

A LAND USE PHILOSOPHY FOR THE MERIDIANI REGION, WITH APPLICATION TO THE REST OF MARS

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Introduction: The surface of Mars, like the surface of the Earth, requires a framework for its management. Such a framework should take its basis from philosophical considerations (the environmental ethics of land use) and practical considerations (the practical value and use of land in the immediate vicinity of any human presence). In this paper I discuss some of the issues of importance and derive a generalised ‘two-tier’ land use policy that will allow for the implementation of cleanliness protocols (planetary protection), but the use of the land for construction and base development.

Two-Tier Land Use: The exploration of Meridiani, like the rest of Mars, carries with it the usual paradox caused by planetary protection - how do we explore and use the surface of Mars when it comes with the inevitable shedding of microorganisms from human spacecraft and spacesuits?

Ethically, there may be no reason to keep Mars completely free of human contaminants. If there is an indigenous biota, then provided that the biota is not threatened on a planetary scale, the localized contamination of the surface of Mars seems acceptable when considered from the point of view of the ‘interests’ of microbes. Similarly, on Earth, we do not consider individual microbes to have rights that merit protection (or else we could not live our lives), but we might well respect microbial communities (such as a community that lives within a lake). This notion of the acceptable destruction of individual microbes or even local communities of microbes, but a general reverence for large-scale microbial ecosystems and communities suggests that we attempt to minimize the contamination of the Martian surface where we reasonably can. I will discuss a simple ‘two-tier’ approach to Martian land use. This approach suggests that we divide Mars into two types of land use – areas where we minimize human impact and areas where we allow land to be used for the purposes of exploration/exploitation.

These two types of Martian land take their heritage from two different land use strategies on Earth. The land that is to be protected, preserved and where human impact is to be minimized takes its heritage from the National Park system on Earth. In this case they might be called ‘Planetary Parks’ [1]. Similar regulations that govern the protection of these lands on Earth might be applied on Mars with obvious modification for the specificities of the Martian surface. In these areas waste would be removed, human impact would be minimized [1]. If there is life it would be treated with respect and preserved, but even in the absence of life, we would still have respect for the land itself. The clos-

est analogy to the protection of Martian land in this way is the protection of land in Antarctica. Planetary Parks would protect specific regions of Mars, which might include Olympus Mons, Valles Marineris, the polar ice caps, etc., but they might also work at smaller scale, including, for example, local valleys or channels near to a Meridiani base camp.

The second type of land – land that is open to exploration and even commercial exploitation – takes its heritage from a Lockean land use policy on Earth. This view of land, developed by John Locke in the 17th century, emphasizes the notion of land ownership [2]. Land that is useful can be claimed and owned by those that find a use for it, and it can be developed in any way they see fit. In the 17th century this was a radical idea at a time when land in Europe was generally owned by local high-ranking dignitaries or by the monarch. John Locke’s ideas of individual land ownership gave people the incentive to productively open up new lands and indeed, the American constitution is heavily influenced by a Lockean view of the freedom of land use. It is a highly effective notion when applied to the opening of new frontiers, as it can accelerate the process. Unlike the early North American continent, Mars has no indigenous population and so a Lockean land-use policy does not bring with it the controversial need to address the needs of indigenous people. The use of Martian land can really be seen as a true manifestation of freedom of land-use. Martian Lockean land is all land that is not protected under a Parks system.

A two-tier land use policy provides a simple resolution of the problem of using land on Mars for human exploration and settlement, and protecting some regions of land to allow for the preservation of aesthetic/scientific potential. The two-tier land use is hardly a novel idea – it derives directly from experiences on Earth and the same conundrum (preservation versus land use) that has confronted people for millennia. However, its implementation on Mars, and with the opportunity for early discussion and planning, can provide a useful framework for dealing with the eventual human exploration and settlement of the planet.

References: [1] Cockell, CS, Horneck, G. 2004. Space Policy, 20, 291-195. [2] Locke, J. (1690). Two Treatises of Government.