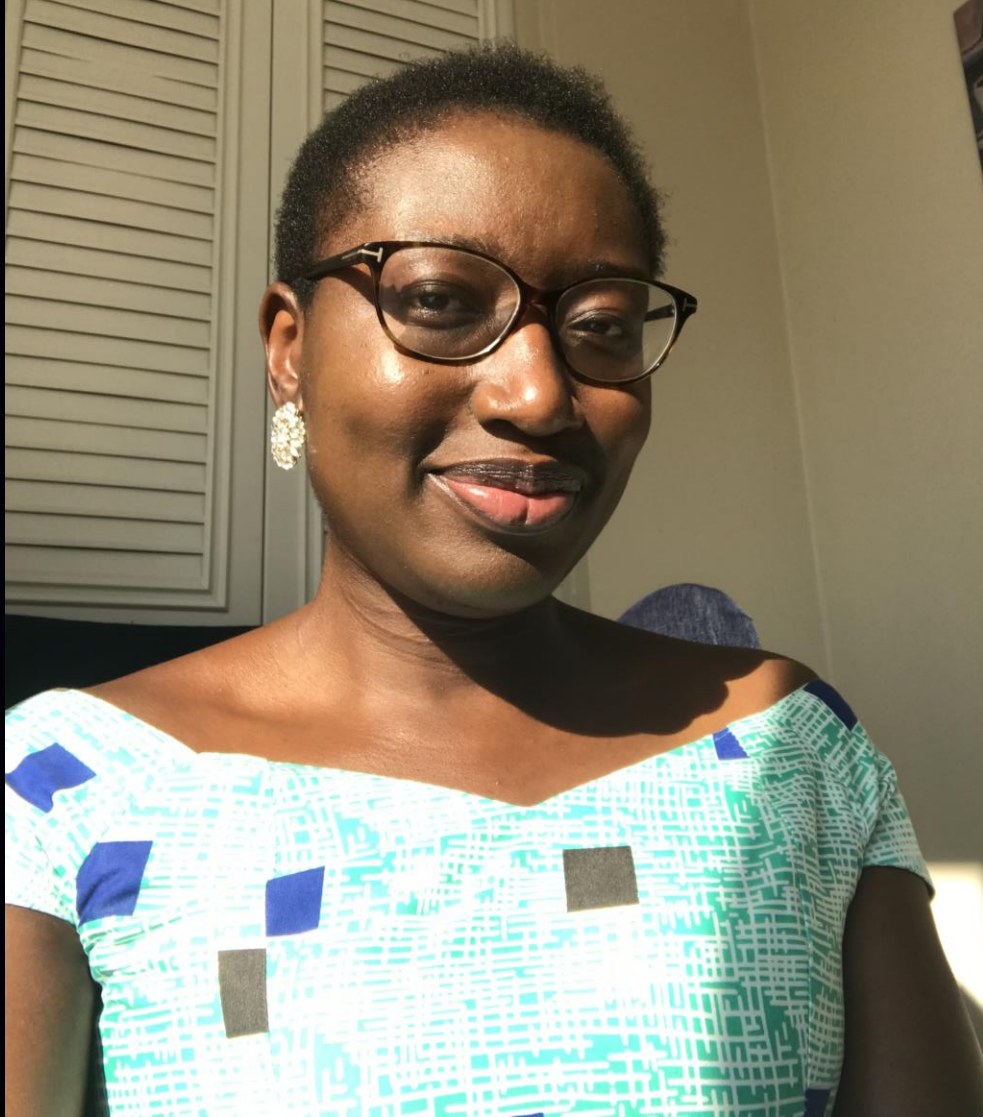


Issues in the Emerging Space 5.0 Era: Environmental Liability at the Frontier

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Assistant professor in the School for the Future of Innovation in Society with a courtesy appointment at the Sandra Day O'Connor College of Law at Arizona State University, USA. Timiebi was a post-doctoral fellow and fellow at the Centre for International Governance Innovation (CIGI) based in Waterloo, Ontario Canada where she focused on climate change law and technological solutions to environmental governance challenges. She also participated in a Canada-India Track 1.5 Dialogue where she focused on Climate engineering governance. She was an observer at the UN Framework Convention on Climate Change in Bonn and Marrakech.

Timiebi was Executive Director of the World Space Week Association coordinating the global response to the UN 1999 declaration that World Space Week should be celebrated Oct 4-10 annually. She is currently on the Advisory Board for the Space Generation Advisory Council supporting the UN Programme on Space Applications. She is also on the Advisory Board of World View Enterprises, a stratospheric balloon company. Other positions include 4 years as a space industry consultant for the leading space analyst firm in Montreal, Canada where Timiebi led a pipeline of commercialization studies for the Canadian Space Agency and led the socio aspects of a socioeconomic assessment of the Canadian space sector.

