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OVERVIEWS

Art in Space: The Spaceflight of the Cosmic Dancer Sculpture

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WHY PUT ART INTO SPACE?

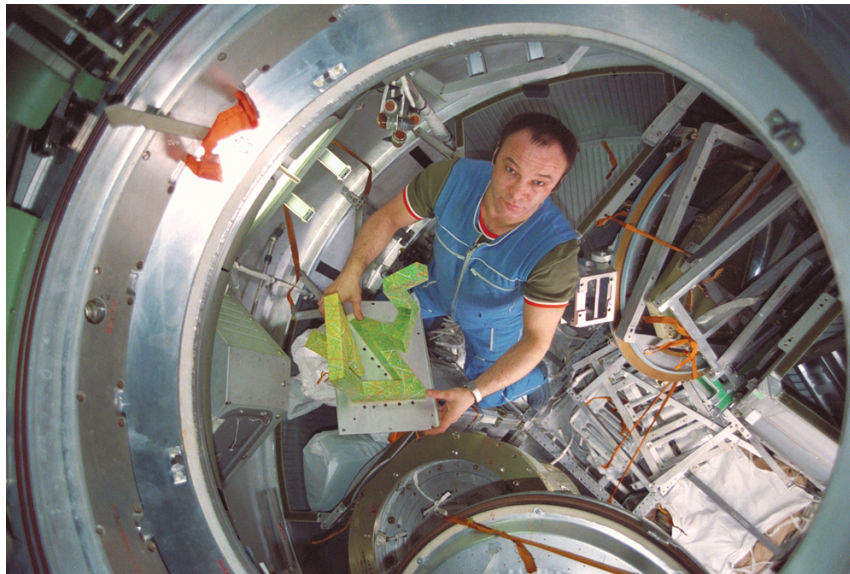
“Visual artists and writers have created fictional images and scenarios on the development of space. Such visions are the primary way that the general public is introduced to ideas about space exploration. Artists and writers, in fact, lay the foundation which makes future space activities understandable by the general public and thus secures the necessary political support.” This quote is from the 1993 International Astronautical Congress Call for Papers for the Symposium on Space Activities and Society: Arts and Literature.

If the above words were in fact widely acknowledged throughout the space community, there would be no discussion about the importance of including art in today’s space programs—especially during a time of declining public support for space activities worldwide.

Unfortunately, only a few persons within the space community would concede that art and artists have a valuable contribution to make at this very critical moment in the history of human space activities. In fact, most would indeed prefer that artists do their art somewhere else (on Earth) and let the serious work of scientists and engineers in space remain unimpeded from intrusions from the “fringes of society.”

Whereas, artists and writers of the past did create the visions upon which the present space program has been built, today, most “space artists” serve the space community solely as illustrators of astronomical and astronautical information coming to them from the scientists and technologists. Outside of the space community, very little art about space is seen or

appreciated by the general public. The “space art” that is reaching the public is usually in the form of television and movie fantasies which, with few exceptions, are at worst reinvented adventure themes and at best, usually ignore and disregard the fundamental physical laws of space, especially those of distance and gravity.



Mir Cosmonaut Gennadi Manakov unpacking the Cosmic Dancer Sculpture inside the Progress capsule.

Art is the expression of any ideal that artists can realize in a plastic form. In addition to language or literature, the visual arts have been a fundamental way of communicating humankind’s understanding of the universe. Thus, any artwork that artists create represents in some way their personal intuitive interpretation of their reality, hence their understanding of the cosmos in which they exist. Art in and about space has the potential to expand our comprehension of this new human experience, transforming it from a technical and scientific activity into other, broader forms of understanding.

Art is also a traditional and powerful means of communication.

Art is also a traditional and powerful means of communication. Integrating space technology into art and using the space environment for the realization of artworks which can be experienced around the world speaks of enormous potential for global communication. Yet, when a few artists have proposed realizing their artworks in space and using space technology to do so, it has mostly been members of the space community at large who raised the first and loudest objections which the media quickly disseminated. Consequently, public opinion of space art, if there is one, usually associates any such proposals with space debris, light pollution and publicity gags.

Furthermore, the present and declining interest in space activities everywhere makes art in and about space appear irrelevant and out of touch with the real issues of humanity. In the art world, space art is most often considered as “kitsch” and/or just anecdotal. Considering the immensity of the universe and the potential impact that space discoveries may have on our religions, philosophies and social systems, and, in addition, space as a new environment for the expansion of human civilization and the immediate promise of space to contribute solutions to our growing societal, economic and ecological problems, it is somewhat amazing that, after more than thirty years of space activities, little, if any, art addressing these themes can be found within the mainstream arts of our culture. There are no artists of international

reputation being regularly exhibited and promoted in the international museum and gallery scene that have made “outer space” their dominant theme.

