

oblige—decisionmakers to consider the likely harmful effects of their activities on the environment before they pursue those activities.”⁸³ This principle has been incorporated into a host of international treaties; notably, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, which became the first treaty in the history of the U.N. to achieve universal ratification (197 countries).⁸⁴ The very nature of the Montreal Protocol is precautionary agreement to protect the Earth’s environment from potentially harmful substances;

*Recognizing that world-wide emissions of certain substances can significantly deplete and otherwise modify the ozone layer in a manner that is likely to result in adverse effects on human health and the environment . . . Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge . . .*⁸⁵

As evidenced by COSPAR’s Guidelines, NASA’s implementation of those Guidelines, customary international law, and the precautionary principle, the United States has a responsibility to bequeath its longstanding planetary protection measures to the quickly developing private sector. In order to ensure planetary protection, fulfill its international treaty obligations, and comply with international customary practice, the United States must supplement and clarify the ambiguous language of the CSLCA so as to prevent the unintentional authorization of under-regulated missions involving potentially hazardous extraterrestrial materials.

IV. CONCLUSION

Although some in the space-resource utilization industry may decry specific planetary protection guidelines as contradictory to

⁸³ James Cameron, Juli Abouchar, *The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment*, 14 B.C. INT’L & COMP. L. REV. 2 (1991).

⁸⁴ Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1550 (1987) [hereinafter Montreal Protocol]; For ratifications, see *Status of Ratification*, UNEP, http://ozone.unep.org/sites/ozone/modules/unep/ozone_treaties/inc/datasheet.php.

⁸⁵ Montreal Protocol, preamble.

the CSLCA's intent that processes be "no more burdensome than is necessary,"⁸⁶ the future of both commercial and scientific involvement with outer space depends on establishing and maintaining consistent contamination avoidance practices. In addition to helping scientists understand the origin of life sustaining materials on celestial bodies, "strong practices in planetary protection will be critical to guaranteeing the quality of returned science and returning samples safely to Earth."⁸⁷ Although the CSLCA is a legitimate exercise of the United States' right to authorize and oversee the space activities of its nationals, special care must be given to the many effects and consequences space-resource utilization will inevitably entail. Not to mention, the commercial success of utilizing space resources will largely depend on one's ability to conduct these activities in a safe and cooperative manner. As a world leader in the exploration of outer space, the United States is in a unique position to set trends, reinforce core values, and help protect our planet's future. If the CSLCA is a first step towards attaining an unprecedented level of space exploration and utilization, should we not put our best foot forward? By amending the CSLCA to include the COSPAR Guidelines, the Act would not only continue a longstanding precedent established by NASA, but also ensure U.S. adherence to international treaty obligations, compliance with international custom, and the protection of planet Earth.

⁸⁶ Presidential Report, *supra* note 11, at 4.

⁸⁷ JPL Report, *supra* note 65, at 1.

COMMENTARY

MODERN ETHICAL DILEMMAS STEMMING FROM PRIVATE ONE-WAY COLONISATION OF OUTER SPACE

*Dorte Jessen**

I. INTRODUCTION

Recently, a group of academics from the pure and social sciences met in London to discuss political philosophy in relation to governance in outer space, particularly how to embrace and harness the reflexive element of political dissent, while maintaining both liberty, political stability and security in an extreme extra-terrestrial environment.¹ While this may appear premature to some, parts of contemporary society is already embracing one-way inter-planetary colonisation in the not too distant future.

Through the case study of Mars One – a one-way trip to Mars - this article sets out to analyse if a reflexive social learning process is taking place in Europe, and to what degree society *is equipped to develop* appropriate governance systems to guide our behaviour as human beings in outer space.

* Dorte Jessen is a Market Economist and completed her Master of Social Sciences in 2015 majoring in Risk, Crisis and Disaster Management at the University of Leicester, UK. Her research interests include humanities in space, existentialism, sociology, risk and disaster management. This article is based on research conducted as part of the author's MSc dissertation in Risk, Crisis and Disaster Management at the University of Leicester, entitled: *Governance in Relation to Private Space Exploration, exemplified by Mars One: Private One-way Colonisation of Mars*. The original research is available on: http://www.space-institute.org/app/uploads/1448556892_Post_this_Dissertation_Dorte_Jessen_Mars_One_February_2015.pdf

¹ ULRICH BECK, RISK SOCIETY: TOWARDS A NEW MODERNITY (1992).

