

Opportunities for and tasks of the decision-makers

Human Space exploration is a journey into space and, in the end, a journey to ourselves, the human being. People around the world engage in exploration ultimately for the same reason, though, coming with different cultural backgrounds, they describe their diverse views in different words. The innate desire to explore, know and understand our surrounding is a "conditio sine qua non" for humankind to grow. The human being will venture further into space, if not today then tomorrow. The expansion of life into the universe follows an almost ethical imperative.

Decision-makers are called upon to regard the support of human space exploration as a task which goes much further than supporting technology development. It is no utilitarian means, but it is a quest. The fact that the different cultures around the globe share in this quest, should make it clear to decision-makers that in supporting space exploration they must not and cannot compete with other actors but should take this trans-cultural quest as a global endeavour. This knowledge should be translated into further public support in our societies for human space exploration.

This Statement provides the rationale and the substance for bold steps into the future and encourages and supports decision-makers in driving the cause of human space exploration further by highlighting its transcultural dimension.



Participants of the workshop (from left): Sergey Avdeyev, Mamoru Mohri, Jean-Marc Comtois, Gerhard Thiele, Spyros Pagkratis, Jean-Francois Clervoy, Jeff Hoffman and Takao Doi

About the Authors

Sergey Avdeyev is Professor at the "National Nuclear Investigation University (MEPhI)", Moscow. He flew between 1992 and 1999 three long-duration missions to the Russian Space Station MIR, his last flight spanning more than one full year (August 1998 – August 1999).

Jean-Francois Clervoy is currently the Chairman CEO of Novespace which organizes microgravity research flights on board the Airbus A-300 ZERO-G. A member of the European astronaut corps since 1992, Clervoy flew three space shuttle missions, including a repair mission to the Hubble space telescope.

Jean-Marc Comtois initially trained as an Engineer at the Royal Military College of Canada (RMC). He became a physician and served as a flight surgeon in the Canadian Forces and subsequently at the Canadian Space Agency (CSA). Comtois is currently the Director - Astronauts, Life Sciences and Space Medicine at CSA.

Takao Doi is the chief of the Space Applications Section at the United Nations Office for Outer Space Affairs (UNOOSA). Doi was a former JAXA astronaut from 1985 to 2009 and flew two Space Shuttle missions, including the first assembling mission of Japanese Space Station Module "Kibo."

Jeffrey Hoffman is Professor in the Department of Aeronautics and Astronautics at MIT. An astronomer, Hoffman was a NASA astronaut from 1979 to 1997 and flew on five Space Shuttle Missions, including the Hubble Space Telescope repair and service mission in 1993.

Mamoru Mohri is the Chief Executive Director of the National Museum of Emerging Science and Innovation (MIRAikan), Tokyo, Japan. With a broad experience in chemistry, Mohri was a JAXA astronaut from 1985 to 2000 and participated in two Space Shuttle missions.

Gerhard Thiele is Research Fellow at the European Space Policy Institute. His current research focuses on Human Space Exploration and its relations with the humanities and social sciences. A physicist, Thiele was an astronaut for more than 20 years and flew on a Space Shuttle Mission in 2000.



Palais Fanto
Schwarzenbergplatz 6
(Entrance: Zaunergasse 1-3)
A-1030 Vienna, Austria
Tel +43 1 718 1118 -0 / Fax -99

www.espi.or.at



Human Space Exploration — A Quest of Cultures around the World

Sergey Avdeyev

Jean-Francois Clervoy

Jean-Marc Comtois

Takao Doi

Jeffrey Hoffman

Mamoru Mohri

Gerhard Thiele

October 2010

Statement by Space Explorers on Human Space Exploration

The urge of human beings to transcend boundaries, be they physical or intellectual, is apparent throughout our history. Today one of its most visible manifestations is the endeavor to leave Earth and travel into space. Persons from 41 (49)¹ countries have already gone to space. Countries from around the globe have joined their forces to build the International Space Station. Societies from both the East and the West have in the past decades engaged in this bold endeavor despite their very different historical, philosophical and cultural backgrounds.

We can ascertain that

- Humans have a multitude of reasons to go to outer space
- People are looking at exploration in different parts of the Earth in diverse ways
- Common drivers can be identified regardless of our diverse cultural backgrounds
- This diversity of reasons and cultural backgrounds enriches the case for human space exploration

The anecdotes and accounts of witnesses of the first landing of men on the Moon are countless: Apollo 11, while carried out by one single nation, was in the end a global event. People walked through the Brazilian rainforest for miles and miles to witness this historic event on the only TV screen far and wide. Others took pictures of the TV screen to somehow catch a memory of an event which was felt as singular in human history.

The meanings of “exploration” in various cultures

Although the fascination for spaceflight and exploration is apparent in all cultures, it is by no means clear that we mean and understand the same when we speak in different languages about “exploration” and especially “human space exploration”.

While the word “exploration” is commonly used in the English languages in the context of “Human Space Exploration”, it has no literal translation in many other languages. For example in the Russian language the words “исследование” or especially “дальняя разведка” suggest that exploration refers to covering distances. “разведка” could be understood as reconnaissance, scouting, fieldwork, or trial, and may be closer related to the German “Erkundung”. “исследование” could be translated as research, investigation, study or analysis; all these translations, of course, encompass part of the exploratory activity – however, translations may not reflect the meaning of the word as used in the English language.

