

Social and Legal Requirements For Establishing Human Life on Mars

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In association with the International Space
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What Space Laws do we have? Outdated?



The Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (1963) lead to the:

- **Outer Space Treaty (1967) [103 + 26 countries]**
- **Rescue Agreement (1968) (Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space)**
- **Liability Convention (1972)**
- **Registration Convention (1975)**
- **Moon Agreement/Treaty (1979) [only 16+4 countries]**

- Who makes International Space Law?



United Nations Office of Outer Space Affairs (UNOOSA)
Created 13 December 1958.

**Now has TWO Working Groups: Committee, Policy and
Legal Affairs (CPLA)
Space Applications Section (SAS) (created 1971)**

**CPLA supports the
Committee on the Peaceful Uses of Outer Space (COPUOS)
Created in 1959**

**TWO Sub-Committees:
Scientific and Technical
Legal.**

- USA/Pres. Obama



- **2010: Codification USC Title 51**

- United States Code, “National and Commercial Space Programs”.

(PUBLIC LAW 111–314)

- To clarify certain laws relating to national and commercial space programs as title Laws on **Insurance and indemnification**; International cooperation; Microgravity research; **Pricing Policy for Commercial and Foreign Users**; **Space Launch**
- These articles do not change any established law; They provide a unified national model in space



Several Scenarios to simulate life on Mars



Mars Desert Research Station, Hanksville, Utah over 140 crew

Mars 500



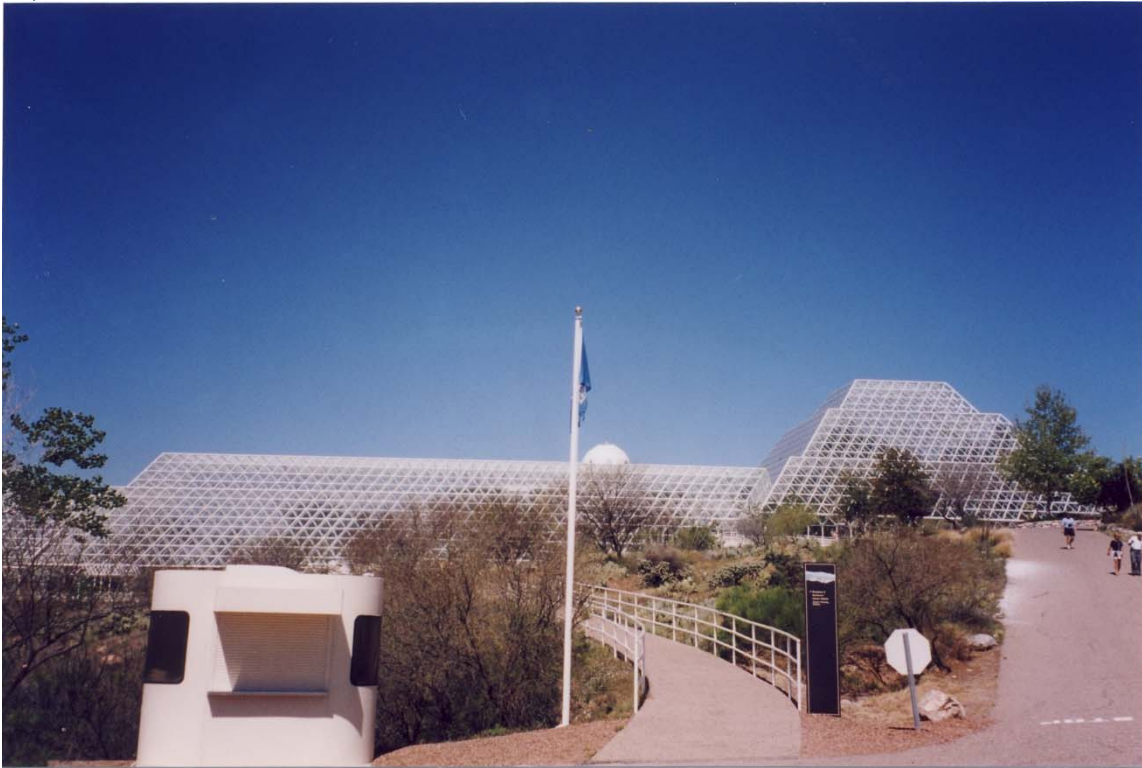
Between 2007 and 2011, three different crews of 6 volunteers each lived and worked in a mock-up spacecraft. 15, 105, 520-days (June 2010-Nov 2011)

