

Mining of Space Resources – Legal Issues

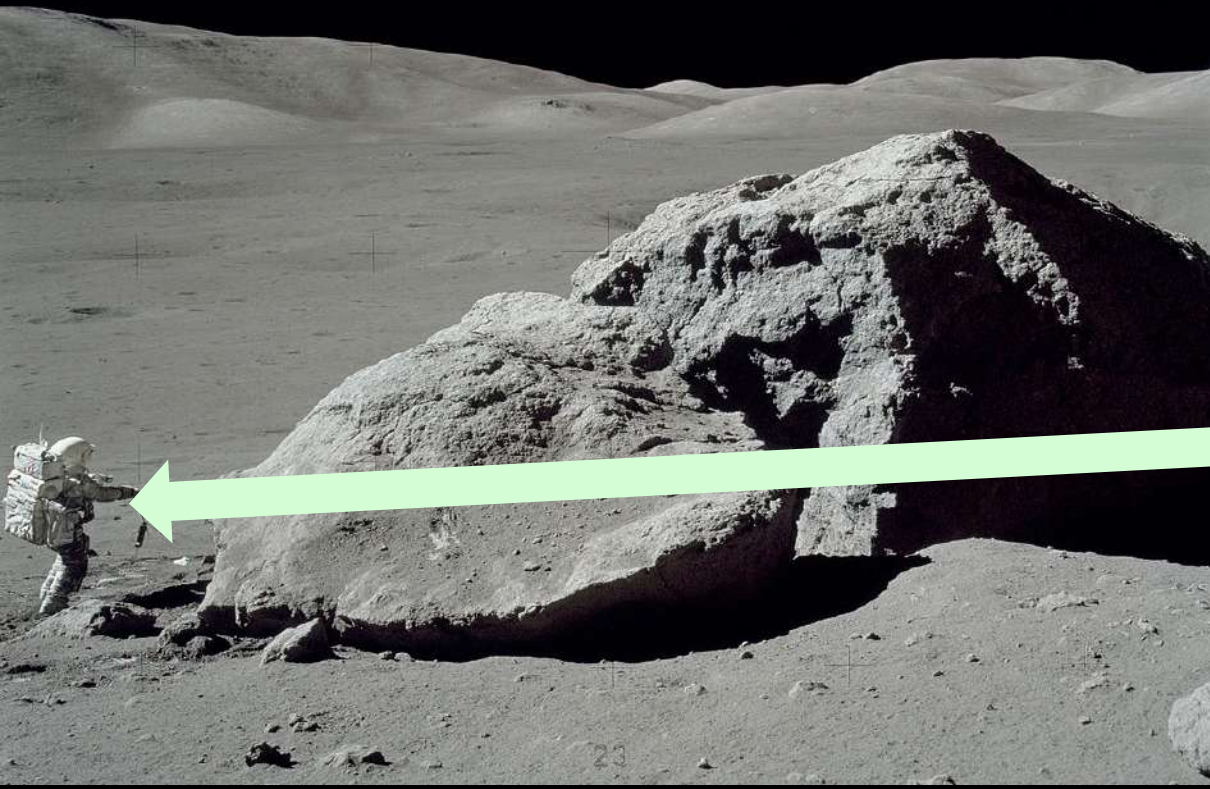
Frans G. von der Dunk

UNL College of Law
Lincoln, 27-04-2016

'Space mining' – part I

Helium-3
on the
Moon





Harrison
Schmitt,
Apollo 17
1972

'Space mining' – part II

Various
mineral
resources
on
asteroids



Planetary Resources



PLANETARY
RESOURCES™

- Established 2010
- To expand Earth's natural resource base by developing & deploying technologies for asteroid mining
- First test satellite launched 2015
- Backed by *i.a.* Larry Page (Google), Eric Schmidt (Google), James Cameron (Titanic), Charles Simonyi (Microsoft), Ross Perot Jr. & Tom Jones (Space Shuttle)

