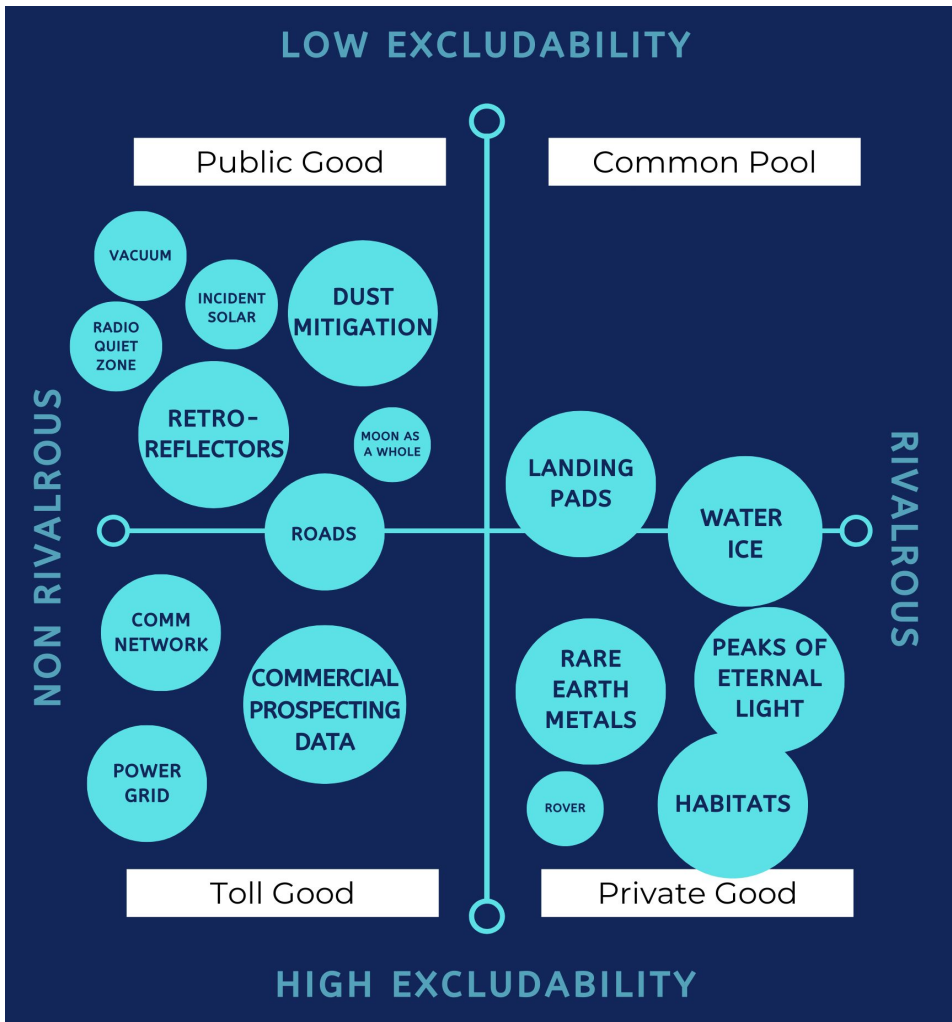
Lunar Goods Matrix

Moon contains many types of resources, and few are actually CPRs.

Subsidiarity

- Have introduced this framework for thinking
- Subsidiarity means, **"governance decisions should be taken at the most local level commensurate with their resolution."**
- Teasing out the specific types of resources and activities, helps to understand the dynamics at play.
- The principle of subsidiarity provides guidance on the question of who should have a seat at the table in governance design conversations ("constitutional" level rights).
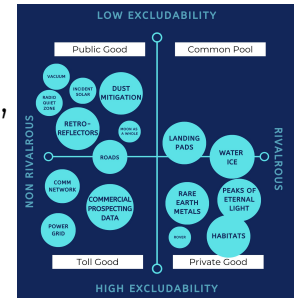
Subsidiarity

- These were also Ostrom's results:
    - Governance works best when it is specific to the situation.
    - No two situations are exactly the same.
    - Not only does being specific increase accuracy, it helps identify stakeholders, and gives more room to try different regimes in different contexts.

