

The Arts and Space Culture: The Common Ground of Creativity



Advertisements For the Imagination
Laura Knott, Artist

A report created as a result of the Workshop on Space Artist's Residencies and Collaborations held February 10-12, 2005 at Carnegie Mellon University West at NASA Ames Research Center, Moffett Field, CA

Workshop Organizing Committee

Lowry Burgess, Dan Goods, Isabel Hawkins, Lorelei Lisowski, Frank Pietronigro

“Since the arts tend to transcend politics, time and geography, it would be the measure of a great civilization that would use their space program for art as well as science, that would use art/science as a way to connect to all peoples, all nations.”

David Barr

“Art is a consolation, taking away the deprivation of people living on the moon or in space. There is no color on the moon. The moon dweller becomes nervous. An artist can create an environment on the Moon to be more comfortable-- if walls are yellow we feel warm, the plants/water needed for human life, like a water tank and bubbles.”

Ayako Ono

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Abstract

This document summarizes the deliberations of space artists, scientists and other related experts during a three-day International Workshop on Space Art at the Carnegie Mellon University West Coast Campus at the NASA Ames Research Park at Moffett Field, California that was held February 10-12, 2005. **(See Appendix A & B, Pg 37-38: For a list of Workshop Sponsors, Advisory Committee Members, and Participants)**

During a gathering at the European Space Agency at their research facility at Noordwijk, The Netherlands in May of 2004, representatives from the Zero Gravity Arts Consortium instigated a meeting to decide that a workshop should be convened at or near a NASA facility to create a document for general use with space agencies, foundations, universities and other related institutions to further the possibilities for space art. The intention was that space agency officials, artists and institutional representatives meet and discuss, then co-author a report that will help facilitate the creation of a *Space Artist's Residencies and Collaborations Guidelines Document*. The following report resulted from a process that started with the workshop focus group meetings that we called 'Pods'.

When the general public hears the term space art they imagine illustrations, paintings and drawings that document and celebrate the accomplishments of the space exploration agencies. But today a new breed of space artists are working in a new genre while creating interdisciplinary collaborations that utilize the technology and scientific methodologies that are employed by space exploration engineers and scientists.

The Workshop, entitled *Space Artists' Residencies And Collaborations* gathered the extensive experience of the 35 attendees (and those who contributed virtually) to create a document to serve as a basis for planning and organizing resources, residencies and collaborations and to further the rapidly expanding global practice of space art.

The Organizing Committee also developed a public space art event. sponsored in part by ZeroOne: The Art and Technology Network and the STUDIO For Creative Inquiry at Carnegie Mellon University, hosted by and held at the facilities of the nearby SETI (Search for Extraterrestrial Intelligence) Institute that was well attended and covered by the media. The workshop participants developed a questionnaire to evaluate the impact of space art and it was used to survey the SETI event audience. **(See File: Space_Art_Survey_Results.xls).**

Challenge

There is a profound need to engage the fuller participation of the arts in space exploration and to engage space exploration in the general frameworks of the arts to gain the mutual advantage of the holistic human imagination toward the cosmos.

Within this larger framework there is the problem of productively interfacing two vastly different cultures, the Arts and the Sciences, with all their separate languages, logics, methodologies, behaviors and traditions as well as issues of different customs of authorship, intellectual property and ownership.

In general, such artistic/scientific/technological residencies and collaborations can foster and develop themes addressing the futures of outer space such as: new forms of education and learning, --a curriculum of zero gravity and partial gravity (EX: 1/6 and 3/8 gravity); whole new sciences and technologies; new graphical imaging; new partial gravity explorations and understandings; the understanding of a joined earth to space reality -- a 3rd space; imagining new energies; anticipating new propulsion systems and power for transport; dreaming and planning sustained communities; create new forms of social organization; new laws and policies, new forms of nourishment; architecture, habitat, environment; new health and medicine; new spiritual/religious feelings, ideas and values; new forms of art making, new forms of art; new understandings of intimacy and love; deeply understanding sorrow and risk in space; being able to express how being in space affects humans on the inside; showing all aspects of the experience, deeper understandings of life with other life-forms; new forms of expression and language; imagining new forms of happiness and freedom, longing, sorrow, and death; new concepts of comfort and repose; even new humor; lunar 1/6 g life; lifting/levitating activities on earth NASA's microgravity drop tower; double-g experiences as powerful as zero-g; new language experience, multi-directional reading poem read in 360 degrees=new vocabulary, new grammars; creating new space suits and hardware as holistic set -- as a form of space art; imagining even new forms of human life These are just a few of the potentials for creative imagining which our artistic communities have been developing and can contribute.

Finally, it can be assumed that many of the future proposed artistic projects and creations will point to the territories of mind and reality, science and technology, at the edges of the possible and even far beyond. In the past, this artistic imagining has been proven crucial to future developments in science, technology, engineering, and mathematics, both in outer space and on earth, and in fact, essential to the realization of the broad potentials for better life, inspiring and motivating curiosity and knowledge creation.

Space exploration is a gift to all human beings. There is great liberation in the phenomenology of space and partial gravity if one is gifted, to live such an experience. Consequently, the participants of the Workshop on *Space Artist's Residencies and Collaborations* advocate for open sharing and cooperation among international scientists, space artist, space art organizations, supporting institutions and space exploration agencies.