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Deep Space Industries



- Established 2013
- To develop spacecraft technologies needed for asteroid mining & make asteroid resources available 2020s
- Announcement design mother spacecraft for asteroid mining 2015
- Founded & chaired by Rick Tumlinson, “extremely active space entrepreneur & activist”

Peter Marquez & Sagi Kfir

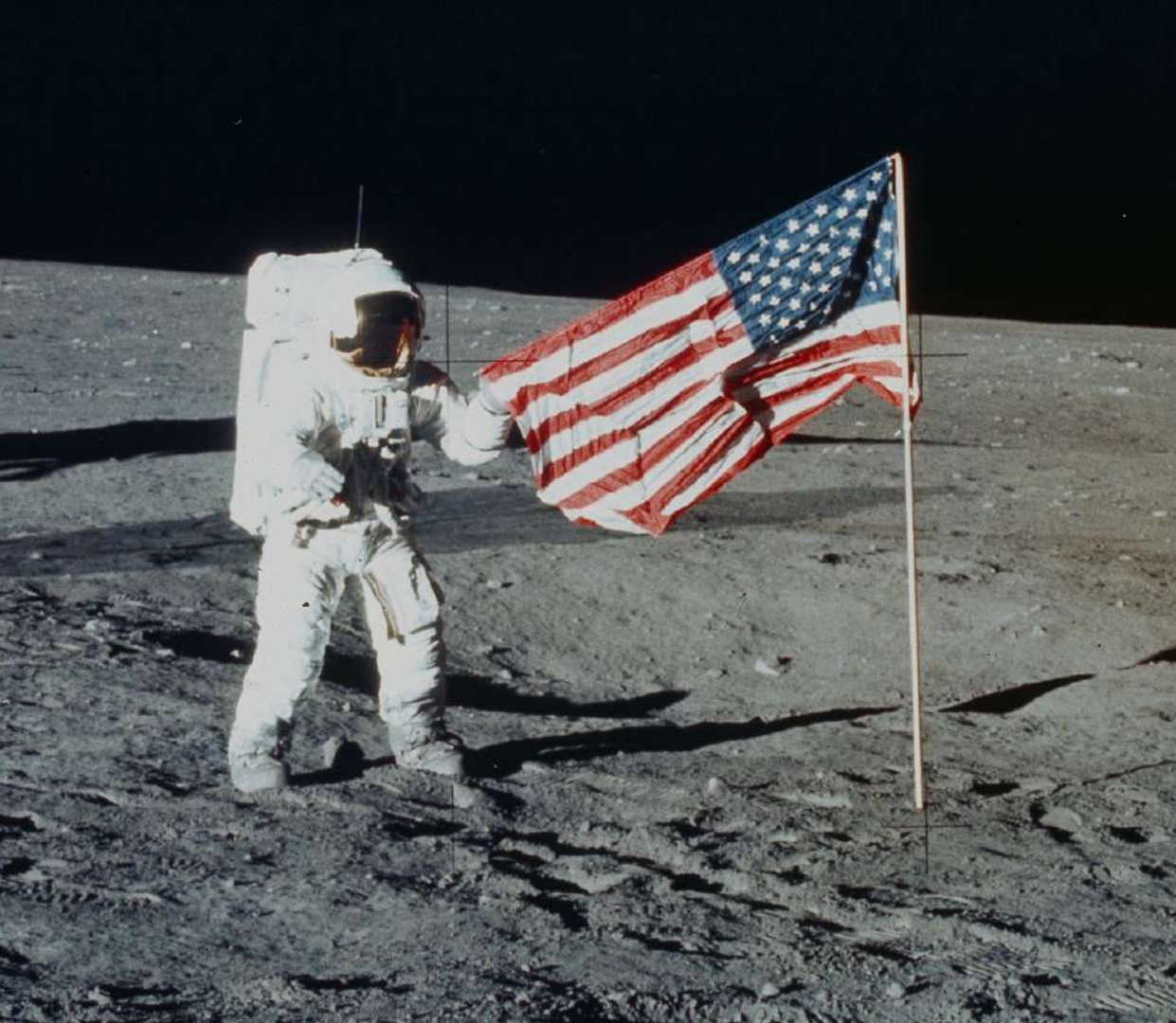


International legal context

- ◆ 1957 Sputnik → first discussions in UN context on ‘space law’ → ‘outer space’ ≠ ‘airspace’
- ◆ 1967 agreement on Outer Space Treaty
 - No serious consideration of commercial exploitation resources of celestial bodies
- ◆ 1979 agreement on text Moon Agreement
 - To address *inter alia* such commercial exploitation
 - Never ratified by major spacefaring nations

Outer Space Treaty

- ◆ Art. II: no national appropriation by sovereignty



A small step
for a man, a
giant leap for
mankind...
*[not just for
the United
States]*

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Outer Space Treaty

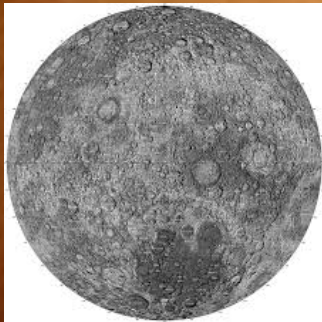
- ◆ Art. II: no national appropriation by sovereignty
- ◆ Art. I: exploration & use for the benefit of mankind
- ◆ Art. VI: state responsibility for private space activities requiring authorization & continuing supervision
- ◆ Art. VII: state liability for damage caused by those
- ◆ Art. IX: obligations to consult in case of potentially harmful interference

Moon Agreement

- ◆ Original text developed in agreement between major spacefaring nations – including United States
- ◆ Established Moon, other celestial bodies & their natural resources as ‘common heritage of mankind’
- ◆ Called for international regime to implement – without specifying any details
 - ‘Comparable’ regime for deep seabed mining included international licensing, mandatory sharing of benefits & mandatory technology transfers...

