

THE OVERVIEW EFFECT:
A STUDY OF THE IMPACT OF SPACE EXPLORATION
ON INDIVIDUAL AND SOCIAL AWARENESS

Frank White
President, Human Systems Incorporated
Newton, Massachusetts

Abstract

This paper discusses the changes in awareness caused by spaceflight in astronauts, cosmonauts, and society as a whole. The paper reports findings based on interviews with sixteen people who have been in space as well as an examination of secondary materials. The Overview Effect is defined as viewing the Earth from space and experiencing its inherent unity as a whole system. In addition, other changes in awareness are described, as are the conditions producing the shifts in perception. A series of propositions is offered as the foundation for continuing research into the philosophy and psychology of the new civilizations now being created on Earth and in space.

I. Background

Research conducted by the Space Studies Institute and others strongly suggests that space settlers will live differently from human beings on Earth. It appears that humanity is about to make a decisive break with the past, moving into a wholly new environment and opening up unprecedented evolutionary opportunities.

Space settlers will use non-terrestrial materials to build their habitats, draw on abundant supplies of energy to power their societies, and experience the freedom of life in space. Will these new humans think differently as well? Will their physical removal to a different place in the universe encourage them to develop a new philosophy of life, a different psychological structure, even a transformed spirituality?

Logic suggests that the answer is yes, but how can we know the ways in which life in space will be different from life on Earth? In addition, we need to know how space development affects not only those who go into space, but also those who do not. In order to answer these questions, the author proposed a research program at the Sixth Space Manufacturing Conference in 1983. The goal was to examine the relationships between human systems and space settlement, starting with research into the behavior of human systems in space.

The focus of this first phase in the project has been to identify the critical elements of living in space, especially those that would impinge on how human beings comprehend reality.

At the Seventh Conference on Space Manufacturing in 1985, the initial results of the research were presented in a poster session on the Overview Effect. At that time, the Overview Effect was defined as the first stage in changing awareness resulting from the experience of spaceflight. The effect derives from the experience of seeing the Earth from space, and the resulting experience of our planet as a unified whole, without borders or boundaries, except those imposed by nature.

Since the initial report on the Overview Effect in 1985, the author has extended the research by interviewing sixteen people who have been in space, and has supplemented these interviews with excerpts from secondary sources. The focus of the work has been to learn more about the spaceflight experience and to consider its implications for future societies on Earth and in space.

The detailed results of this work will be published in a book in November, 1987. (1) In this paper, findings to date are presented in a way that should be of particular interest to readers interested in the development of large scale space settlements.

II. Method

Some 200 human beings have now been in space for periods of time ranging from 15 minutes to several months. While citizens of fifteen different terrestrial nations have flown in space, the dominant spacefaring cultures remain the United States and Soviet Union. There is a reasonable body of secondary sources on the spaceflight experience, including books by the American astronauts and extensive diaries by the Soviet cosmonauts.

Research for this project included an investigation of these sources, but much more remains to be done in this area. The sample of sixteen interviews included active and retired career astronauts, payload specialists from various countries and companies, and a Senator and a Congressman. As of May, 1987, only one of those interviewed was not from the United States (Marc Garneau of Canada) and none of the women astronauts has yet been interviewed.

Interviews took place in person or on the telephone, and lasted from 20 minutes to 2 1/2 hours, depending on the astronaut's available time. The final interviews were reconstructed from notes or tape recordings and then submitted to the astronaut for corrections.

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The interviews were conducted in a free-form manner, but a few key questions were nearly always asked:

- (1) Describe the experience of seeing the earth from space;
- (2) Describe the experience of weightlessness;
- (3) Did your sense of time change while in space;
- (4) What effect will space exploration have on the future evolution of human society;
- (5) If you could communicate a single thought about space exploration to others, what would it be?

These questions elicited a range of responses, and the variety in the answers is itself instructive. However, it is also possible to determine the common components of the spaceflight experience. Out of this set of insights, we can develop a series of propositions to be tested by our continuing research.

III. Propositions about the Spaceflight Experience

In this section, our propositions about the spaceflight experience are discussed in more detail.

1. Most space travelers do experience the Overview Effect.

The hypothesis that shifting one's physical point of view to a different location in the universe would affect one's thinking about reality is confirmed by the interviews with people who have been in outer space. To be sure, the general assumptions could be confirmed by talking with people who have never been off the earth (mountain climbers, for example). However, there is no shift in perspective on the surface of the earth that allows the human mind to experience the very powerful perception of the whole earth as a system.