Mars One – First Private Mission to Mars



- In the next 10-20 years—the “selected few” will have a one-way trip to Mars. This is the brain child of Bas Lansdorp who has raised \$784,380 dollars and plans that most of \$6 Billion needed will come from a TV reality show

With 20 settlers expected by ~2050.



Biosphere 2 –

3.14 acres - 1/2
acre farm

- The “Biospherians” eight people—were sealed off on Sept. 26, 1991 for 2 years—inside Biosphere 2, a 3.14-acre glass enclosure located in Oracle, Arizona.

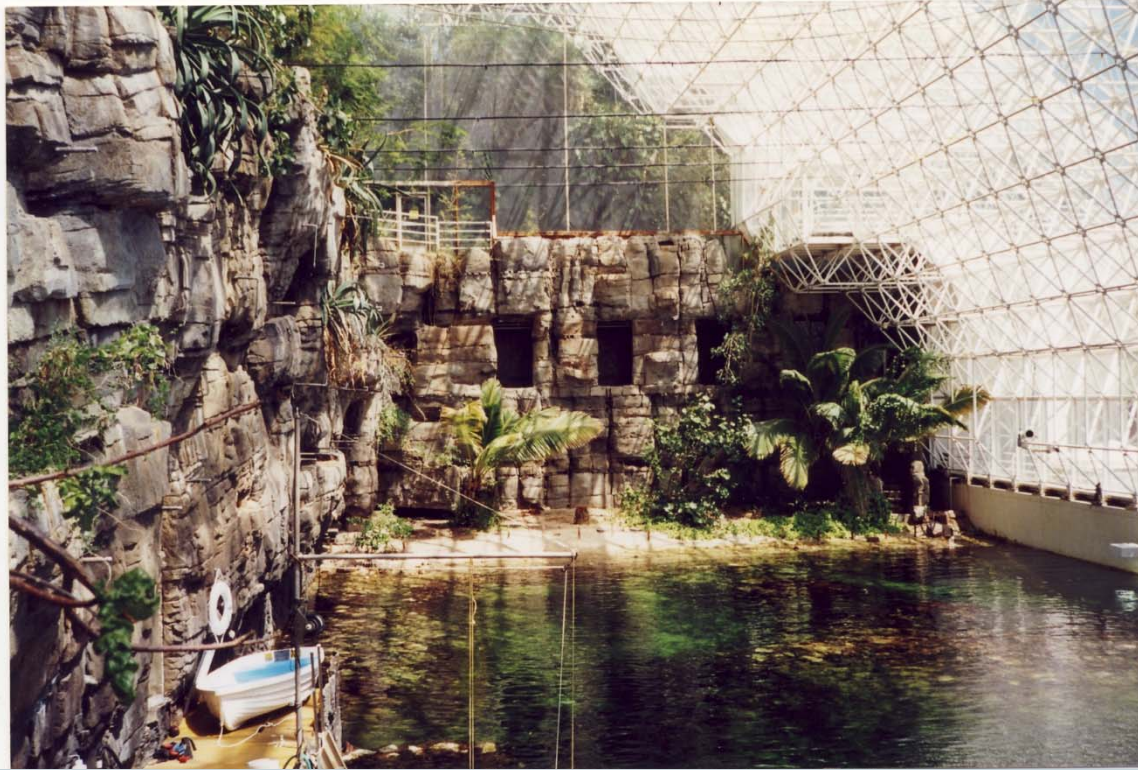
3,800 species

(many became Extinct)

During the 1st Biosphere 2 - 2 year mission



- The first year there was a bare minimum of food to eat where the experimenters were literally in a state of semi-starvation and lost between 11 and 16 % of their body mass index. One even went from 205 pounds to about 156 pounds in weight.
- There were also states of depression, irritability, fatigue and mental fog.
- In the end, the 8 crew members were split into two factions and some would not even talk to the others unless absolutely necessary. And that was all within the first 9 months.



