ExoLab Space Mission Simulation: Expanding life with art & science

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Abstract

In the context of building a minimum autonomous modular architecture for the Moon & extreme environments on earth, a simulation has been performed considering also the potentiality for Art & Science applications. In specific ExoHab and ExoLab has been equipped as technical mockup at ESTEC for multidisciplinary mission simulation [1,2, 3].

1. Introduction: Art in Space

Space must be a place for both scientific and cultural applications,. "Art in Space will give a new dimension to the artistic production expanding human culture" (B. Foing in [4]). In this context, Art & Science has been selected as a high potential form of art to use Space as a media. The use of Space as a media could extend the scope of art & science crossovers and generate new forms, ideas and applications for both the space industry and the arts.

1.1 Art & Science

As explained by the Royal Academy of Art [5], artists specialized in art & science are artists who translate their experience of the world into visions that could enhance the quality of life with future forms of art. Those artists are inspired both by art & science and are able to create new form of medium for art project. In particular by questioning the human-environment relationship from both artistic and scientific point of views, those artists propose to develop new mediums and new ways to apprehend space missions. A form of collaboration in "which scientific concepts are seen as a kind of 'content', and where the artist translates these concepts into images, sounds or other experiences" triggering radically new kinds of artistic development [6] .

2. The simulation

On 29 May 2015, a simulation procedure, structure and equipment were prepared as technological mock up to perform a space mission simulation. A team of nine members was invited by the ILEWG to address specific tasks inside the simulation verifying how persons from different humanistic and technical fields could bring an added value to space mission.

2.1 Crew structure & background

The crew has a classical task and hierarchy structure, but with members from different humanities & scientific fields, divided between: remote support, ExoHab & ExoLab module and ATV observatory.

- **Remote support**: Campaign director (Bernard Foing – science, technology & logistics), Commander (Irene Lia Schlacht - design & engineering), Mission support (Jolanda W. Preusterink – operations and education)
- **ExoLab:** Executive Officer (Miha Tursic - art); Crew Engineer (Desmet Guillaume - Engineering architecture); Health & Safety Officer (Eva Petric - art & psychology)
- **ExoHab:** Crew biologist (Spela Petric - bioart)
- **ATV observatory:** Crew astronomy specialists (Ludwig Pasenau - exoclimatic art); Crew scientist (Natali Blugerman – Art & Science)

2.2 Crew tasks

During the simulation the crew in EVA performed research of form of life, while the crew astronomer and biologist worked on their field of research

getting inspired also on cultural application. During the EVA it was plan a communication break down and two astronauts in EVA perform a safety emergency procedure while the crew biologist and the crew health & safety officer were left alone each in one of the module trying in reconnecting the communication. The crew member left alone experienced psychological reactions related to the feeling of isolation. We summarise here results relevant to artistic inspiration derived from the simulation.

3. Results

The simulation inspired the members on cultural and artistic level:

• Executive Officer Miha Tursic: performing EVA search for life forms was inspired by questions of developing new life or life-like forms to inhabit the Moon or other planets.

• Crew scientists Natali Blugerman: performing EVA & planet observation, was inspired on her project on ice observatory as connection between human and space with elementary elements such as ice and fire developed with ice lens.

• Crew astronomy specialists Ludwig Pasenau: performing a telescopic solar observation to prevent the crew from radiations, was inspired by a video (Image1) shooting of the sun and the atmospheric activity to develop a series of space weather videos. These works could nurture an exoclimatic art project for future astronauts engaged on a long duration mission.

• Crew biologist Spela Petric: providing communication support for EVA team, was inspired on a new artistic concept on difference of growing biological life in the different planets of our solar system

• Health & Safety Officer Eva Petric: being isolated in the ExoLab module, giving access to her body perception and inside, was inspired a text on her sensory perception.

4. Conclusion

Image 1: Space Weather Artistic Video, © Pasenau.

During this simulation, the members from different art & science background could perform the mission tasks and found inspiration to new cultural applications with art & science.

Acknowledgements

International Lunar Exploration Working Group (ILEWG), ESA ESTEC, Politecnico di Milano,) PR Observatory Copernicus, KABK, KSEVT, LLA-CREATIS/CRISO, Université de Toulouse, University of Liège, DELO Journal.

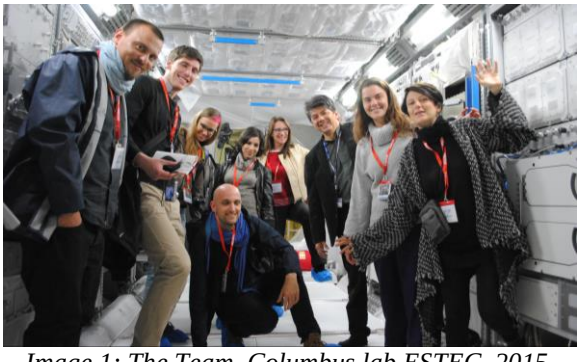

Image 1: The Team Columbus lab ESTEC, 2015.

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