Timiebi was a teaching associate (France, 2008) and associate chair (Ireland, 2017) of the space policy, law and economics department at the International Space University, and an associate at Kayode Sofola and Associates law firm. She was an NYSC Corp at the Nigerian National Space Research and Development Agency, where she spent a year in the Legal Affairs and International Cooperation department. Timiebi has represented Nigeria at the UN as a Next Generation Aviation Professional at the International Civil Aviation Organization Model Council in Montreal (2014) and at the Legal subcommittee of the Committee on the Peaceful Uses of Outer space in Vienna (2011).

Timiebi has published in the leading outlets on space topics, namely Astropolitics, Space Policy, Acta Astronautica and on environmental law at the Journal of Transnational Environmental Law. She was a contributor and the guest editor of a special issue of the New Space Journal focused on New Space from an African Lens. She has given talks at reputable institutions and stages, including the McGill Space Institute, Stanford University, Rice University, Wesleyan University and TedX ASU. Timiebi is very active in outreach having produced and hosted a 12 episode podcast interviewing leading female scientists and engineers from around the world titled Ladies do Launch and has been a guest on noted podcasts such as Mission Interplanetary by Slate, For all Mankind by producers of the TV series and Space to Grow by Astroscale. She has also been featured on television shows Xploration Outer Space, and Arizona PBS Catalyst.

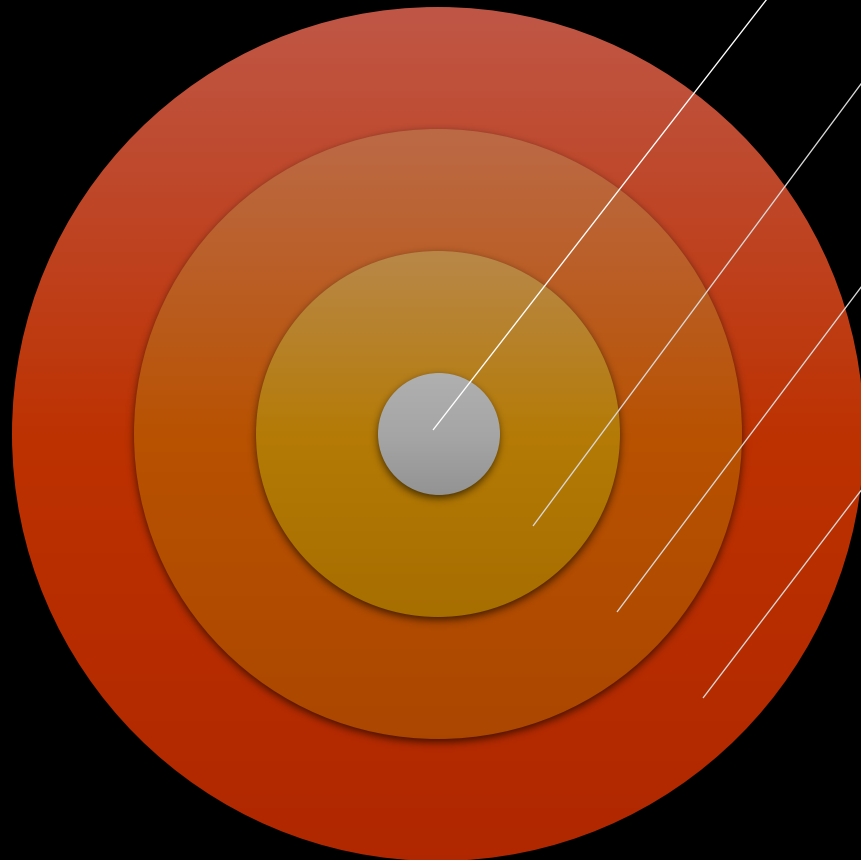
ABSTRACT

Waste is an inevitable by-product of any activity. The waste problem we have today in space is space debris, and tomorrow, will be as a result of the establishment of an in-space economy. Space Debris is a growing problem and left unchecked has the potential to reduce the ability of humanity to use and enjoy the outer space environment, in the way future visions of our utilization of the space environment imagine.

Coupled with proposed resource extraction projects, the space environment and activities could be disrupted through adverse changes to the space environment, which we can not fully predict today. This anthropocentric claim does not take into consideration whether the outer space environment should be protected for its own intrinsic right in line with recent trends towards giving rights to nature.