Confined Environment

The Psychology

- 1) Environmental problems with oxygen/carbon controls [causing lethargy, sleep apnea, and breathing difficulties, where additional oxygen had to be added to the system] and food grown for the first year was insufficient causing health problems (e.g., loss of weight and stress).

Confined Environment Psychology



Principal Problems

- 2) Psychological problems – the group split into two factions, turning allies into enemies and generosity into selfishness. Some of this has been seen in Antarctic research, ICE research: within an Isolated, Confined and Extreme Environment.

ICE (isolated psychology)



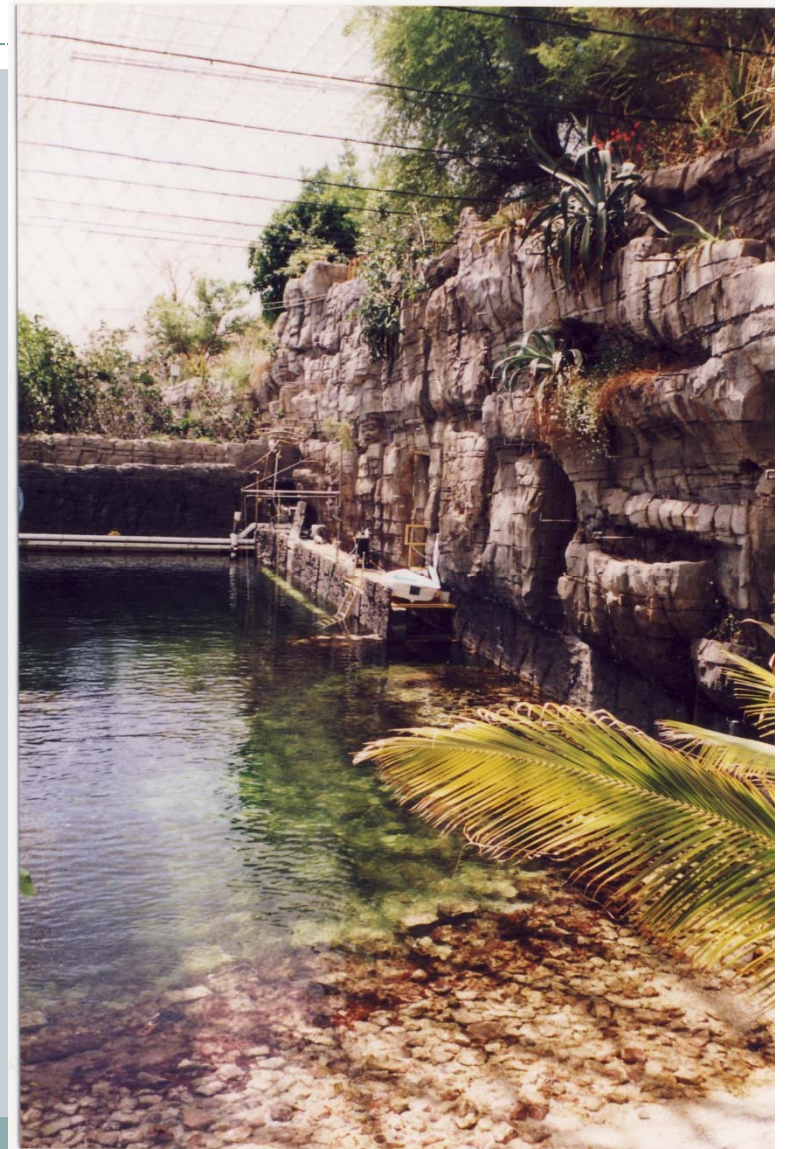
Palinkas (2003) has suggested that, after looking at Antarctic missions, there are three of the four factors which come into play:

- Social Coherence is really important (a woman a plus)
- Variations in moods are seasonal [also may depend on needs being fulfilled]
- Estimates of personality pre-mission are not as accurate as estimates of individuals *in situ*

- Palinkas, Lawrence A. "The psychology of isolated and confined environments: Understanding human behavior in Antarctica." *American Psychologist*. (2003 May) Vol.58(5) pp. 353-363.