Especially interesting provisions...

- ◆ Prohibited appropriation ‘only’ of Moon, other celestial bodies & their natural resources “in place”
- ◆ Allowed for possibility to develop “specific legal norms enter into force with respect to any [specific (categories of)] celestial bodies”
- ◆ Raises issue of size – ‘celestial body’ vs. ‘natural resource’?



Moon

Circumference 10,921 km

Surface area 37.9 M km²

Volume 21.95 B km³

Mass 73.4 Quintillion tons



Itokawa

Dimensions 535 x 294 x 209 m

Mass 35.5 M tons

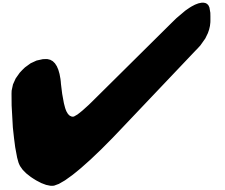
Legal status of outer space ...

- ◆ ... what does that mean for ‘space mining’?
- 1. Outer space belongs to all of mankind → all resources also belong to all of mankind
 - International regime, perhaps including ‘international license’, necessary to regulate commercial exploitation

Like satellite communications?



**International
Telecommunication
Union**



Or the high seas – after all?

- ◆ 1982 Law of the Sea Convention as to regime for exploitation deep seabed ‘fundamentally re-interpreted’ by 1994 New York Agreement
 - No more mandatory sharing of benefits
 - No more mandatory transfer of technology
 - Still international licensing regime, but process largely dominated by the states whose private sector was actually interested & able
 - United States still did not ratify
 - ↔ Lockheed Martin established subsidiary in United Kingdom

Legal status of outer space ...

- ◆ ... what does that mean for ‘space mining’?
 1. Outer space belongs to all of mankind → all resources also belong to all of mankind
 - International regime, perhaps including ‘international license’, necessary to regulate commercial exploitation
 2. Outer space = ‘global commons’ → all are entitled to use resources for their own benefit
 - As long as compliant with international law, national licensing allowable

Like fishing on the high seas?