Astronauts consistently make the point that while they already knew, intellectually, that the earth was a whole system without boundaries or borders, being in orbit allowed them to experience this reality, and this makes a difference.

A typical expression of this feeling is a shift in how personal identity is expressed. Apollo 9 astronaut Russell L. Schweickart has pointed out that orbiting the Earth in an hour and a half brings you to the realization that your identity is with the whole planet. (2)

Since personal identity is the foundation of an individual's psychology, the finding that being in space can catalyze a shift in identity is significant for the future. It suggests that returning space travelers will begin to exert transformational influences on Earth's society, and that space-based civilizations will operate out of fundamentally different paradigms.

Former shuttle astronaut Joseph P. Allen has suggested that looking back at the Earth may have been the most important reason for going to the moon, even though no one would have thought so at the time. (3)

2. In addition to the Overview Effect, space travelers experience other changes in consciousness.

One of the most important findings of the research is that there are other shifts in perception in addition to the Overview Effect.

When a person is in space, there is the opportunity not only to look back at the Earth, but also outward to the solar system and beyond. Once the shift in identification begins, it is a natural progression from Earth to the solar system and then beyond to the galaxy and universe.

I have called the identification with the solar system the "Copernican Perspective." This is a realization that Copernicus was right, and that the Earth is not only a whole system unto itself, but is also an integral part of the solar system. In addition, the sun, rather than the Earth, is the center of that system.

I have called the identification with the universe as a whole "The Universal Insight," a realization that the solar system is a part as well, not only of the galaxy, but also of an infinite and eternal universe.

Consciousness is essentially an awareness of "self" as distinct from "other," and the experience of self depends on the experience of the other to which one is related. Thus, a person whose consciousness is defined principally in relationship to a small town, with little awareness of the outside world, will have a different consciousness from a person whose self-awareness is defined in relationship to a metropolitan area or an entire country.

Similarly, as human beings open up their awareness to our role in the universe, our collective consciousness is likely to change. While this may not have been the original purpose of space exploration, it may become the most important result.

Apollo 14 astronaut Edgar Mitchell has pointed out that, while his moon journey was a magnificent technical achievement, it was only a hint of the ultimate result of the trip for him, which was a realization of humanity's place in the universe. (4)

3. Changes in awareness are affected by many variables, including type of mission being flown, type of person on the flight, and individual attitude.

The space age that began with Sputnik is only thirty years old. However, spaceflight offers a wide variety of experiences.

The possibilities include brief suborbital hops, shuttle missions lasting several days in Low Earth Orbit, semi-permanent stationkeeping in orbit, and journeys to the moon and back. These different types of missions produce different changes in astronaut awareness. For example, it appears that going to the moon is an experience more likely to produce profound changes than orbital missions.

Missions into Low Earth Orbit do not allow the astronaut or cosmonaut the opportunity to truly view the Earth as a whole. In addition, short orbital missions are so packed with activities that the space traveler does not have much time for looking out at the Earth or reflecting on the experience.

In long duration orbital missions, there is a "sameness" to each day, which appears to reduce the sense of the experience as being special. However, those on long missions have a greater opportunity to integrate "Earthgazing" into their everyday lives on orbit.

Extravehicular activities (EVAs) are among the most powerful catalysts for personal changes in awareness. Outside the confines of the spaceship cabin, immersed in the deep silence of space, gazing directly at the home planet, the astronaut or cosmonaut is flooded with new information. Going EVA allows the space traveler to experience not only the lack of boundaries on Earth, but the experience of the universe itself without "frames or boundaries," in Schweickart's words. (5)

Lunar missions provide the chance to see the whole Earth getting smaller and smaller as the spacecraft heads for the moon. It also provides the contrast between the lifeless moon and the earth, which is so hospitable to life. Both on the outbound and return trips, there is quite a lot of time for the astronaut to reflect on the meaning of the experience. Finally, some of the lunar astronauts have gone EVA on another planet, still the most unique of spaceflight experiences (only twelve humans having done it.)

While the type of mission is important in terms of effects, so is the type of person. A variety of people have now gone into space, moving the sample of space fliers beyond the original mold of military test pilots. While NASA's program to increase citizen participation in the program has stopped with the Challenger accident, a number of non-career astronauts have flown. One would expect that the payload specialists who have recently ridden on the shuttle, with less training for the experience and being more open to it, would feel the impact of spaceflight more strongly.

In fact, the attitude of the experiencer may be the most important variable of all. Regardless of background and training, if one is willing to accept any experience without prejudging its meaning, the experience is likely to have greater impact. (6)

4. The barrier to disseminating knowledge of the Overview Effect is not the ability of the astronauts to communicate, but our inability to hear what they are saying.