Biosphere 2 second mission March 6, 1994

- The outside management team fell apart and one of the managers opened the door to make sure the inside people knew about it as they had lost communication with them.



Biosphere 2 second mission March 6, 1994

Our conclusion is that although science and technology are critical to going to Mars and keeping colonists healthy, we also need to focus on human challenges before us—challenges of human relations, human communications and human organization.

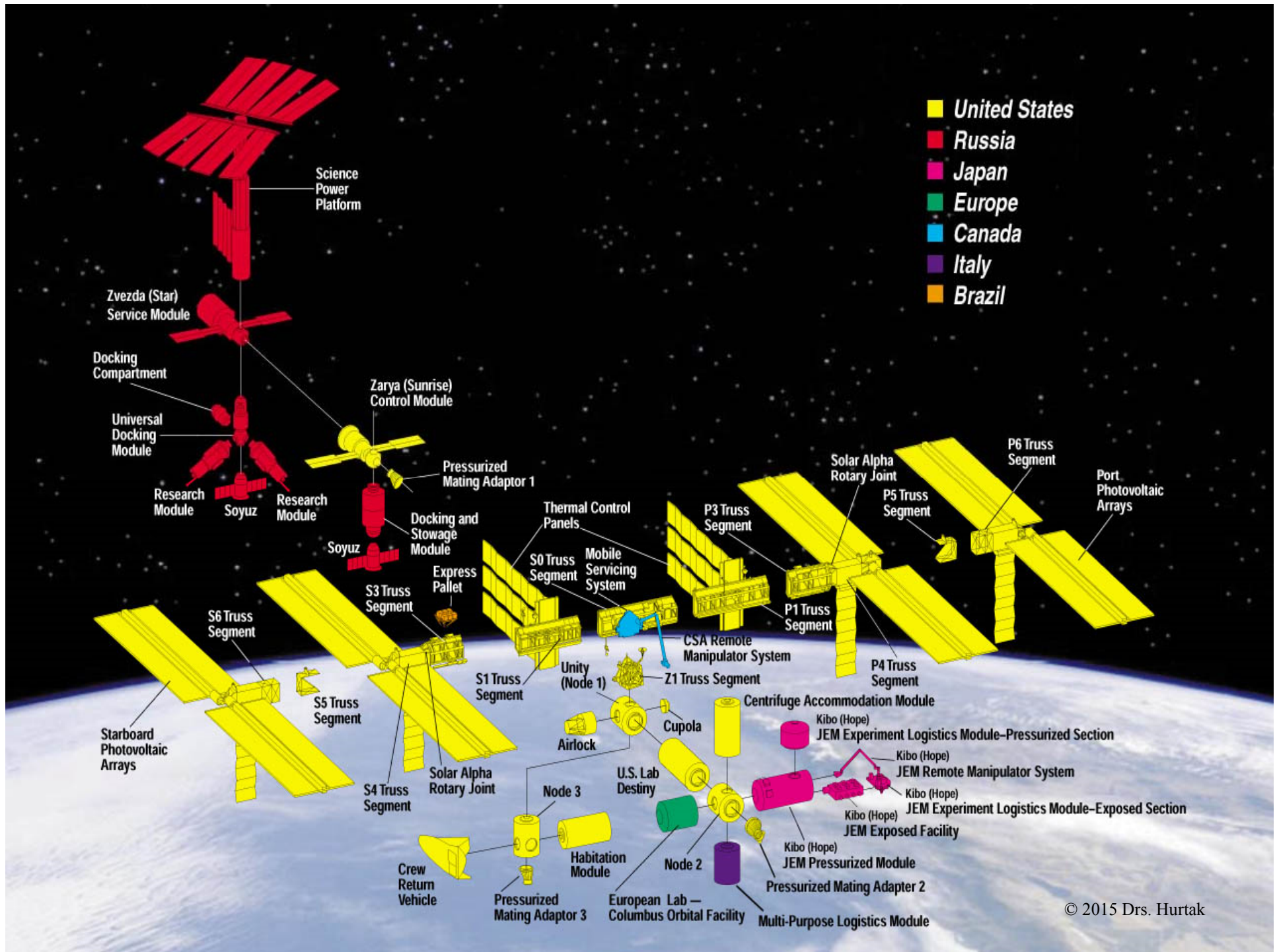


And space law is part of that!

