

Living in Outer Space: Anthropology and Proxemic Methods for Human Adaptation Analysis in Microgravity Environment

M. Ferrino

Alenia Spazio S.p.A. Torino

The Space Station (ISS) is a combined Laboratory-Office/Home and embodies ethical, social, and cultural aspects as additional parameters to be assessed to achieve a user centered architectural design of crew workspace (fig.1). With regard to group interaction as well as individual needs in terms of time, space and crew accommodations, cultural and physical anthropology's methods are needed to collect life style patterns and human adaptation trends living in "Space". Here are highlighted our experience applying a Proxemic approach (E.T. Hall, 1966 and F. Pregnolato, 1998) and a comparative study to define the adaptive human interaction variables and micro evolution mechanism trend in microgravity environment (Lombard et al, 2001). Both approaches might be contributed to a Human Centered Design approach in a multi-disciplined perspective. The interrelationships between the physical environment and human behavior reflect a variety of theoretical perspective and should play a important role to solve the gaps in the present knowledge and to indicate the directions for future research.

Crews members belongs to different cultures, way of life and consequently they use different behavioral strategies to communicate and using space, this fact, introduce a *infra-cultural* condition which is strongly modified with respect to Earth. Considering the *neutral body posture* and the restraint needs to perform a task, also the visual perception, gestures, and social distance are redefined on orbit. As example, in fig. 2 is showed how, the different body orientation used in task activities suggest the possibility to review the accessibility and operability requirements and to re-orient future workplace design based on the «on orbit» social space index like as

orientation, proximity and visual interaction.

Therefore, time, space, social roles and task typologies need dedicated tools to define a new index of socialization and comfort to orient innovative design concepts. A comparison was made between the «neutral body posture» as a *natural* and adaptive posture on orbit and the body postures which astronauts actually assumed in microgravity working on Laptop. (Burzio et al., 2002). In the future, an active and continuing feedback with the astronauts will be necessary, to organize a homogeneous data base representing groups living in space, their shared ideas, images, and cognitive schemata. From this point of view seems important to redesign habitability criteria *versus* future conceptual design starting from the real needs and life conditions living in extreme environment thinking that, as E.T. Hall said «*Cultures won't change unless everyone changes. There are neurological, biological, economic, historic and culture psycho dynamic reason for this*».

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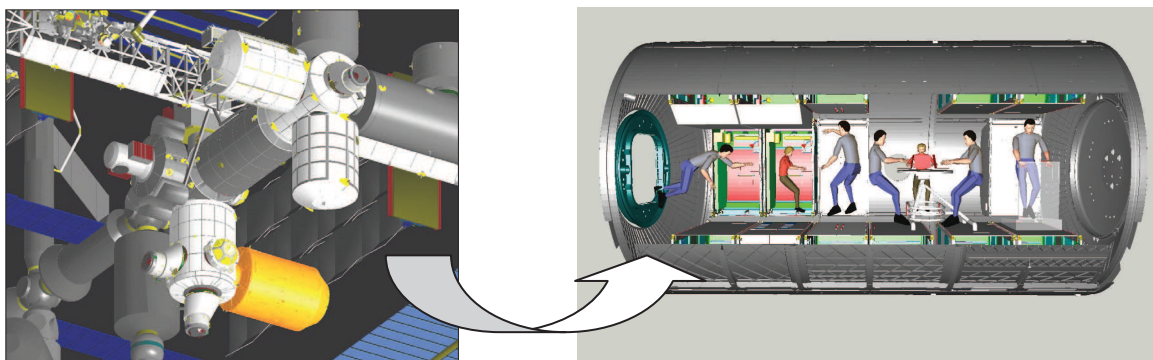


Fig. 1. Habitation Module interior design layout.



Fig. 2. Team work activities on orbit (with courtesy of NASA)

Evoluzione della postura umana comparata a quella del *Proptithecus* in funzione dell'adattabilità all'ambiente microgravitazionale: ipotesi interpretative. Lo studio dell'Uomo verso il Terzo Millennio. Croce di Magara. Spezzano Piccolo (CS), 25-28 Settembre.
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