It has been said that the astronauts are not very effective in describing the spaceflight experience because they are trained as pilots or scientists, rather than as communicators. We should therefore send poets and philosophers into space to understand what it is like.

Even a brief look at the evidence demonstrates the inaccuracy of such assumptions. While in space, astronauts concentrate on the mission at hand and do not spend time describing their feelings about the view or weightlessness. Back on Earth, however, many of them have written books, given talks, appeared on television, and been interviewed by writers about the experience.

The astronauts are often quite articulate in their communication. Books such as Michael Collins' Carrying the Fire and Joe Allen's Entering Space are good literature and bring the experience home effectively. The Soviet cosmonauts keep diaries on their long duration missions that are often poetic in their descriptions of their feelings about what is happening to them. Shuttle astronaut Jeff Hoffman took a tape recorder into space and made a real-time diary of the experience that is an excellent representation of life in space. (7)

The principal barrier to communication about spaceflight is that there has not been a shared context within which astronauts and non-astronauts could exchange thoughts. The listeners haven't been weightless or seen the Earth from orbit, or gone around the planet in ninety minutes. In the early years of spaceflight, they also had very little beyond the astronauts' words to help them, but that is now changing and the context is being created. Not only is a greater variety of astronauts going into space, but there are now films, posters, slides, and simulated spaceflight experiences available to help the listener grasp what is being said.

5. The dissemination of the Overview Effect to society as a whole may be more important than the individual experiences of the astronauts themselves.

Our research originally focused almost exclusively on the personal experiences of the astronauts and cosmonauts. As the work continued, it became clear that the societal impact would have as much long-term importance as the psychological effects, and that the two were closely linked.

While the individual experiences are fascinating, they can be given any number of different meanings, depending on how they are interpreted. Society draws general lessons from the experiences of its leading members, and this making of meaning guides future generations.

Only a few human beings have gone into outer space and had the direct overview experience. However, millions of people have seen the pictures of the whole Earth taken by the astronauts, or viewed the film, "The Dream is Alive." As a shared context is created that bridges the Earth and space environments, the shift in perspective reported by astronauts and cosmonauts is taking place for society as a whole. This is in turn supporting a global transformation in the awareness of the human system known as humanity.

A culture's understanding of social identity is linked with identification of self and other in a manner that is analogous to that of the individual. For the past few hundred years, social evolution has focused on the relationship of nation-states to one another. However, the essential message of the Overview Effect is that the borders and boundaries so laboriously created by political entities are invisible from a higher level of perception.

Moreover, the psychological Overview Effect is being supplemented by the technological Overview Effect emanating from satellite technology. Satellites, in particular, translate a feeling of planetary unity into a fact, at least where worldwide communications is concerned.

6. Increased knowledge of this process provides us with an ability to link space exploration directly to human evolution.

A society's self-awareness might also be called its paradigm, or worldview. A society cannot evolve unless the paradigm changes. Concomitantly, a transformation in the paradigm makes evolution almost inevitable.

This means that human social systems evolve in response to new information from the environment that is too significant to absorb without going through the society's core paradigms go through fundamental transformations.

It is for this reason that space exploration has been a powerful engine of human social evolution for the past thirty years, especially as the experience of the Overview Effect has been disseminated by the astronauts through a variety of media. It is of course possible to continue thinking of an "us against them" world, in which nation-state conflicts are the dominant filter through which events are perceived.

However, if the view from space is shared widely enough, it eventually becomes obvious that the human species is essentially a "one-ness" in relationship to a vast universe. The transition might not be readily noticeable. It was once hotly debated whether the world was round or flat, but that is no longer an issue worth discussing. Similarly, planetary unity will soon become a matter of speculation and evolve into a practical foundation for human expansion out into the solar system and beyond.

Supporting social evolution and changes in human consciousness has not been a recognized goal of space exploration in the past. However, the transformation of society's basic paradigms is critical to human progress. Therefore, insofar as space exploration supports that process, social evolution is one of the program's major benefits.

Now that the Overview Effect and other changes in consciousness are becoming known, space exploration can be justified on those grounds, and missions can be designed with evolution in mind.

7. Taking people into space is not the only way to use the spaceflight experience in support of social evolution.

Once the evolution of society is seen as a reason for undertaking space exploration, there is a natural tendency to favor sending as many people into space as possible.

However, at this point in the development of space technology, it is not feasible to take large numbers of people into outer space. For this reason, the direct experience of the Overview Effect and other changes in consciousness are available to only a few. From the perspective of society, the impact of experiences such as viewing a film about space may be just as valuable as actual spaceflight, because a large number of people can see a film.