\$ ¢ £ ¥ €

→ Unilateral US action...

2015 Commercial Space Launch
Competitiveness Act

Title IV

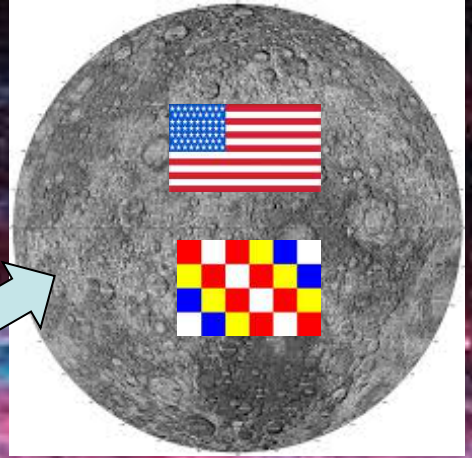
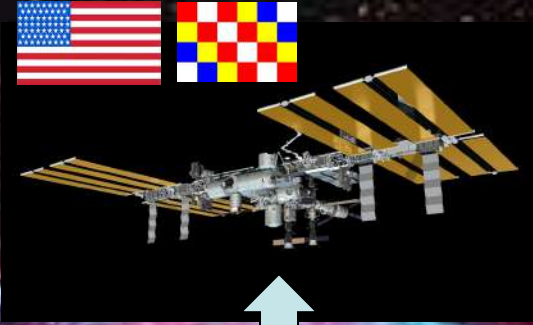
**“Space Resource Exploration and
Utilization”**

Key elements Title IV

1. Recognizes property rights US citizens/companies over space resources once mined on 'first come, first served' basis as for disputes under US jurisdiction
2. Calls for (more) regulation to authorize & supervise, in conformity with international law
3. Calls upon President to promote interests of US industry in global context → development international regime → ...

Ramifications on earth...