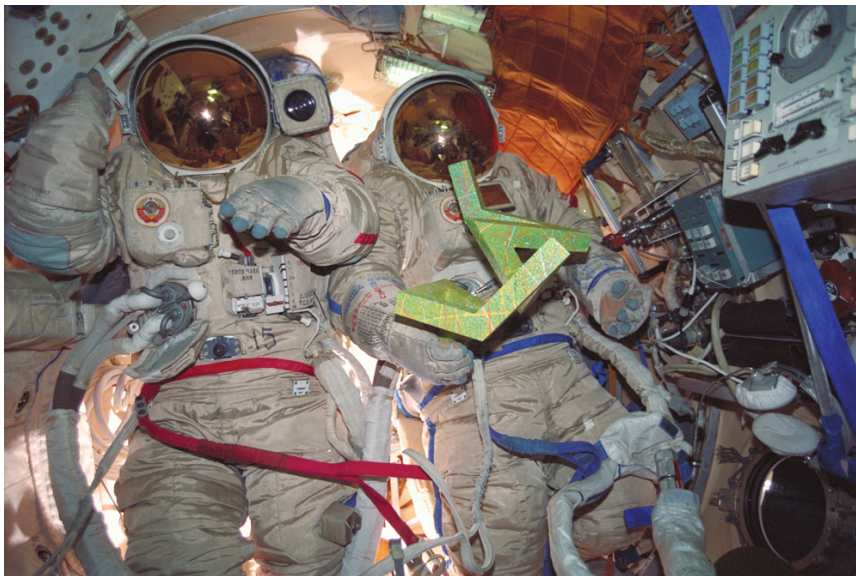
Today, on our overpopulated and environmentally despoiled planet, space offers humanity the only option to survive and prosper. Yet, only when society becomes fully aware of the importance of space activities to their lives and to their future, will the hopes and dreams of humanity have a chance to become a reality. In short, the future of human civilization and, indeed, even the survival of humanity as a species is at stake. Thus, an expanded cultural dimension to human activities in space is desperately needed just as humanity is in desperate need of expanding its presence beyond Earth—an idea long overdue for both art and space development.

THE FIRST EXAMPLE OF ART DESIGNED FOR SPACE

On May 22, 1993, the first sculpture ever conceived for a mission to space, realized and launched as a declared, authorized and scientifically-reasoned “space art project,” lifted off for its flight to the Russian Mir space station. Called the Cosmic Dancer, this art work has since become a part of the living space for the cosmonauts aboard the Mir station.

After its arrival there, cosmonauts Gennadi Manakov and Alexander Polishchuk allowed the Cosmic Dancer sculpture to freely float and spin inside the station. They were instructed to evaluate both the contribution and the difficulties of having art share their environment. They made a photographic and video documentation of their interaction with the sculpture and they replied to a questionnaire addressing some of these issues. This documentation was returned to Earth in September 1993.

The Cosmic Dancer sculpture is a painted geometric form made out of welded aluminum measuring approximately 35 x 35 x 40 centimeters and weighing exactly one kilogram. These dimensions were prescribed by the parameters of the Mir station environment as were the paints used which were tested and certified for their suitability.



The Cosmic Dancer Sculpture photographed in the Mir station spacesuit storage chamber.

A MULTI-DIMENSIONAL ARTWORK

For me as the artist, the Cosmic Dancer sculpture represents a convergence of several directions in my art that I have been developing since about 1976.

The Micro-Macro Cosmos

At that time in the development of my art, I was curious to see what science had to say about the nature of reality. What I discovered, and what has influenced my art ever since, was a description of the universe at the microcosmic level consisting of sub-atomic particles in an inseparable network of interactions. These interactions involve a ceaseless flow of energy which gives rise to the stable structures of the material world—the macro-cosmos. These structures do not remain static but are transient and oscillate in rhythmic movements. The whole universe is engaged in endless motion and activity: in a continual cosmic dance of energy. Both the aesthetic aspects of this description as well as the environmental implications of an interdependent and interconnected universe stimulated me deeply.