Likewise, in the Japanese language a direct translation for exploration does not exist. The Japanese word for exploration “tanken” emphasizes “search” and “discovery” (from the first syllable “tan”) as well as “commitment” and to some extent “hardship” (from the second syllable “ken”). It appears that a literal translation of “exploration” into other languages is not always easy, if possible at all. Therefore it is more appropriate to describe the meaning of the word “exploration”.

As any language reflects the cultural background which has developed and shaped a given language over centuries and many generations, it is obvious that the attempt to describe what is meant by “exploration” is a reflection of a given cultural background.

And as the cultural heritage is manifold across the many nations and societies on Earth it is clear that a multitude of connotations are associated with “exploration” or its equivalent in other languages.

It is all the more meaningful and significant that despite this multitude of viewpoints, humans around the world engage in the same activity. It follows that common underlying beliefs or concepts exist, even though the words used in the various languages and countries differ.

“Exploration” reflects the innate human desire and need to increase one’s experience, knowledge and capabilities. This gain in experience lets us not only better know and understand our environment, but in the end it leads to a better understanding of ourselves as human beings.



Exploration as a quest of humankind

From this understanding several conclusions can be drawn: “exploration” describes the quest to search for the unknown or not-yet-known without the expectation that a specific question is being answered. Searching for answers to clear-cut questions is rather the realm of science. However, limiting exploration to scientific questions alone not only narrows but even reduces the prospects for the gain of new knowledge, as it neglects the emotional part of how a human being behaves in and interacts within his environment. The multifaceted nature of potential human interaction with his surroundings cannot be duplicated remotely. The act of exploration involves all human senses, as limited as they may be in a given situation. Touching a Moon rock through the gloves of an EVA suit may not be identical to weighing the rock in your bare hands. Nevertheless, it still involves the tactile sense of a human being, allowing him to integrate this experience with his previous experiences and thus can lead to a creative and unique course of action and behavior, which is characteristic of human beings.

The attempt to increase our knowledge has an immediate effect first on our individual education and, later on and consequently, on the cultural development of our society. This expansion from an individual experience to a raised level of cultural awareness in our society demands the need and the will to share one’s experiences. Exploration and knowledge remain pointless, if this experience is not being shared with others. The most frequently asked question after astronauts and cosmonauts return from space is: “What was it like to be in space?” While the questioner cannot experience weightlessness in a physical sense by listening to the words of an astronaut, he or she may be able to relate to the narrated experience in terms of his or her own experiences. In the future, it is hoped, more and more people will be able to share this experience too.

It follows naturally that this sharing will indeed increase and significantly enhance the cultural development of our societies. One could even argue that the realization of our innate desire to explore will lead to further developments in the cultural level of our societies.

It is frequently mentioned that human space exploration in the end manifests the urge of the species to survive. Such a concept is at least suspect from the view of an Eastern society: in the understanding of Eastern philosophy every life form, being part of nature, lives in harmony with nature. Science has taught us through genome research that all life forms are connected. Therefore the notion of survival of only human beings through exploration can be seen as an attempt to control nature instead of living in harmony with nature. Nevertheless, expanding life into the universe is a coherent step in evolution.

The development of life and of a life form which is able to reflect upon itself and its surroundings must be seen as one of the most if not the most wondrous development in evolution. Furthering this development by expanding life into the universe could be seen as an almost ethical imperative.

Levels of human interaction in exploration

Exploration can occur with different levels of human interaction with the environment being explored. Humans originally explored the skies using telescopes, and most of the universe can still only be studied this way. Telescopic exploration is passive and puts the human into an observer’s role, who does not interact in any physical way with the subject that is being explored. In a second step humans can send robots to foreign worlds to investigate yet unknown heavily bodies.

This kind of exploration allows for some limited interaction, due to our limited technology and, in a more fundamental way, due to the limitations of the speed of light. It is however apparent that both mentioned exploratory forms, which demonstrate the imaginative use of tools by the human being, lack the real-time direct interaction in situ and with all human senses. This emotional quality of exploration can only be assured by the physical presence of the human being. Consequently, human space exploration in its full richness can only be supplemented and cannot be replaced by any of the other exploration methods.

The International Space Station

Today, countries around the world have joined in building the largest infrastructure outside our home planet, the International Space Station (ISS). Despite the many hurdles, difficulties and hardships which had to be overcome to make this undertaking happen, the ISS marks a milestone in the human urge to explore the universe. As such, the ISS follows in the huge footsteps of the first spaceflight of a human being (next year we celebrate the 50th anniversary of Yuri Gagarin’s flight) or Apollo, when human beings landed for the first time on another celestial body. The impression and impact, which these, until today, unparalleled exploratory milestones made on humans in all countries of our home planet, show unambiguously that human space exploration is not merely an international, but a truly global endeavor.

¹ The correct number depends on how to count cosmonauts: some have flown as a Soviet or Russian citizen though being born in countries which are today independent.