It is proposed that due to colonial history of exploitation of the space environment and the freedom of outer space, space will be valued for its utilitarian value and so in the short term lessons learned from existing environmental liability regimes may serve the development of evolving regimes towards ensuring the long term sustainability of space activities through providing deterrence for damaging the outer space environment and possibly promoting the collection of a pool of funds that can be used for developing technological solutions to maximize preservation of the space environment.

However, given the challenges of liability for environmental damage this discussion hopes to spur food for thought as to if there are other ways to be environmentally conscious in the space environment, and provide for intergenerational justice.



Space 4.0

Evolution

Space 3.0

International
Cooperation/Space
Station

Space 2.0

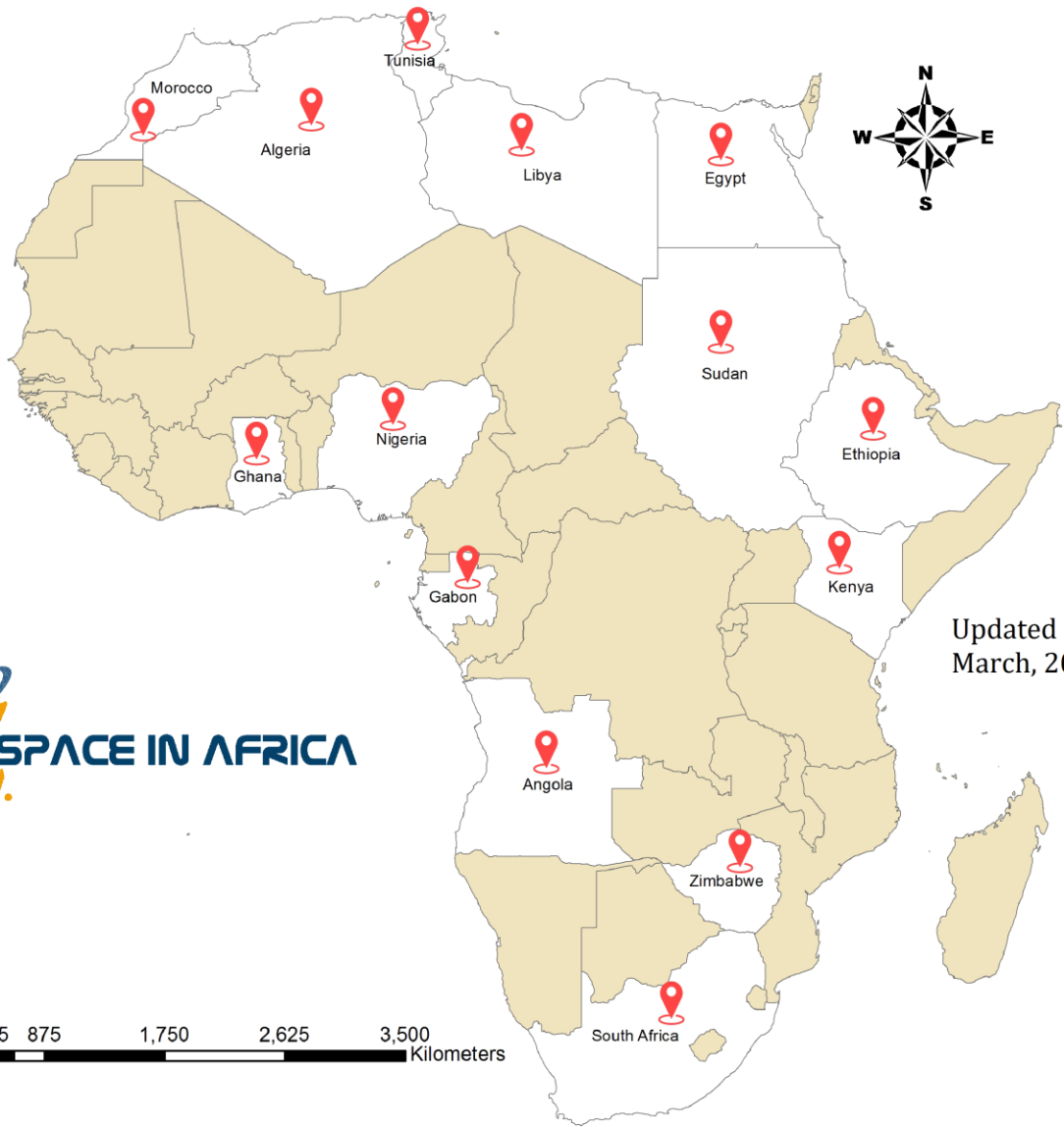
Space Race and
Apollo

Space 1.0

Early study of
astronomy and
astrology



0 437.5 875 1,750 2,625 3,500 Kilometers



Updated on March, 2019

Updated 2021

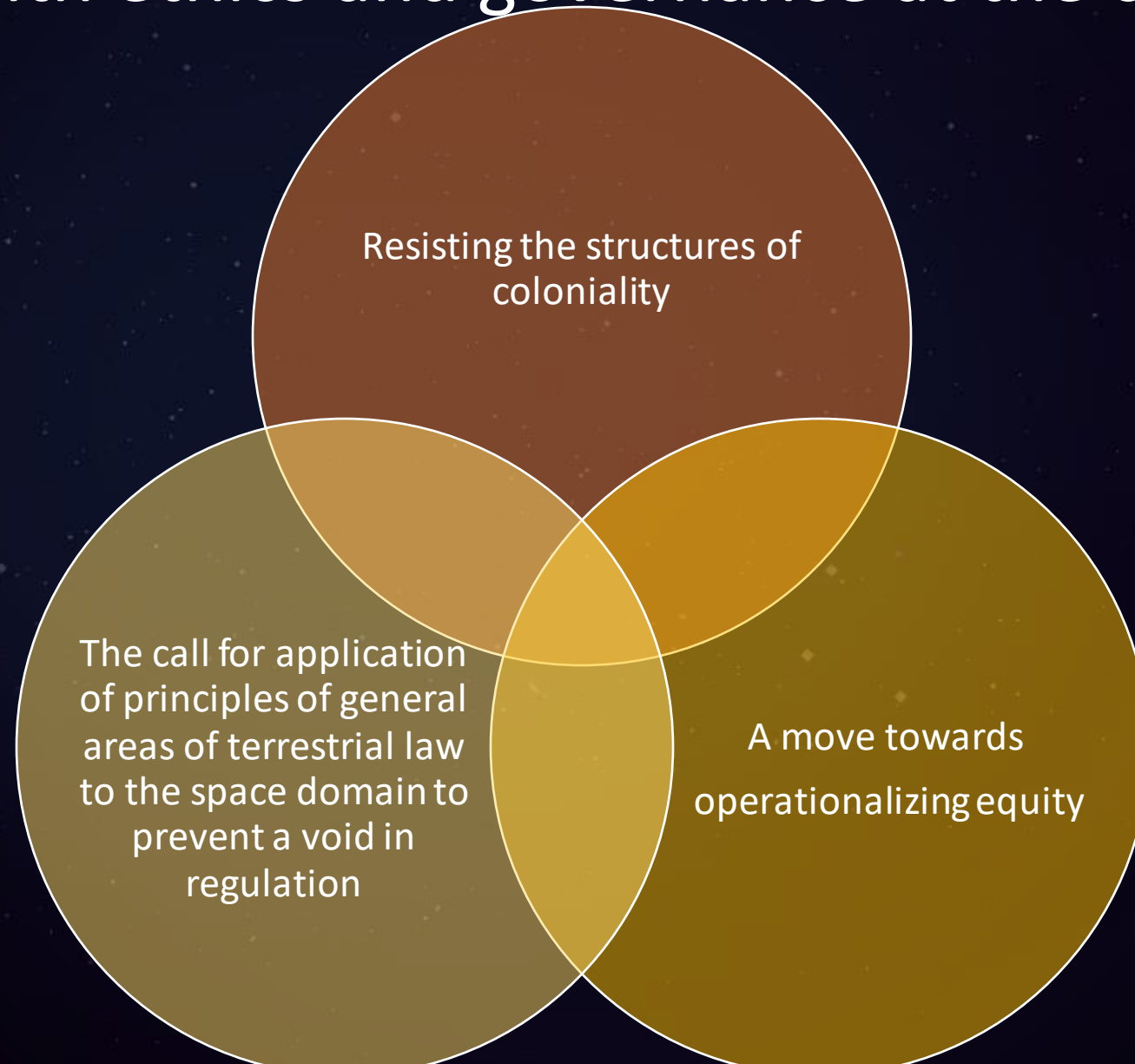
- Uganda
- Mauritius



Nigerian Space Research and Development Agency



Space 5.0 Era is characterized by at least 3 trends with ethics and governance at the center