Some particle physicists (Fritjof Capra, Gary Zukav) have pointed out that this description of the universe was similar to that of Eastern mystics which have also used the image of the dance to convey their dynamic view of the universe. The dance of Shiva, the Hindu god of creation, is the dancing universe symbolizing the cosmic cycles of creation and destruction and the daily rhythm of birth and death.

I was both impressed and inspired by this seeming merging of diverse cultures and these diverse yet similar ways of describing the cosmos. This seemed to indicate to me that knowledge about the nature of the universe was somehow imbedded in our physical being, which made sense, as we humans are intelligent products of cosmic evolution.

This information was integrated into my art by using points of color as a basic visual element—a metaphor of a quantistic/pointillistic universe. All of my art since this time, mostly paintings and sculptures, has used some variation of this approach, both as subject matter and through artistic technique. The painted surface of the Cosmic Dancer sculpture is typical of this approach.

Selecting a Color for Space

On a more practical level, the color scheme selected for the flight sculpture was based on the following criteria: (1) the sculpture had to have sufficient contrast with the Mir environment in order to insure that good images could be obtained on film and video and, (2) it should offer an “aesthetic” contribution to the cosmonauts’ living quarters. With these two considerations as a guide, a dominant green color scheme for the flight sculpture was chosen.

This decision was reached after viewing photographs and video tapes of the Mir station interior which indicated a somewhat drab, technical environment crowded and cluttered with equipment, tubes and cables. In contrast, from the view portals, the cosmonauts could observe the blackness of space and the dominant blue and white of the Earth. Green was also considered because of its association with terrestrial plants and the psychologically calming effects that associations with nature are reported to induce. In the photographs made available to me, there appeared to be very little of this color in its brighter intensities in the Mir station environment.

Sculpture and Gravity

The physical aspects of cosmic forces and the concept of the cosmic dance had become embodied in my sculpture over the years. Gravity is the most powerful force in the universe - responsible for the consolidation of form, the movements of the celestial bodies and determining the eventual fate of the entire universe.

As a terrestrial environmental factor this cosmic force, the “*gravity constant*”, is hardly considered as essential to the creation of art, yet it has profoundly influenced and determined both the conception and the perception of sculpture since its beginnings. Because they are created in a terrestrial civilization, all sculptures have a “resting point” - a point of contact in which their mass interacts with the gravity of the Earth. Sometimes sculptures are fixed to a base so that their appearance seems natural in our gravity dominated environment. Others stand, rest or are fixed to some supporting structure. Even balloon- or air-filled sculptures that may float in the air are positioned by the forces of gravity.

Consciously or unconsciously, artists conceive and carry out their sculptural creations with the gravity constant determining the eventual resting point of the work, and, by so doing, they pre-determine how the sculpture will eventually be perceived by the public. This *gravity constant* has much to do with our perception and appreciation of sculpture—as our response to its aesthetic “rightness” is based on our own experiences in our terrestrial environment.

A sculpture floating in a zero-G environment could be viewed from an infinite number of perspectives or angles.

When imagining human civilization extended into outer space, it is obvious that the art of this civilization will take advantage of its new environment. The qualities specific to this environment will have a fundamental effect on both the conception and perception of the artworks in it—much like the gravity constant has had on the evolution of terrestrial art. In the zero-gravity (zero-G) environment of outer space, the *gravity constant* disappears and sculptures become weightless. As a consequence, the conception, the perception and the appreciation of an artwork will be altered in such an environment.



Cosmonaut Alexander Polishchuk with the Cosmic Dancer Sculpture.

A sculpture floating in a zero-G environment could be viewed from an infinite number of perspectives or angles. This free floating aspect also enables a kinetic dimension to such artworks - resulting in their seemingly independent motion.

A TERRESTRIAL AND EXTRA-TERRESTRIAL ARTWORK

Since 1981, I have created a series of sculptures that are characterized by their twisted geometric shapes. The geometric form of these sculptures enabled them to be positioned in different ways. This aspect allowed the sculptures to be viewed from different perspectives and, in relation to their surroundings, the same sculpture could appear to be a unique three-dimensional form as a result of its varied positions. Depending on the complexity of the sculpture, usually between four and eight resting positions could be found for each sculpture - the *gravity constant* being the ultimate determining factor.

The Cosmic Dancer takes this concept to its logical conclusion. By taking advantage of the microgravity environment found in Low Earth Orbit (LEO), the Cosmic Dancer could indeed be perceived from an infinite number of perspectives and “dance” its own dance in the cosmos.

