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# PRIVATE HUMAN MISSIONS TO MARS AND INDIGENOUS LIFE: INSIGHTS FROM AN EARLY EMPIRICAL BIOETHICS STUDY AND THEIR RELEVANCE TO CORPORATE LEGITIMACY

**Abstract**

The rise of emergent space initiatives -especially of private ones- has begun to push the boundaries of the space industry, thanks to technological innovations that will soon be able to significantly facilitate the development of previously neglected pioneering fields, such as, for example, space research and exploration, space resources utilization, and human access to space. The invigoration and the forthcoming growth of this new space economy in the aforementioned pioneering fields are expected to bring forward important bioethical issues. In particular, a recent Planetary Protection-related survey in Greece brought forward interesting qualitative insights with respect to the bioethical aspects of private human activities on Mars and their interaction with potential indigenous life. One of these insights was the effect that such bioethical issues might have on the corporate legitimacy of future private space endeavors between Earth and Mars, at least according to the perception of members of the Greek adult population. For this reason, the purpose of this paper is to further explore the aforementioned insights with a dedicated empirical bioethics study. The practical application of empirical methods, especially of quantitative ones, in bioethics can be useful in investigating a wide spectrum of problems. In this study, the quantitative technique of hypothetical vignettes is being used, a method that has been used to examine and analyze critical ethical problems in the past. A vignette is a "short story about hypothetical characters in specified circumstances, to whose situation the interviewee is invited to respond". By developing a vignette specifically for this study and by embedding it in a relevant survey questionnaire, the respondents' attitudes and values in the context of the described situation are assessed. In particular, this study uses the constant-variable vignette method (CVVM) where identical scenarios are presented to respondents, followed by related questions. The created "private human missions to Mars" vignette is pre-tested in the field with a sample of subjects in Greece, and the generated data are processed using standard statistical methods. A future larger-scale and international application of this technique may generate necessary insights for the responsible alignment of future commercial activities on Mars with the values of various public groups around the world, thus helping space entrepreneurs prevent the precautionary obstruction of their endeavors by concerned local stakeholders on Earth, due to questioning of their corporate legitimacy.