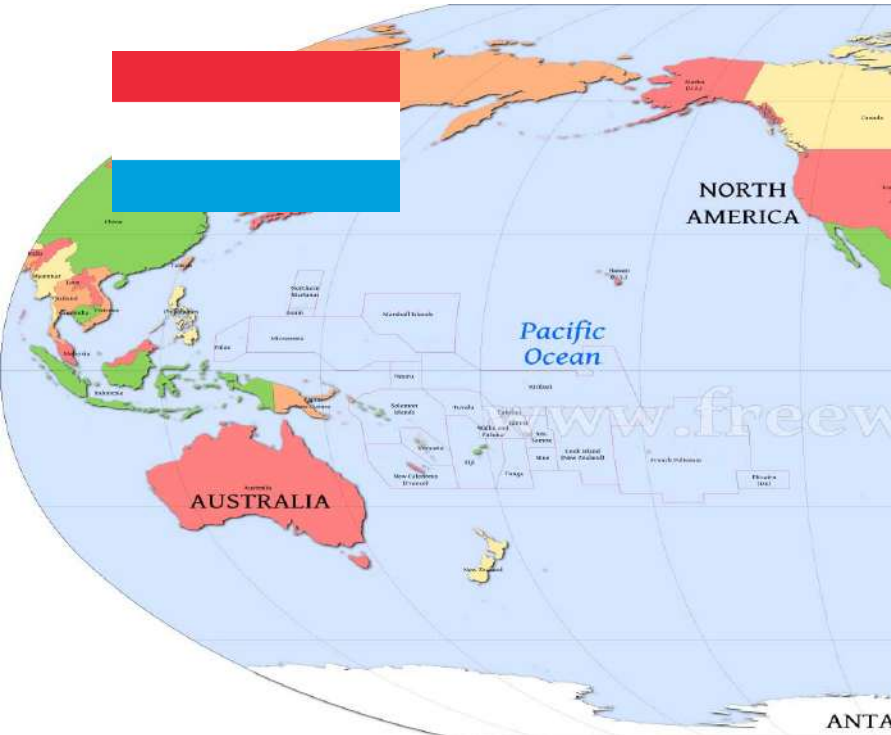
International dis

Luxembourg to invest in space-based asteroid mining

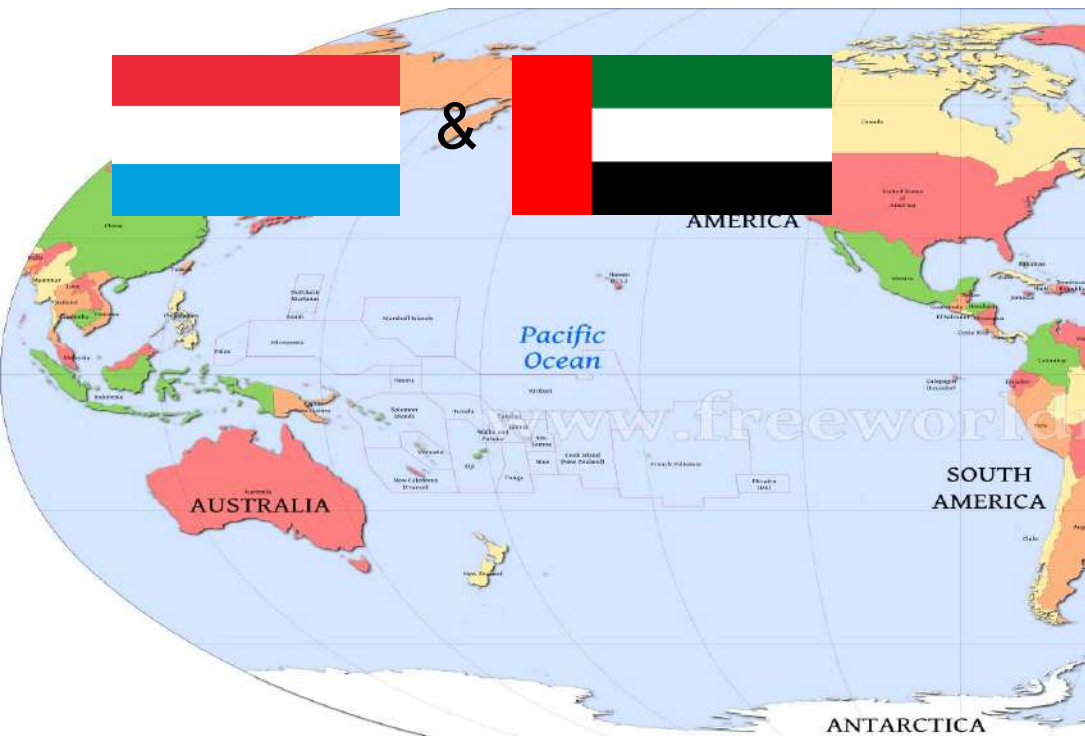
by Peter B. de Selding — February 3, 2016



Luxembourg Vice Prime Minister Etienne Schneider says Luxembourg will offer regulatory and financial incentives to space resource-mining companies. Credit: Luxembourg government



International discuss



UAE Space Agency director general Mohammed Al Ahabbi, during the announcement of The National Space Programme in November. Silvia Razgova for The National

UAE to finalise space laws soon

Lucy Barnard

March 7, 2016 Updated: March 8, 2016 09:05 AM



Related



The UAE is finalising what is likely to become one of the world's first space laws, the head of the national Space Agency said yesterday.

A space law covering both human space exploration and commercial activities such as mining is currently being drafted, said the UAE Space Agency director general Mohammed Al Ahabbi.

