Chapter 15

Human Planetary Exploration: Legal Aspects

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ABSTRACT

This chapter examines the legal implications of the ambitious plans to send manned missions to Mars and establish permanent human presence in outer space announced. It addresses the concept of “colonizing planets” and its potential consequences. It offers an overview of the applicable existing legal norms and presents a number of potential legal scenarios concerning the governance of permanent human habitant in outer space. Even though technology is not completely there yet, we should not wait for the space shuttle to be ready to board in order in the nearest future to start discussing potential legal frameworks required to govern multi-planetary existence.

INTRODUCTION

It is the year 2017 and Elon Musk, the CEO of SpaceX presented his ambitious plan to take humans to Mars, that is, for “Making Humans a Multi-Planetary Species”. (Musk, 2017) According to Musk, the time has come to “colonize” Mars. However, as exciting and appealing as this plan may sound, there are a number of issues that need to be resolved beforehand in order to get humans to Mars. The issues are above all of a technical nature, but they are not the only challenges that need to be addressed. Far-reaching ethical considerations and vital legal questions require concentrated attention as well.

In relation to a permanent planetary habitat, ethical dilemmas cover a very broad spectrum. They range from environmental reflections (e.g. would it be permissible to perform terraforming of Mars, especially using nuclear bombs to warm it up? What are the environmental repercussions of geo-bioengineering?) to humanity considerations (e.g. how are the first inhabitants to be chosen and who should decide this? Should there be a universal referendum or should private companies have the freedom of choice?). These ethical questions lead to the next logical step, that is, to pragmatic deliberations including, among others, the following questions: what is more desirable, developing a self-sufficient, independent Mars society or one that is Earthly bound? And how would these different scenarios e.g. affect human employment

DOI: 10.4018/978-1-5225-7256-5.ch015
and the distribution of natural resources on Earth? How would it be able to trade and under which conditions? These examples serve only to indicate the range of dilemmas that surround ambitions to make human presence interplanetary and that need to be discussed before such a mission takes place rather than afterwards, particularly since the space mission to Mars raises more fundamental questions than any previous space mission.

While humanity and society considerations are highly relevant and require reflection, they exceed the scope of this book. Therefore, the following chapters will present some of the substantial technical and legal issues related to the envisaged space mission to Mars.

**LEGAL BACKGROUND AND NEW LEGAL UNCERTAINTIES**

In the first phase of the Space Age, space technology was developing at a slow pace, there were only a few actors and possible space activities were very limited. However, nowadays, things are different. There are numerous new space applications that influence new business models and challenge the current legal framework. Furthermore, in recent years, the rise of private space actors is such that they have achieved a predominant role in the space domain. (Bank of America Merill Lynch, 2017) This dominance initiated a second space race, the race between various players in the private sector competing for national contracts and tenders. In addition, private actors are also competing for media attention. Therefore, they often make “sensationalistic” statements that run contrary to the well-established legal principles governing space activities.¹

In addition, rivalry tends to spill over from the commercial sector to the state, forcing governmental space agencies to enter the race with the private industry regarding break-through missions, i.e. human space exploration missions. The question as to who is going to be the first to deploy a manned mission to Mars has become another axis of the competition. This fear that the governmental sector has been left behind, has led to several public declarations announcing the refocusing of national space policies, increasingly towards human space exploration. This is exemplified by the United Arab Emirates’ (UAE) commitment to accelerate the global development of space exploration and space habitation through projects like UAE Mars City and the Mars 2117; as well as by the US Space Policy Directive 1, which provides for a government-led, integrated program, with private sector partners, for a human return to the Moon, followed by deep-space and missions to Mars. (Science Alert, 2018) (NASA Press Release, 2017)

Even though it is uncertain if private ventures will actually be able to make it to Mars before governmental space agencies, as it is they portrayed in the media, one should keep in mind that the required technology is currently primarily being developed by the private sector. In order for this technology to be utilized, it has to comply with all the legal requirements presently governing the conduct of space activities: meaning that operational features and materials used both need to comply with existing principles. In addition to these legal requirements, break-through missions, whether conducted by national agencies or private companies, often entail numerous legal questions that are not covered by the existing space law treaties (e.g. liability for space debris, ownership of extracted resources, refusal to cooperate etc.). Hence, these type of legal uncertainties may open a dangerous door to a legal grey area that can be misused. For example, some entrepreneurs are claiming that the ‘non-appropriation’ principle is only applicable to governmental activities, but not to private ones.

For this reason, it is important to identify legal voids from the outset and initiate discussions on how to solve them before any misconduct occurs and injured parties appear. In order to demonstrate what
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