A theoretical arch will be established, building on *Social Learning Theory* and the concept of *symbolic loading*,² along with *Adult Infantile Narcissism*³ and *Technological Adolescence*⁴, underpinned by Beck's *Risk Society*.⁵ This article argues that that whereas only limited reflexivity is detected, social learning *is* occurring. Only this time it is spearheaded by 'laymen' rather than scientific experts.

It will be concluded that while the UN 1967 Outer Space Treaty⁶ may not be an ideal solution, for the time being, it represents the broadest international consensus.

II. MARS ONE – A PRODUCT OF CONTEMPORARY SOCIETY?

Mars One is a Dutch not-for-profit foundation that intends to establish a permanent human settlement on Mars by 2027 by sending people on a one-way trip to the red planet. The endeavour will be funded by releasing broadcasting rights to an associated reality TV show, sponsorships, crowdfunding, and revenues from intellectual property.⁷ The first four people are envisaged to land on Mars in 2027.⁸

There is no mention of the legislative framework upon which Mars One is basing its activities in the literature or online resources. They do, however, have two space law experts amongst their advisors.⁹ Given that there are still ten years until any actual space activities would take place, no licence is required for the time

² Brian Wynne, *Nuclear Debate at the Crossroads*, 79 NEW SCIENTIST 1114, 349-351 (1978).

³ PETER DICKENS & JAMES S. ORMROD, OUTER SPACE AND INTERNAL NATURE: TOWARD A SOCIOLOGY OF THE UNIVERSE 609-626 (2007).

⁴ EDGAR D. MITCHELL & ROBERT STARETZ, OUR DESTINY: A SPACE FARING CIVILIZATION?, A ONE WAY MISSION TO MARS: COLONIZING THE RED PLANET 47 (2011).

⁵ BECK, *supra* note 1.

⁶ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, U.N., Jan. 27, 1967, 610 U.N.T.S. 8843 [Outer Space Treaty].

⁷ *How are the astronauts prepared?*, MARS ONE, <http://www.mars-one.com/faq/selection-and-preparation-of-the-astronauts/how-are-the-astronauts-prepared> (last visited Feb. 8, 2015)

⁸ *Id.*

⁹ Mars One's team of advisors include Ms. Masson-Zwaan, former President of the International Institute of Space Law (IISL) and Mr. Sridhara Murthi, adviser to the Prime Minister of India and Vice President of the IISL; *Mission Advisory Board*, MARS ONE, <http://www.mars-one.com/about-mars-one/advisers> (last visited May 21, 2017).

being. Authorisation and licencing would depend on the launching state.¹⁰

III. ONE-WAY MISSION TO MARS

The idea of a manned mission to Mars is not new. What is new, is that technology is now advanced to a level comparable to the difficulty of going to the Moon in 1969.¹¹ What is also new, is the concept of a privately funded *one-way* mission to Mars, as opposed to a government funded return venture through the likes of NASA, to whom the idea of a one-way mission is politically untenable, thus completely unthinkable.¹² Ideally, in a democracy, this represents also the consensus of society.

The truth is, the sooner we get people to Mars – even if there is not a return ticket for the time being – the sooner we will start being able to return from Mars. But does that mean that we should?

IV. CLASSIC PATTERNS OF GOVERNANCE IN A LATE-MODERN SOCIETY

Governance contains a connotation of social control legitimised in a democratic (capitalist) society,¹³ and is applied in a very broad sense not only to include associated with political structures, but also the conduct of children, souls, and communities.¹⁴ Simply put, to govern is to structure the possible field of action of others.¹⁵ *Society* in this context will be limited to a ‘western’ society. As a natural progression of Plato¹⁶ and Foucault, *behaviour* it will be defined as collective acceptable behaviour compelled by *voluntary conduct* with a *mutual sense of duty and obligation*.

On this basis, it can be concluded that ethical and moral structures are inherent within governance frameworks, thus begging the question: Which legal framework?

¹⁰ Outer Space Treaty, *supra* note 6.

¹¹ Robert Zubrin, *Human Mars Exploration: The Time is Now*, 12 J. COSMOLOGY 12, 17-25 (2010).

¹² C.A. Carberry, Artemis Westenberg & Blake Ortner, *The Mars Prize and Private Missions to the Red Planet*, 12 J. COSMOLOGY 4081-4089, pp. 321-332 (2010).

¹³ MITCHELL DEAN, *GOVERNING SOCIETIES: POLITICAL PERSPECTIVES ON DOMESTIC AND INTERNATIONAL RULE* (Open University Press, 1st ed. 2007).

