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**LUNAR ZEN GARDEN - NATURAL DESIGN AS A KEY FOR RELIABILITY
IN SPACE EXTREME ENVIRONMENT**

Abstract

KEY WORDS: well-being, long duration space mission, art therapy, psychology, fractal.

The human biorhythm in outer space, its sensory perception and all its psychophysiological systems, become completely upset by the difference of gravity, absence of natural terrestrial stimuli, constraints of a limited space, isolation, natural radiation etc. For a long duration mission, a traditionally well-trained astronaut/cosmonaut will not be sufficient for mission success. We must utilise “human centered design” to create a psychologically familiar environment and natural biological stimuli in order to reduce the stress, increase the well-being and obtain productivity, and reliability to guarantee mission success (as explained in the NASA STD Cap. 8, from 1995).

All these factors have to be considered in the new and expanding areas of space tourism, and long duration exploration; astronauts/cosmonauts are not only workers but also a soul. Well-being, art and design are the key words that can be match trough the concept of Natural Design as a Zen Garden.

Natural Design is a discipline based on natural elements. Structures could be created to guarantee human reliability in an extreme context, such as a long duration mission on the Moon. The application of Natural Design will utilize the natural elements present in the environment to create, with a philosophy of elementary structure, context of art and design interaction that will increase the well-being. In this context we have elaborated the Zen Garden concept as a design concept that forecasts the variety and the variability of terrestrial stimuli. Its composition could have a basis on the fractal natural structure, and the material utilised are rocks and sand, that are in lunar materials. Therefore, this is an application of the Natural Design methodology.

A Zen Garden on the Moon is a symbolical evocation of the importance of calm, meditation, energy, happiness. All these elements are a part of human culture. In this extreme context where one of the main problems is stress, this factor is fundamental to avoid the collapse of this “working machine” that is the human being. ”Natural Design” is also an approach to benefiting psychology and biology in this environment by evoking concepts such as motivation, emotion, inner feeling, development, adaptation and references to descriptions of patterns which are a part of the cosmos. It has its roots in philosophical behaviourism.