SPACE AND MY ART

The influence of space on my art goes back to my youth. From 1959 to 1970, my family lived in the vicinity of Cape Canaveral and the Kennedy Space Center in Florida where my father worked. There, I personally witnessed the beginnings of the US space program. As a university student, I worked summer jobs there during the exciting Apollo era.

In 1984, I began to consider and develop concepts for artworks specific to the space environment. The first of these was the OURS - the Orbiting Unification Ring Satellite proposed for the year 2000. This sculpture is designed to have a diameter of approximately 1 km and should be visible to much of the world’s population as a “circle in the sky.”

A prototype of the OURS introduced in 1988, the OUR-Space Peace Sculpture (OUR-SPS) was proposed as a space art project to be realized during the International Space Year (ISY). Designed to be a symbolic celebration of international cooperation in space, a 6 m in diameter inflatable sculpture in the form of the astronomical symbol of the Earth was developed and a test model was constructed by NPO Energia in Moscow in 1990. This sculpture was designed to be deployed from the Mir space station by a cosmonaut during a spacewalk and its deployment televised to Earth.

The OURS project for the year 2000 has been technically defined, but in the present economic climate, is prohibitively expensive. The OUR-SPS project, though very developed, was canceled in 1991 due to lack of sponsor support in the wake of the dissolution of the former USSR.

Building on the experience gained in the development of the above space art projects, I decided to further develop my geometric sculpture series by introducing one of these sculptures into the weightless environment of space. By freeing a sculpture of the *gravity constant*, it would be possible for the sculpture to be viewed from an infinite number of perspectives. Furthermore, such an activity could also investigate how human beings living and working in space would react to having such an artwork share their environment, how a

sculpture would react in a pressurized and weightless environment, and how the project would be evaluated in the context of other human activities in space.

LAUNCHING THE COSMIC DANCER SCULPTURE

In September 1992, a proposal to take a Cosmic Dancer into space aboard the US space shuttle was sent to the authorities at the National Aeronautics and Space Administration. NASA officials answered that, although the Cosmic Dancer project had merit, there was no current program for “non-scientific payloads” to fly on the orbiter.

Simultaneously, a proposal to launch a Cosmic Dancer to the Russian Mir station was submitted to NPO Energia via their joint partner in Germany - Kayser-Threde GmbH of Munich. In September 1992, an offer to launch a Cosmic Dancer to the Mir station was made by Kayser-Threde GmbH. Subsequently, in November, a “Letter of Intent” was signed and negotiations for the launch date and the determination of the technical specifications commenced. In December, a contract between the OURS Foundation and Kayser-Threde GmbH was signed to launch the sculpture to the Mir station on a Progress supply vehicle with launch opportunities in March or May of 1993.



Arthur Woods hopes one day to launch the Cosmic Dancer II into space as a free floating sculpture.

The price for the launch and the included services was set at DM 150,000. To pay these and other project costs I made a limited edition of 99 Cosmic Dancer sculptures which are identical to the flight sculpture in all aspects except that each one is painted differently. The sculptures and the video are being offered to art and space collectors via art galleries and the OURS Foundation located in Switzerland.

A Cosmonaut's Response

Responding to the supplied questionnaire, Mir cosmonaut Alexander Polishchuk gave the following comments:

“When the Progress arrived and we un-wrapped the sculpture we were very pleased, as it was like we saw an old acquaintance. But we were quite surprised as the color of the sculpture was different than the training model—it was green! But it was maybe even better so. The combination of the light green and yellow color has a more calming effect and this is very important for us in stress situations.

The Cosmic Dancer is an incredible sculpture, angular and unusual for the classical understanding of art. Nevertheless it gave us pleasure. The form of the sculpture is original and avant-garde, and inspires diverse thoughts and fantasies. One can see in this figure any being one wants. Therefore, it is interesting to enjoy looking at it and to hold it in one’s hands. We think that such art works are not only important to the artists who send them into space but also for us cosmonauts who simply feel the presence of a little artwork as comfortable.

And that it is a Cosmic Dancer, as the English title says, we have never had any doubt. Particularly interesting was to dance with it to music. Dancing is meant symbolically as we circled around it and it too moved freely as it wanted. It appeared like it circled around us for some reason. That, we can really call dancing!

Contemplating the sculpture turning in weightlessness while listening to music results in an effect which is possibly totally unknown on Earth. It is difficult to describe this effect.”

At the time of this writing, the Cosmic Dancer sculpture is still aboard the Mir space station. I am hoping that it can be returned to Earth by either the Russians or by the US space shuttle when it visits and docks with the Mir station in 1995.

Arthur Woods is an artist located in Switzerland.