International discuss

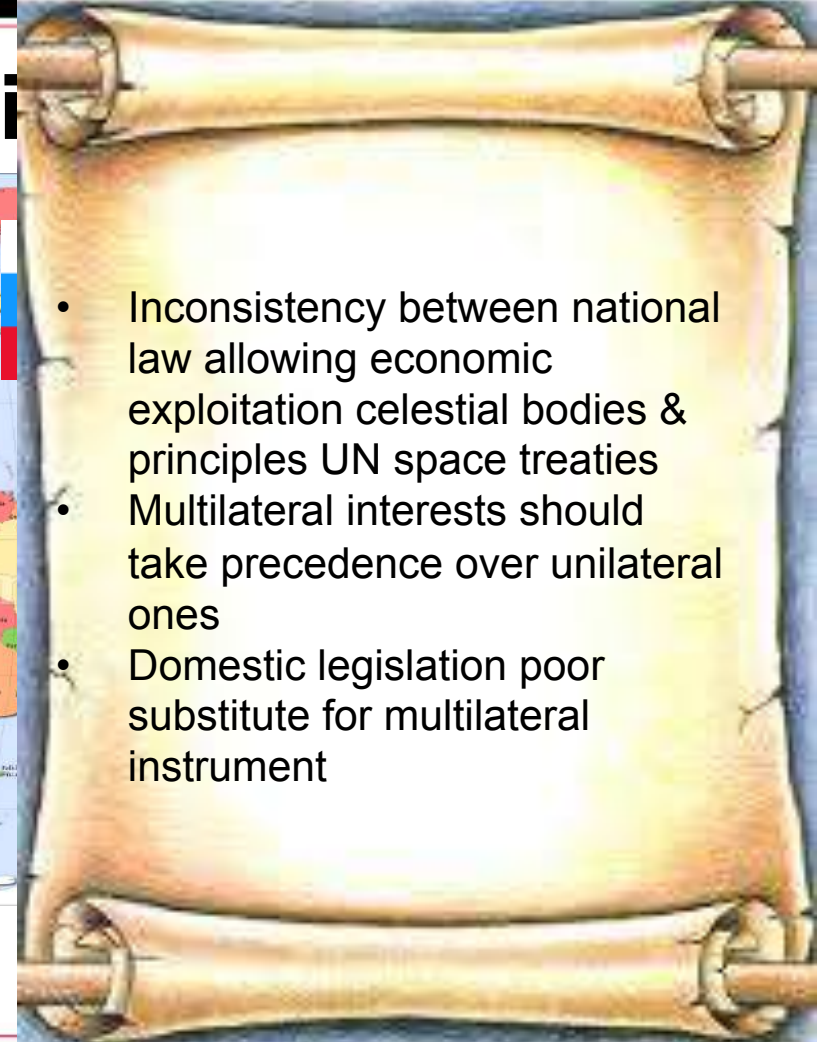


- Disrespect for international law by allowing US private sector to appropriate & sell space resources as per Title IV
- New interpretation of 'non-appropriation outer space'
- Disregard for discussions in context Moon Agreement
- Element of US doctrine of 'domination of outer space'
- 'Freedom of use of outer space' not law but theory of expert & specialized fora

