

Exploration of Mars (08)
Mars Sample Return and Human Exploration (2)

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A SERIES OF ONE-WAY MISSIONS TO EXPLORE AND COLONIZE MARS

Abstract

Our long-term objective in space exploration should include the colonization of other planets. Colonization is a biological imperative and would allow us to survive future challenges ranging from human-induced disasters to natural hazards such as asteroid impacts. Mars, our Moon, and asteroids are feasible targets. Mars is the most desirable target because of its available resources, including water, oxygen, and essential minerals. The Red Planet is also the most explored and Earth-like planet beyond Earth with a substantial atmosphere affording substantial protection from radiation and, and reasonable surface gravity. We propose that the colonization of Mars should proceed via a series of one-way human missions. Only then can we ensure long-term commitment to Mars and space exploration, and a continuous human presence there. Though the Apollo missions were an immense achievement in human space exploration, they lacked commitment to establishing a permanent presence on the Moon, and therefore risk being relegated to a footnote in history. Return-missions for the Moon-landings were obvious and the cost-benefit ratios acceptable. The situation is very different for human missions to Mars. Mars is further away but also more life-friendly than the Moon. The benefit of a traditional return mission is questionable: the astronauts would not be able to stay long on Mars for exploration and the costs of sending a crew to Mars and back are prohibitive. In our view it makes more sense to start a Mars exploration program as follows: (1) Embarking on robotic missions to select a colonization site, lay foundations for a permanent base, and prepare for the arrival of the first human mission. (2) Launching a series of one-way human missions, with the astronauts becoming increasingly self-sufficient and less dependent on supplies from Earth. (3) Upgrading the human base to a fully-fledged colony once a constant shuttle service from Earth to Mars can be established with the capability of return trips. By eliminating the need for return journeys, costs would be slashed dramatically. Nor is there any lack of volunteers despite the risks involved, as we have discovered during our several years of campaigning for this concept. Scientists especially would be keen to go, given the fantastic opportunities provided for trail-blazing work. Global space exploration needs an inspiring goal. Our one-way to Mars program would be such a worthy endeavor, being a truly global humanitarian project whose benefits to terrestrial society would far outweigh the costs and dangers involved.