Norms

- Self-governance describes actors coming together of their own free will, negotiating to represent their interests and balance incentives.
- On the international level this is also what States do, since there is no higher/overarching body.
- In this sense, norm-making activities can themselves be thought of as analogs for future international activities.

Takeaways

- Norms, like analogs, can be thought of as a **tool**--a tool that is underutilized in the space domain.
- All these frameworks are about understanding structural incentives amongst actors that are not otherwise compelled to cooperate.
- **Goods Matrix, Bundles of Rights, and Subsidiarity** can help structure our thinking about the design of norms.
- Norms can help us **prototype**, which is important for **learning loops** that build **strong institutions** and, as needed, good laws.

Why Now

1. Incentivize and accelerate activity. Being in action.
2. Provide concrete examples to inform future regulations and lawmakers
3. Think through precedents and intentionality

In the worst case, we'll have some new thinking to use here on Earth.

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Thank you

@jessykate

Group Discussion on Norms

• **What did you learn from the keynote and the lightning talks?**

• **What is a "norm" for you, how does this inspire questions for how this applies for LEO, Moon and near term 5-10 year futures.**

Defining Norms

Part 3.
Norms –how to determine them, how they develop

We need norms that States and a large number of other actors share, to cooperate to achieve goals.
But what are they?

Some definitions:
Merriam-Webster : **a principle of right action binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior**

Cambridge Dictionary: **An accepted standard or way of doing things.**

YourDictionary.com: **The expected behavior in a specific situation.**

Hans Kelsen: **The meaning that something ought to be, or ought to be done, although actually it may not be done.** For a legal norm, that the behavior is **required, or permitted, or authorized, or prohibited.**

Part 3.
Norms –how to determine them, how they develop

The word is related to 'normative' and not 'normal'. So, the *normal* or average behavior is not what we mean (in sociology/law/economics terms), as "the norm".

Elements of a norm:
- There is the element of 'oughtness' to it, as in, one ought to behave in a certain way.
- Repercussions for non-observance?
  - Defectors need to justify their non-observance?
  - Others actors stigmatize defectors from the norm?

Part 3.
Norms – The Life Cycle of a Norms

1. The **Emergence** of the norm
2. The **Cascading** of the norm
3. The **Internalization** of the norm

1. The **Emergence** of the norm

Stage 1. Norm entrepreneurs call attention to a problem, and try to change behaviour. They establish some basic, first iteration of standards, call them best practices that everyone should adopt

2.   The **Cascading** of the norm

Stage 2. The norms become broadly accepted. A critical mass of actors must accept the norm so that a tipping point is reached and the norm becomes widespread. Likely more than merely just a "best" practice, but a 'really common' practice.

To reach this tipping point, legal instruments might be needed, and also major actors should adopt the norm.

3.   The **Internalization** of the norm

Stage 3. The norm is internalized, meaning that States and other relevant actors take them for granted, as ones that they are expected to follow.

Individual example: almost all people only cross the street <u>with</u> the crosswalk light - even when there are no cars around, and no police. They have internalized the norm.

Actors other than States are involved in creating, maintaining norms.

The challenge is that it may become easier to flout norms and to bring about their demise than it is to adhere to them.

Another challenge is that actors (including a mix of States and nonstate actors) could create norms acceptable to themselves, but inconsistent or running counter to established norms, including binding laws, and run counter to community interests.

