

HUMAN EXPLORATION OF THE SOLAR SYSTEM SYMPOSIUM (A5)
Long Term Scenarios for Human Moon/Mars Presence (2)

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THE DESIGN OF INTELLIGENT DEVICES AS MOON OR MARS BASE

Abstract

The place of man in space is considered to be the instrument by which he acquires knowledge. The conception of an intelligent architecture (dynamic, interactive, organic and with a controlled ambiance) on Moon or Mars should be looked at as an ideally oriented device that propels cognitive process and allows to acquire knowledge to the occupants. The aim of this exercise is to determine the architectural form of this ideal device, which permits a global and very precise perception of the extreme environment, and at the same time to build a better understanding that will lead to a greater adaptation of this sustained colonization.

The design of intelligent devices in the extreme environments is a result of close collaboration (an exchange of different hypotheses and analytical data) between engineers, architects and psychologists. The analysis of Moon or Mars base architectures includes the projects presented in the final report of the *IRS space station design workshop 2009*, held in Stuttgart University. For this workshop a large team was formed by beginners and experts. During this workshop I had a chance to face the problem of a structure without window facilities owing to radiation levels in a mission for a long period on the Moon. The problem was solved in a holistic and multidisciplinary approach including the human factor, with different ideas. One of the solutions was to simulate perception with principles like camera obscura or periscopes.

This paper investigates about how the architectural form of a Moon or Mars base well adapted to his environment emerges from biomorphism of human senses of perception in a kind of "morphogenesis" based on the stages of the cognitive process in order to achieve a sustainable manned mission architecture.