What LAWS ARE NECESSARY



- Innovation is accelerating, requiring a holistic mapping & meaning for exo-biological realities, artificial intelligence, quantum technologies, interspace networking—these are important – but it is understanding the sociology of humans that will really create a pure Social Return on Investment and Life on Mars.



Who owns the space station?



There exists an Intergovernmental Agreement that allows the Space Station Partner States to extend their national jurisdiction in outer space, so the elements they provide (e.g. laboratories) are assimilated to the territories of the Partner States.

The basic rule is that 'each partner shall retain jurisdiction and control over the elements it registers and over personnel, in or on the Space Station, who are its nationals' (Article 5 of the Intergovernmental Agreement).

What laws are needed to live on Mars?



Necessities of Space Law



Multilateral sharing and negotiations in mobilizing data and information must be connected with a world body of legal stature and background like the UN and COSPAR (COMMITTEE ON SPACE RESEARCH from the International Council of Science) so that laws and protocols issued from one global dimension of planet Earth to the other global dimension of planet Mars become functional.



- Negotiating strategies developed must not only employ customary diplomacy, and

government agencies like NASA, along with, for example, environmental agencies and NGOs, industry, the media and civilians, in general, who may be assigned to colonize Mars.

Necessities of Space Law



- What should the colonies focus on first:
- (i) ensure the health and safety of colonists and all other life forms to the best of our ability;
- (ii) guarantee Third Party Liability (TPL);
- (iii) promote private space activities (e.g., corporations) to help fund the projects.
- (iv) play an active role in fulfilling international responsibility for sustainable development of space.

What kinds of Laws exist and why are they needed?

4 +2 Types of Laws

- *Criminal
- *Civil (includes contract, labor and family law)
- *Common (case law or traditional laws)
- *Statutory (written laws issued by government agencies, e.g., legislatures) and ordinances

- * International Law (between nations)/Space Law
- * Constitutional Law

Criminal Law



- Thou shall not kill, steal ...
- This has been around since the beginning of civilization and is a requirement.

International Criminal Court (independent)

International Court of Justice UN

Mars colonists would have to accept the most basic criminal laws whether they are initiated by the United Nations, International Criminal Court or a Nation-State as they are fairly universal. Sovereignty may be an issue but generally the laws are similar.

*Civil Law



- This includes contract, labor and family law...

Although this may start with nation-state laws from each of the respective countries, eventually these laws will most likely break away from nation-state laws and Mars' colonists would establish their own civil laws.

Family law we might imagine could develop differently on Mars, but on a practical level on labor and contract work what would we encounter?

Liability



- On the ISS, The Intergovernmental Agreement established a 'cross-waiver of liability' which prohibits any of the five Partners or their related entities (contractor, sub-contractor, user, customer) to claim against another Partner (or its related entities) for damage sustained as a result of International Space Station activities (Article 16 of the Intergovernmental Agreement).

The Future of Space



- 1) Space Tourism

via Space Adventures, Virgin Galactic, Starchaser, Blue Origin, Armadillo Aerospace, XCOR Aerospace, Rocketplane Limited, the European "Project Enterprise";

- 2) Asteroid and Space Mining

Film director and explorer James Cameron, as well as Google's chief executive Larry Page and its executive chairman Eric Schmidt, Richard Branson are to create a fuel depot in space by 2020 through the company called Planetary Resources.

Why are civilian Laws needed in Space?



- **Private-sector corporations**
May become more powerful than labor unions.
Corporations may be the ones in control. There may need to be laws that protects Mars from corporate takeovers and protect land by various environmental groups who need to participate in negotiations as full participants.