Scenario Case Studies
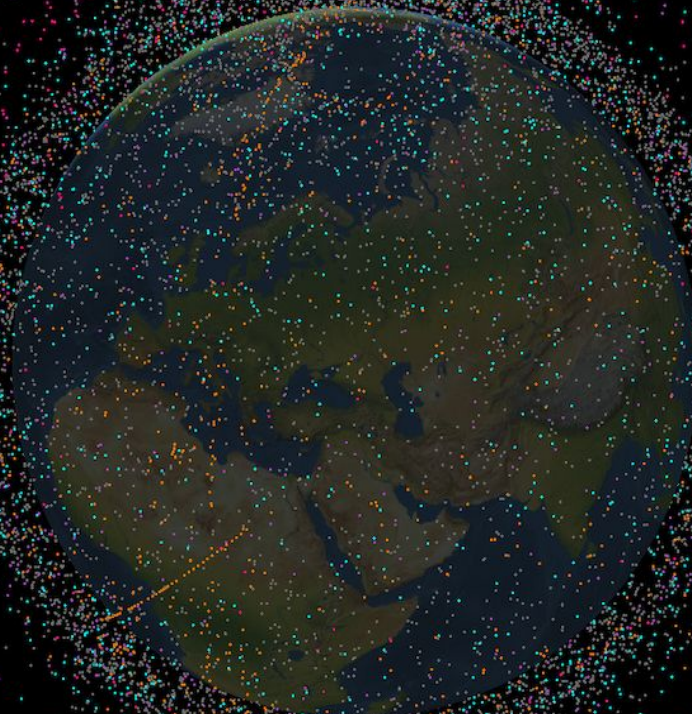
Part 4.
Developing Space Norms - space environmental norms

US Tightens Space Debris Standards; Keeps 25-Year Cap

The updated debris rules address new space activities such as mega-constellations, Cubesats and satellite servicing.

By THERESA HITCHENS on December 09, 2019 at 11:25 AM

You Retweeted

Hugh Lewis
@ProfHughLewis

Conclusion from Heiner Klinkrad: need to implement near-term remediation actions to avoid the Kessler Syndrome. #orbitaldebris2019

11:49 AM · Dec 9, 2019 · Twitter for Android

brianweeden @brianweeden · 2h

This was essentially the conclusion 10 years ago and no one has really done anything. And the US govt had zero plans to remove debris in the near future

Hugh Lewis @ProfHughLewis · 3h

Conclusion from Heiner Klinkrad: need to implement near-term remediation actions to avoid the Kessler Syndrome. #orbitaldebris2019

1   1   4

Part 4.
Developing Space Environmental Norms

LEO is a Global Commons (economically speaking)
A clean, usable, sustainable LEO is a Global Public Good

How can we preserve, maintain?

1.   **Privatize:** State Sovereignty (this is out)

2.   **Regulate:** International Agreements
     IADC Guidelines
     COPUOS Guidelines
     LTS Guidelines
     But nothing binding, beyond OST Art. IX

Part 4.
Developing Space Environmental Norms

3.   Incentivize: Economic and Market Forces

4.   Cooperate: Voluntary measures & actions
      National space legislation on debris
      Contracting practices?

Problems: Free Riders
Weakest link? / Pollution haven?

No/low adherence to existing norms

Isn't there a **Community Interest** in keeping LEO sustainable?

Part 4.

Where do we go from here?

1. Look at problems in space, categorize them as Commons or Public Goods
2. Analyze the four methods of norm emergence?
3. Where are existing norms (in terms of their life cycle?)

And always be looking at concordant domains, problems, from land mine bans, to climate change measures, etc.)

Thank you!

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Scenarios

LEO / GEO

Space Debris

Collision Avoidance

Unfriendly Acts in GEO

LUNAR

Free Riders & Retroreflectors

Competing Companies

Space Debris

You are the CEO of a small sat. startup that wants to use 800km sun sync orbits. However, a large foreign Earth Observation company is also using this orbit, and they are creating lots of debris by not removing their satellites. The government responsible for this company, while a party to the Outer Space Treaty, doesn't have a national space law, doesn't really care about debris issues, doesn't appear to be implementing the IADC guidelines. As CEO of your company, what can you do to ensure that you and others can continue to use this orbit?