Simulating the spaceflight experience has already become a commercial success. The benefits of the experience are already being recognized at institutions such as Space Camp in Huntsville, Alabama and Disneyland in California.

In these and other places, people pay to go through simulations of spaceflight. Similarly, a film such as "The Dream is Alive," often cited by the astronauts as the closest thing to the actual experience, has now been seen by millions of people, and its popularity is growing.

"Overview Consciousness" is in fact becoming available to all of us, rather than being the province of the space fliers alone. Most of us may not be able to physically leave the planet for some time. Now that we have an understanding of the benefits of the overview, however, we can use airplane trips, films, posters and simulations to achieve our own versions of "astronaut awareness."

8. Going into space is not as critical as realizing that we are already there.

Going into space is actually a misnomer because we are in space, always have been in space and always will be. The shift that is taking place today is not so much that we are going somewhere as that we are realizing where we are.

The astronauts and cosmonauts are comfortable with the term "spaceship Earth" because they have seen it with their own eyes. While most people know that the Earth is in space, it is difficult to experience this reality on a daily basis. Space travelers cannot avoid the realization, and it often has a powerful impact on them.

The primary result of the realization that we are in space is likely to be a looking outward into the universe and a more dynamic philosophy of life. Everything in space is in motion relative to everything else, and evolution is a constant reality. Once one takes up a position outside the biosphere of Earth, it becomes clear that all points of view are just that, points of view.

Ultimately, this shift in perspective on who and where we are in the universe will affect every element of human life, both for those who choose to live in space settlements, and those who remain on the planet.

9. Each new development in consciousness resulting from space exploration can be seen as the foundation for a new civilization.

When this research began, it was assumed that the primary result of the Overview Effect would be the development of "a new psychology for a new civilization." The new psychology was seen as a heliocentric, rather than geocentric, perspective, and the new civilization was seen as a space-based community.

As the research has progressed, it has become clear that space exploration is having as great an impact on the psychology of Earth dwellers as it will on space settlers. In addition, it has become clear that each step outward into space carries with it a change in awareness and therefore the basic paradigm for a new civilization.

So far, the work has suggested three identifiable changes in awareness, which we have named the Overview Effect, Copernican Perspective, and Universal Insight. These have in turn been correlated with three new civilizations, which we have named Terra, Solarius, and Galaxia. However, much more work must be done to determine whether these correlations can be considered speculations or predictions.

10. A trans-national human space program is likely to emerge as the next step in space exploration.

The astronauts and cosmonauts were put into space primarily by national space programs. While there, they realized the limitations in thinking that are imposed by the concept of national boundaries. The Association of Space Explorers, an organization of space fliers from the United States, Soviet Union, and other countries, is one result of this realization.

Seen from orbit, there are no national space programs any more than there are national boundaries. There is, instead, one "human space program" that is becoming planet-wide in scope. This human space program is not yet conscious of itself and has not yet been given a name or funding, but it exists as the sum of all the activities supporting human evolution as a spacefaring species.

A human space program dedicated to exploring the universe for the benefits of all life ought to be formally established soon. Building upon the planetary unity being generated by the Overview Effect, this program could become a new "central project" for humanity, occupying our energies for the next millennium and beyond. (8)

The Human Space Program would institutionalize exploration as an essential activity of the species, thereby supporting continuing social evolution. It could also provide the next unifying symbol beyond what has been provided by national programs.

V. Implications

The Overview Effect may prove to be as important to the people who remain on Earth as to those who choose to live in space. Space settlers will take for granted the reality of the planet as a whole system, and will begin to build their new societies looking outward into the solar system. It is likely that the growing sense of unity on Earth will be matched by a quest for diversity as the next steps in social evolution are taken.

The whole Earth is a symbol of planetary unity, but is it a symbol of human unity on a larger scale? The answer to this question is crucial, and suggests that studies of the potential range of relationships between Earth-based and space-based cultures are now needed.

In addition, as increasingly alien environments are opened up on the space frontier, we must expect that the diversity among humans will continue to grow, thus making broadbased intercultural understandings even more essential.

Summary

These propositions form the basis of a new approach to understanding the human dimension of space exploration. It focuses on changes in the basic paradigms of human civilization as a result of space exploration, rather than on the technical or economic accomplishments of the enterprise.

Our original hypothesis was that changing one's physical perspective would have an impact on one's view of life itself. Our first two years of research suggests that this is indeed so, and much more. In fact, it now appears that space exploration is a key driver of social evolution because it transforms individual and social awareness on a global level.

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