

FAR FUTURE (D4)
Human Exploration Beyond Mars/Interstellar Precursors Missions (1.-D4.3)

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NEED FOR PARALLEL SCIENTIFIC RESEARCH ON TERRA-FORMING

Abstract

The ultimate aim of space-exploration would be to establish human settlements in space- be it in the interplanetary space or on the planetary surfaces. While the former would entail huge orbiting spacecrafts relying on Earth or other celestial bodies for all its resource requirements, the latter (known as Terra-forming) would enable in-situ utilization of resources and hence provide an environment that would be more conducive for permanent settlements.

As technologies are being developed to send man to Mars (and probably beyond) over the next few decades, it becomes equally important to address technological and financial issues concerning the establishment of permanent human settlements in Space. The technological feasibility of Terraforming, which involves creating an unconstrained planetary biosphere that mimics Earth on another planet, is yet to be verified. Hence, it is imperative that the space-community address the issues concerning Terra-forming with the same vigor as developing a manned mission to Mars, so that when the capability to send manned mission is attained, human-colonies can established there without any delay.

From a philosophical point of view, the quest for actual realization of Terra-forming would help us in understanding and shaping our own planet. Even though the earth is currently a safe planet to live in, mega-problems such as global warming, depletion of natural resources, etc and the possibility of some catastrophic event, could pose danger to the civilization on Earth. The probable need for reformation (and restoration) our own planet gives a new purpose and direction to terraform other planets.

This paper would address the need for enhanced scientific research into the technological issues concerning Terra-forming, parallel to the development of manned mission to Mars and beyond, so that human-settlements in space would become a reality soon.