Collision Avoidance

You are the operator of a constellation of small satellites in LEO providing internet connectivity to high-end users seeking faster communication speed. However, repeated conjunction warnings with a national GPS/PNT operator triggers governmental authorities routinely demanding that you perform fuel-costly avoidance maneuvers, decreasing the lifespan and negatively impacting customer service. Your engineers inform you that many of the warnings are so low probability that they are really not worth maneuvering for.

Unfriendly Act in GEO

In recent months, your telecommunications satellite in GSO has been subjected to suspicious behavior by a smaller satellite which is performing close approaches to your satellite, without prior warning, notice, or consent. The foreign satellite is coming close enough to listen in on transmissions from the ground, but not close enough to physically threaten your satellite. Your foreign ministry first tries to communicate through backchannels to the foreign government you suspect is operating (or at least directing) the satellite, to no avail.

Freeriders & Retroreflectors

You are the leadership team of a small lunar lander company. NASA offers to provide retroreflectors to all missions to the Moon for free. However, It also requires a small amount of mass to carry the retroreflector, so it's not completely free. Two upcoming missions are planning to land near your intended landing site in the next three years and may also carry retroreflectors. You have the incentive to just wait for other missions to do it, and you stand to benefit from the capabilities provided by others' devices. But so do they. The other lander teams are pushing you to include the device on your payload manifest because they also want to benefit from this network.

Dust & Damage

You have landed on the Moon. Another lander with significant investment wants to land near you to develop a power utility that would be available to all actors, but due to the dust they will generate, they have asked you to move. This will be costly to your mission. The incoming mission is a larger vehicle, and the dust radius is wider than your own identified safety/keep-out zone of 2KM. The dust could damage your rover's mechanical components. Whose responsibility is it to accommodate the other? Who is responsible if dust compromises performance of an asset, or hinders development of public goods?

Competing Companies

You are the lunar policy representative from the state of origin of a small lunar startup called Lil' Landers. Lil' Landers has identified minable resource deposits through remote sensing around the Moon, and asserted a priority claim on the region which your government has agreed to recognize. Another, larger aerospace corporation called Goliath, backed by billionaires, has scheduled a copy-cat mission in the same locale on the back of the findings released by Lil' Landers, and registered in a competing terrestrial jurisdiction. Goliath has 100X greater capacity to exploit this opportunity than Lil' Landers, and can get there faster to boot. Lil' Landers ask you interfere, but since states cannot appropriate territory, they also cannot control who lands at which locations.

Discovering Actions & Priorities

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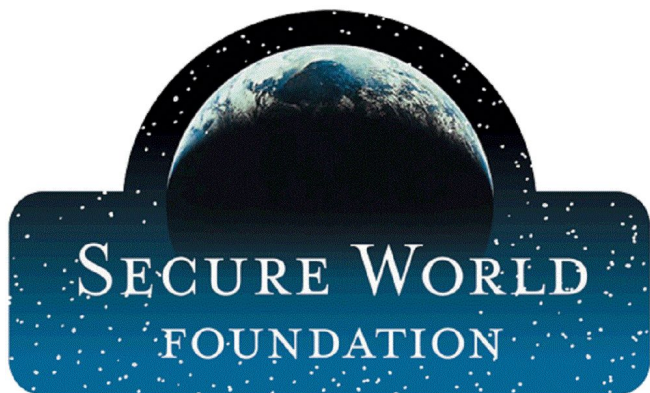
swfound.org   openlunar.org

Recommended Reading:

Edith Brown Weiss, **Norms in a Kaleidoscopic World**, Collected Courses of the Hague Academy of International Law, Volume 396 (especially chapters IV and V).

Martha Finnemore and Kathryn Sikkink, **International Norm Dynamics and Political Change**, 52 International Organization 4 (1998), pgs 887-917, Available at: https://home.gwu.edu/~finnemor/articles/1998_norms_io.pdf.