¹⁴ Michel Foucault, *The Subject and Power*, 8 CRITICAL INQUIRY 4, 777-795 (1982)

¹⁵ *Id.*

¹⁶ PLATO, *REPUBLIC* (Benjamin Jowett trans., Barnes and Noble 2004).

V. GOVERNANCE: FORMING AS IT IS NEEDED?

The 1967 UN Outer Space Treaty remains the key international governance foundation, broadly sanctioned globally; upholding the principles of free space exploration for the benefit of all mankind. The overarching principles in the Outer Space Treaty have formed the basis for four additional treaties; the Moon Agreement undeniably being the most important one in relation to Mars colonisation, as it includes provision for establishing an international regime and to govern the exploitation of resources as this becomes feasible.¹⁷ The Outer Space Treaty also formed the basis for five guiding principles adopted by the United Nations,¹⁸ all developed in step with the *technological* progress,¹⁹ thus suggesting that governance, to some extent, is developing as it is needed. Meanwhile, human settlement in outer space is yet to forge the necessity for a firm governance structure. In relation to the development of space law, the question is whether it is happening fast enough to keep pace with technological developments, and what will be its bearing when it comes to our *actual* conduct in outer space.

The driver in an industrial late-modern society is capital, and lots of it. Financial and commercial sustainability will likely be the determining factors of the success of private space exploration. Despite Article 11 of the Moon Agreement articulating the equitable sharing of benefits with special consideration of developing countries,²⁰ there is controversy surrounding the issue of proceeds generated in space. There is concern that the treaty presumes that the peoples (nations) of the world are pledging to operate and behave differently in the space environment than they have been accustomed to on Earth, rendering the treaty highly idealistic and anti-

¹⁷ *Space Law Treaties and Principles*, UNOOSA (2013) <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>.

¹⁸ Vladimir Kopal, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies*, (2008), legal.un.org/avl/pdf/ha/tos/tos_e.pdf.

¹⁹ *Space Law Treaties and Principles*, *supra* note 17.

²⁰ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, U.N., Dec. 5, 1979, 1363 U.N.T.S. 3.

capitalist.²¹ Considering that asteroid mining enterprises are beginning to form, they may represent the next addition to space law with scholars observing that an element of ‘industry self-imposed’ governance structure may complement the current legislative framework.²² Notwithstanding the risk of amplifying the prevailing societal power structures²³ this development of more creative and nimble solutions, through what is fundamentally *spontaneous hybrid regimes*, including private and public partnerships, is reassuring.

There is a clear distinction in public versus private risk, especially when looking at types of risk, such as risk of bankruptcy, thus stranding global citizens in space, wherein levels of radiation (which rather bears the traits of a hazard) naturally would be the same, no matter the launch entity. Regardless of the type of risk, the UN would still be the right body to govern and legislate these risks under Article VI of the Outer Space Treaty, obliging states to authorise national space activities, hereunder licensing.²⁴

It can be argued that the legal frameworks for space formed so far, have focused on *technologies* and to a reasonable extent formed as they were needed. But as the European Science Foundation (ESF, 2013) has persistently raised²⁵ – and what this article aims to argue – with private space exploration just around the corner, what about the *humanities*?

VI. THE DIALECTICS OF HUMANITIES, CAPITALISM AND THE UNIVERSE

Ironically, despite the fact that Mars One is a non-profit organisation, given that the launch of Mars One is envisaged to be financed to a large extent through a TV reality show,²⁶ capitalism

²¹ Bill Sulzman, *International Law and Space*, GLOBAL NETWORK AGAINST WEAPONS AND NUCLEAR POWER IN SPACE, <http://www.space4peace.org/sl原因w/sl原因w.htm> (last visited Jan. 25, 2015).

²² Paul B. Larsen, *Asteroid legal regime: Time for a Change?*, 39 J. SPACE L. 2, 275-326 (2014).

²³ Oran R. Young, *Regime Dynamics: The Rise and Fall of International Regimes*, 36 INT'L ORG. 2, 277-297 (1982).

²⁴ Outer Space Treaty, *supra* note 6.

²⁵ ESF – European Science Foundation, *Humans in outer space (HiOS)* (2013), available online at: <http://www.esf.org/hosting-experts/scientific-review-groups/humanities-hum/strategic-activities/humans-in-outer-space.html>.

²⁶ MARS ONE, *supra* note 7.