

IMPLICATIONS OF MANNED INTERPLANETARY TRAVEL

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ABSTRACT

Current trends would indicate that manned interplanetary travel will become a reality within the next fifteen to twenty years, beginning with the exploration and eventual colonization of Mars. The implications of this type of exploration must have a profound effect on the philosophies we use to extend our presence into the solar system. We stand on the threshold of becoming a polyglobal civilization and must realize that this threshold is the demarcation between short term Earth-Moon sorties and the long duration missions to other planets.

Man is a creature of gravity, it pervades his world and being so thoroughly as to be invisible. Invisible that is, until it is removed. The potentially devastating effects of microgravity have been hinted to by the longer duration missions of the U.S. and more so by the U.S.S.R.'s MIR missions. Decreased blood plasma volume, loss of red blood cell mass and the alteration of the red blood cells shape, loss of os calcis bone density, sustained loss of bone calcium and muscle nitrogen, space sickness and alterations to the immune systems, present us with serious questions that are just being addressed in depth.

The degradation of man's bodily functions in the absence of a gravitational field would seem to indicate the need for artificial gravity on planetary missions. This is of course currently being debated in the science community, though one must wonder if our logic is failing us. Is it ludicrous to think that a creature – ruled by gravity for millions of years – could function for extended periods of time without it? Should we allow limited national budgets or unrealistic schedules make us rush into an Apollo-type philosophical approach to interplanetary exploration?

As we begin our effort of extending our biota to other planets, let us develop a truly interplanetary ship capable of being enhanced over the years. A vessel assembled in space, designed for missions lasting years, providing gravity, radiation shielding and proven closed environmental system to take us there and back, time and time again. This paper will explore the key philosophical, psychological, and physiological issues that should be addressed regarding missions to Mars and beyond.