*Common Law



- Case law from judges or traditional laws.
- Colonists on Mars will certainly begin to develop their own common/case laws based on unique incidents that occur on the red planet. Perhaps judges will hear cases through interstellar communications channels and a judge and jury will listen to cases from earth to Mars to make their final judgements. But where are those judges from? Right now the UN has 15 judges. The International Court of Justice could stand in or local nation-states, but with a mixed group of people, what is fair or legal if it's not about countries but people?



THE MANFRED LACHS SPACE LAW MOOT COURT COMPETITION
 "CASE CONCERNING PLANETARY DEFENSE"
 2015 AFRICAN REGIONAL ROUND

Background:

- Held yearly since 1992 by the International Institute of Space Law (IISL)
- Involves about 60 law schools from around the world every year
- Prior space law course NOT a prerequisite. Many schools that have won have no space law course
- Four Regions: Africa, Asia Pacific, North America, Europe

African Regional:

- Three-day competition in Pretoria, South Africa
- Date: May 2015 (TBA)
- Winning team's travel to World Finals

World Finals:

- Traditionally judged by Judges of the International Court of Justice
- Held in early October along with International Astronautical Congress, which provides opportunities to meet space lawyers and space industry representatives from around the world
- 2015 World Finals will take place in Jerusalem, Israel

For more info go to <http://www.iisweb.org/lachsmoot/> or contact the Regional Organizer at lachsmoot-africa@iisweb.org

Team from Obafemi Awolowo University of Nigeria, winner of the 2014 African Regional. From left to right: Faculty Advisor Dr. Akinwale Orlowomo, ICJ Judge Xue, student Ms. Ayodele Similokwa, ICJ Judge Skotnikov, ICJ Judge Donoghue and student Ms. Adeseye Temipole.



Since 1992, the International Institute of Space Law organized the Manfred Lachs Space Law Moot Court Competition. Moot = a mock court for the conduct of hypothetical legal cases, for law students.

<https://www.facebook.com/spacemoot>

extra commercium vs res communis



- At the United Nations —
a new canon of space law is being discussed in favor of ***extra commercium (commercial activity is applicable in some instances)***. Some NGO delegations want to establish areas of Mars that are legally Environmentally Protected Zones (MEPZs) Whereby certain areas would be off limits to countries and corporations involved in exo-industrial exploration allowing other areas to be “fair use” for the drilling and exploitation of resources.

Declan J. O'Donnell

Intern. Space Development Authority



- Declan has seen the importance of Article 11 of the Moon Treaty which he claimed provided the solution to the problem of benefit sharing. By showing how the resources of Mars could be equitably promoted, managed and developed by a non-government authority in the commercialization of space.
- As long as no one owned it – it could be exploited.
- O'Donnell and Hurtak (2011) *The Sub-Orbital Private Space Flights May Require a Law Suit to Escape Benefit Sharing*

Three options to change *res communis*



- 1) Withdraw from the Outer Space Treaty
- 2) Amend the Outer Space Treaty to try and work around the *res communis* doctrine and shape the treaty more in line with the present day global realities incorporating: ***ex nullius (first come first served) or extra commercium (commercial activity is applicable in some instances).***
- 3) Highlighting domestic space policies which could evolve into more multilateral agreements with other countries regarding the use of space.
- 4) Create an independent institution on Mars.



Credits: NASA

PROPOSED PROTECTION LAWS

- **Hurtak & Egan: “Mars Treaty protection laws” (*Annals of Air and Space Law* -2005)**
- **In relation to Mars’ Mineral and other Natural resource activities, should they occur, the Parties acknowledge ...to**
- **a) protect the Mars environment and dependent and associated ecosystems;**
- **b) respect other legitimate uses of Mars habitats;**
- **c) maintain zones for ‘microbiological samples’;**
- **and, d) establish a ‘court system’ on the ISS [or on Mars] that addresses integrated business, operational strategy, and scientific competition.**