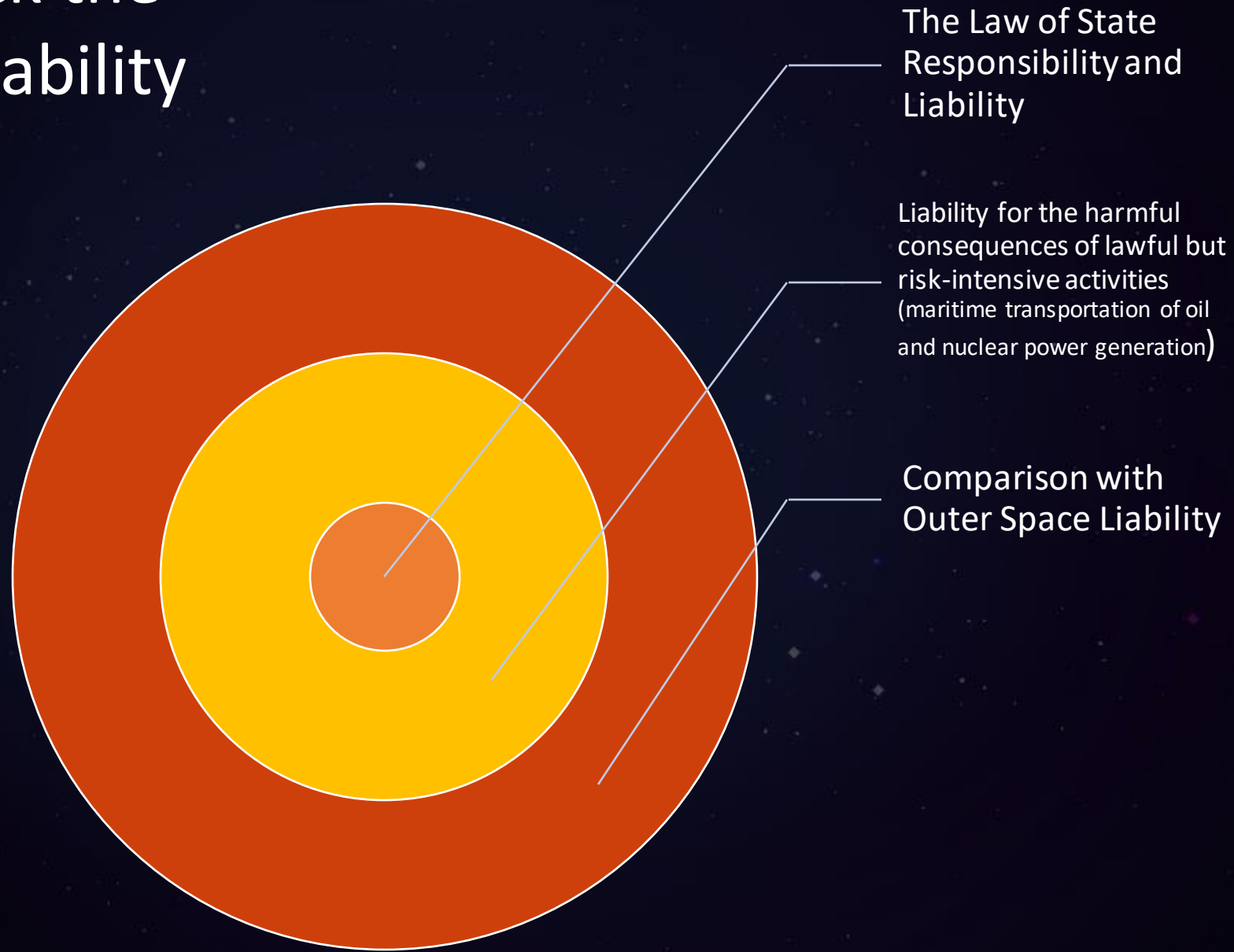


The first issue that arises out of the Freedom of Outer Space is the specter of unfettered use of the space environment and the tragedy of the commons.

Finding practical ways to address this problem is also the first step to operationalize equity and looking at principles applicable in the terrestrial environmental law arena to fill the void.

- Space activities and the effect on the space environment: the case and cause of space debris, and potential harm caused by proposed space mining and other commercial activities
- The current conception of and rationale for Space Sustainability is for Global Security
- The true logic of sustainability as a justice outcome
- Intrinsic vs inherent value
- Towards a middle ground: Enlightened anthropocentrism
- Is there a case for Environmental Liability? Deterrence and accountability, and pool for Compensation funds for technology development

Peeling back the Layers of Liability



However, according to Jutta Brunee, whether or not the environmental liability approach makes sense in the circumstances remains uncertain for a variety of reasons. Notably that the broad trends mask the vast array of unresolved issues:

- ❑ there is no sufficient uniformity to draw general conclusions on civil liability regimes
- ❑ shaky pattern of support for international liability regimes
- ❑ whether liability regimes, assuming their entry into force, could actually meet the high expectations that their proponents have of them

Therefore are there other more future oriented strategies that could be looked at beyond liability to preserve the space environment? Thoughts on Property rights? Discussion.