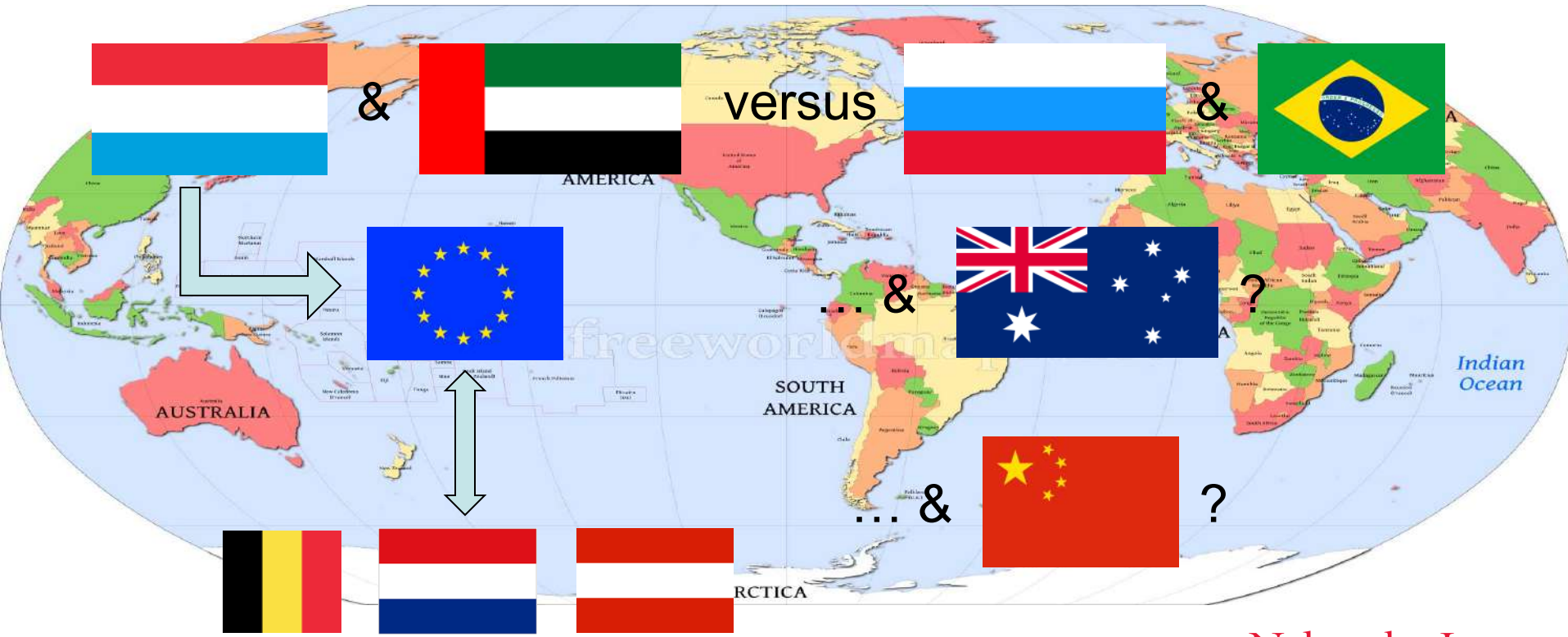
International discussion



- Inconsistency between national law allowing economic exploitation celestial bodies & principles UN space treaties
- Multilateral interests should take precedence over unilateral ones
- Domestic legislation poor substitute for multilateral instrument



International discussions...





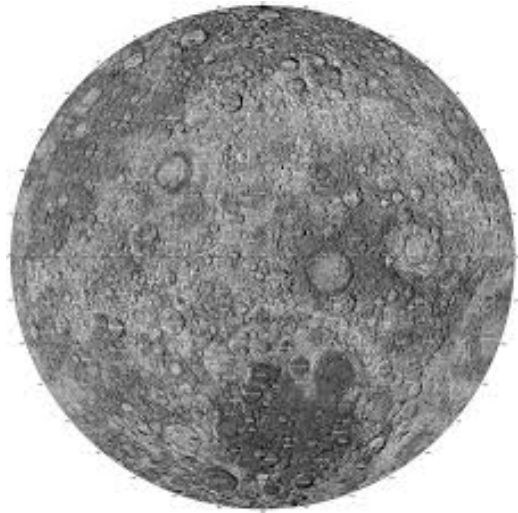
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...enters Mr. Dennis Hope...

- ◆ 1980:
achieves
registration
claim of
ownership
of the Moon
in California
...





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Confusion reigns...

- ◆ Many clients for Dennis Hope / Lunar Embassy
 - Can clients start assuming they actually own ‘(sur)real estate’?
 - Greg Nemitz, Eros-433 & NASA
- How does this qualify under US law?
- What should US government do under international / US law?
 - Dutch & Chinese ‘ambassadors’ Lunar Embassy jailed
- *Legal certainty for mining operations...?*

***There is enough space out there
for lawyers educated at UNL***



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