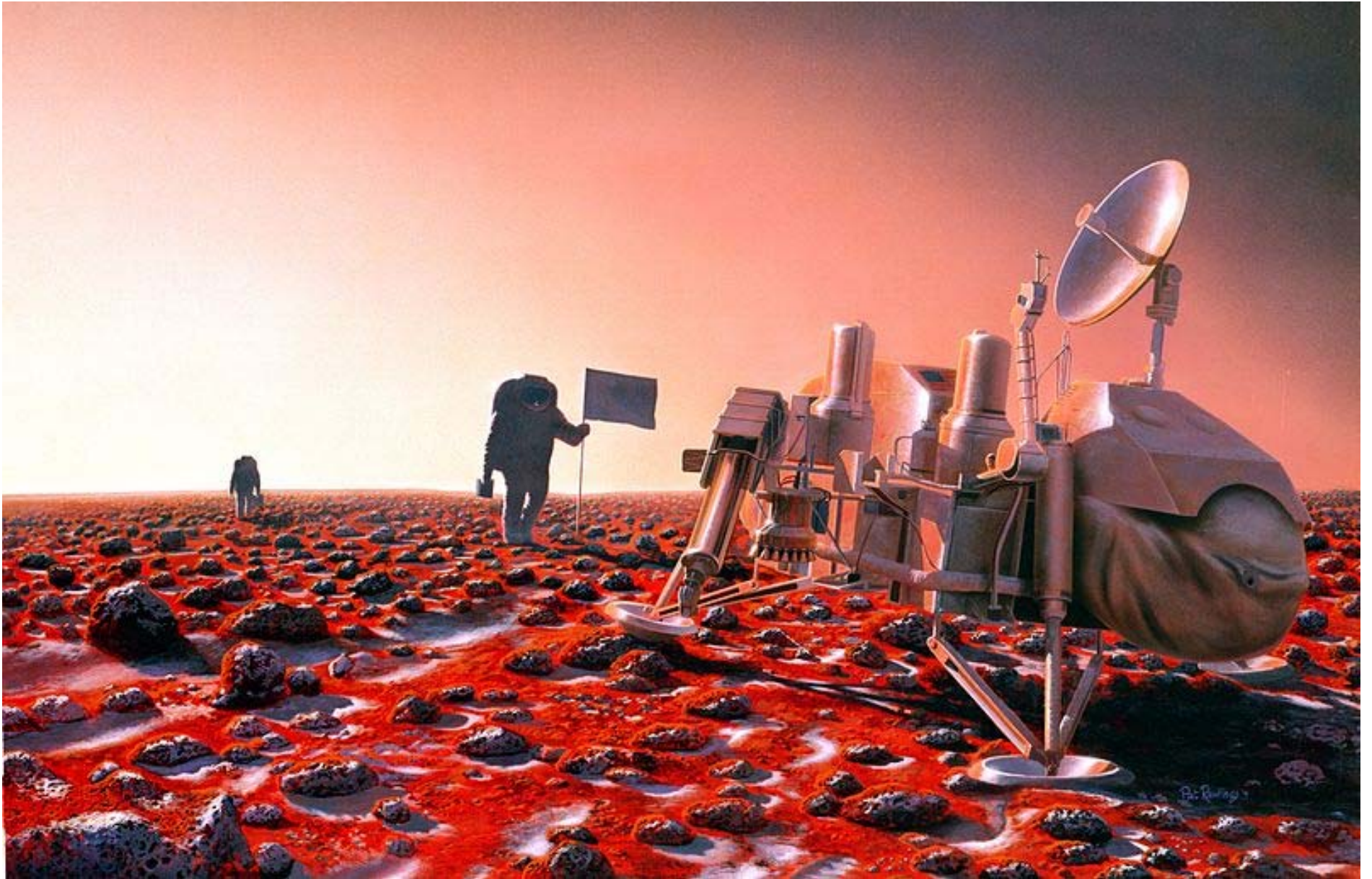
A Mars’ Mineral and other Natural Resources Regulatory Committee could be established by the UN or a “Mars” Commission.

“Each country represented by the UN shall be entitled to be represented by the Committee and to appoint representatives who may be accompanied by experts and advisers.”

