

23rd SYMPOSIUM ON SPACE ACTIVITY AND SOCIETY (E5)
Moon, Mars and Beyond: Analogues, Habitation and Spin-Offs (2)

Author: Mr. Waltraut Hoheneder
LIQUIFER, Austria, whoheneder@liquifer.at

Dr. James Burke
The Planetary Society, United States, jdburke@caltech.edu
Dr. Anna Barbara Imhof
Liquifer Systems Group (LSG), Austria, bimhof@liquifer.at

THE HUMAN SENSES IN LUNAR HABITAT ARCHITECTURE

Abstract

The architect of a lunar habitat is challenged to create surroundings that enhance not only the physical health and work potential of people but also their psychological, social, aesthetic and overall well-being. In previous studies the present authors, with various collaborators, have examined ways to engage the senses of sight, sound, smell memory and taste for these purposes. We have offered ideas about visual arts and sculpture, dance in lunar gravity, the remembered aromas of natural plants and the recall of peaceful symbols as stimuli. We have also explored the relationship of socio-psychological factors and the very technologized habitat space. Here we intend to add in the sense of touch, including its thermal, proprioceptive and kinesthetic aspects, to describe and advocate the architectural elements of a beneficial and enjoyable total sensory experience.

Especially in sensory deprived places or life-times our health depends on a multi-sensory environment to perform according to our mission goals. This research will analyze analogue and digitally enhanced, mechatronically steered interfaces which present a suitable sensoric stimulus to support interior spaces and technology interfaces when being exposed in a Lunar outpost. The authors investigate examples and experiments which can be a starting point for lunar habitat design and show a range of possibilities for haptic, proprioceptive and kinesthetic experiences. Especially in environments where gravity differs from 1g, e.g. partial gravity on the Moon, the body movement, orientation and all other senses are so divergent from the ones we are normally used to. Thus they have major implications in our daily life, therefore it is essential to study and anticipate them before designing and establishing Lunar bases.

The paper will explore this field of sensation of movement, touch and related cognitive aspects and will show the value of incorporating them into a design when developing outposts in space for long duration missions.