* Constitutional Law

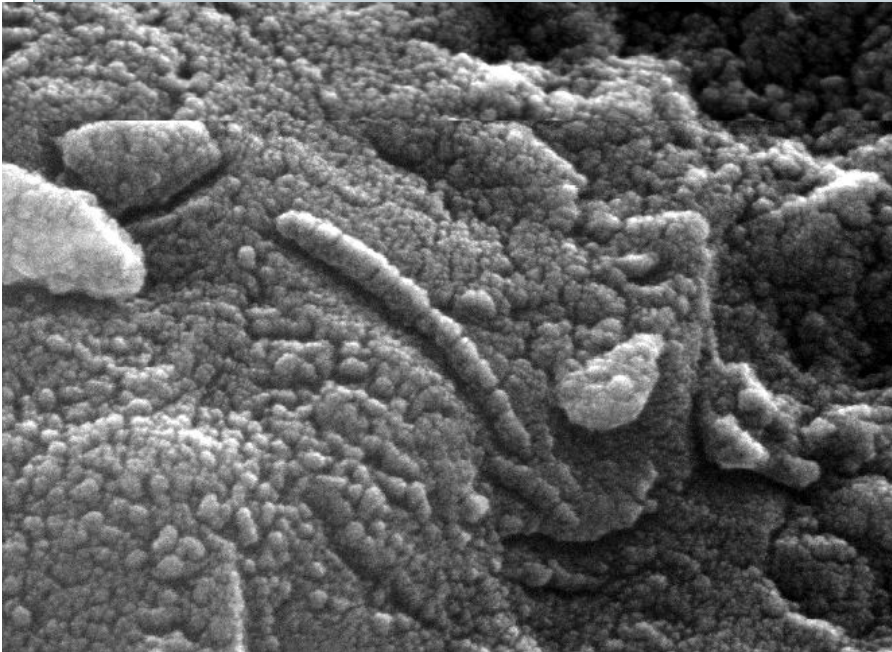


- Eventually Mars MAY have its own constitution.
- The European Union has considered creating a constitution, instead they created the Treaty of Lisbon
- Creating a Constitution would be the epitome of creating its own sovereign entity.



Credit: NASA/Pat Rawlings

What if life is found on Mars?



Do we send more probes
to investigate it ?
Or do we put up a “do
not disturb sign”?



Whatever we do, we should be bound by the principles of responsibility and international accountability to treat life in outer space with the same dignity accorded to life on Earth.

Res communis (common property of all)

ex nullius (first come first serve)

extra commercium (commercial activity is applicable in some instances).

A Space Law Treaty The Outer Space Security and Development Treaty (2011)

- Composed by Astronaut Edgar Mitchell, Dr. Carol Rosin (formerly of Fairchild Industry) and Dr. Scott Jones, consultant to the late Senator Claiborne Pell of the Foreign Relations Committee.
- This treaty establishes a framework and procedures to assure that space and Mars will be a neutral realm from which all classes of weapons are banned and from which no hostile action shall be taken toward Earth or the surrounding Cosmos.

A Space Law Treaty The Outer Space Security and Development Treaty (2011)

- “The parties to this Treaty:
- Reaffirm the urgency of preventing a destabilizing, threatening, and costly arms race in space.
- Recognize that information and data gained from cooperative space exploration and development will provide unlimited benefits and opportunities to all humankind in areas of health, education, the economy, mutual security, energy, and the environment.

A Space Law Treaty The Outer Space Security and Development Treaty (2011)

- This treaty affirms (Article I):
- Nothing in this treaty shall prohibit the following space-based ventures that are not activities related to space-based weapons:
 - (a) space exploration
 - (b) space research and development
 - (c) Testing, manufacturing, production or deployment of non-weapons systems. Not prohibited are commercial, civil, entrepreneurial or military space-based ventures that are confirmed by a Peace in Space Office.



In conclusion!



Mars colonists of the future! This is your future.

Understand that we are on the brink of one of the greatest breakthroughs in all of history in the first phase of pioneering a peaceful approach to the opening of the portal of Outer Space.

We are the citizens of the future, as universal humans/spacekind who are breaking the umbilical cord with Mother Earth to touch the heavens by our traveling to Mars.