We desire to see sexism, racism, homophobia, and others forms of bias and prejudice left behind. In accepting these imperfections of ours, we will work in the spirit of mutual cooperation by replacing hatred, bigotry and self-centeredness with cross cultural generosity, gift giving, a sharing of ideas and property, mutual support and mentoring, and cooperative education in support of a Space Potlatch.

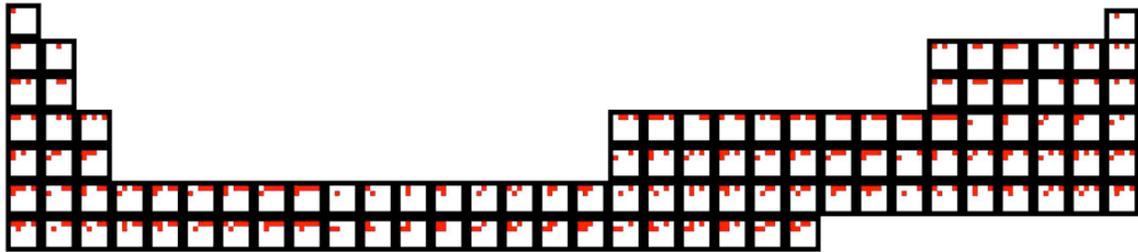


Image by Douglas Vakoch from "Self-sacrifice: An interstellar composition" ["Le sacrifice de soi: Une composition interstellaire"].

Douglas Vakoch

Director of Interstellar Message Composition, SETI Institute

Deputy Chair, International Academy of Astronautics Study Group on Interstellar Message Construction

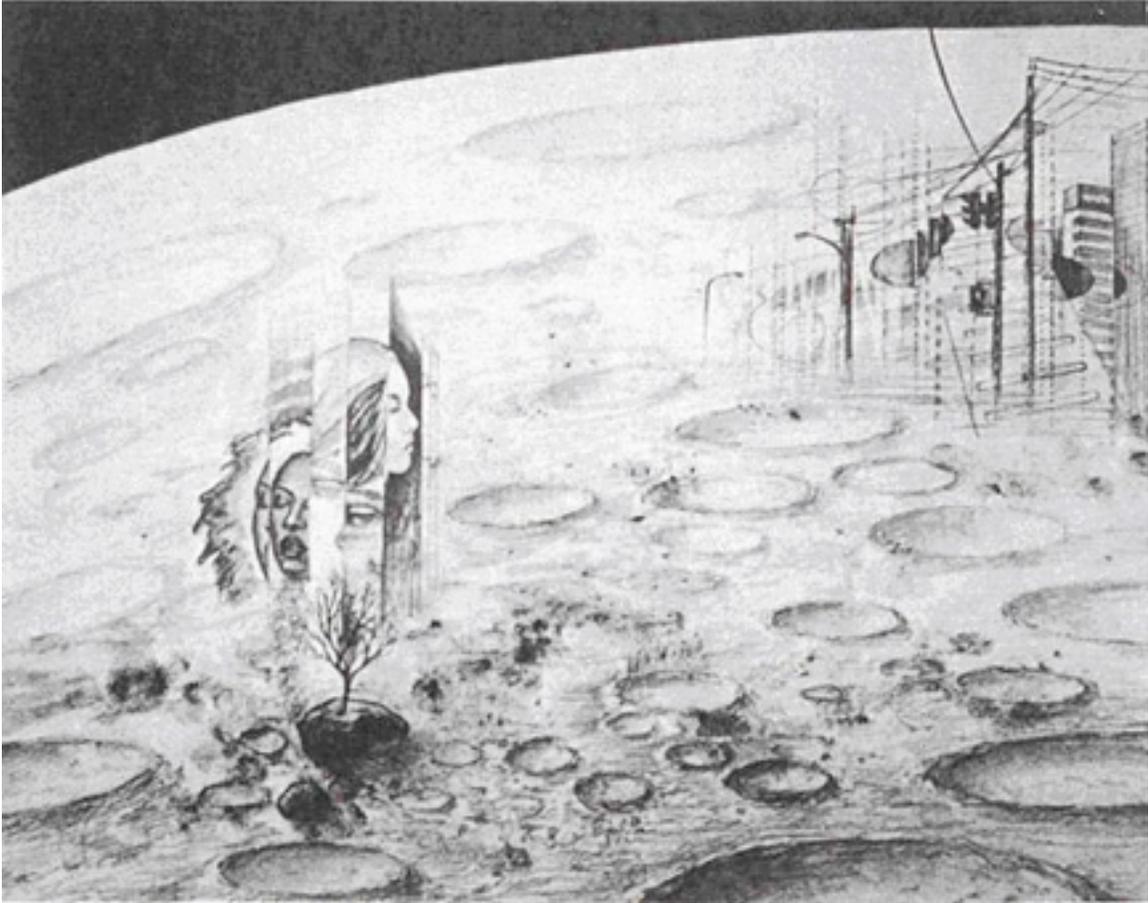
Science may serve as a universal language for communicating with extraterrestrial intelligence on other planets. We can begin by describing physical objects likely to be known to extraterrestrial scientists. This message depicts the Periodic Table, which orders chemical elements through their atomic numbers. Atomic numbers are encoded here as binary digits. Image by Douglas Vakoch from "Self-sacrifice: An interstellar composition" ["Le sacrifice de soi: Une composition interstellaire"]. In the Fourth @rt Outsiders Festival. Group exhibition held at the Maison Européenne de la Photographie, Paris, France, October 1, 2003 – November 9, 2003. http://www.art-outsiders.com/archives3/fr4_gallery001.html -- For High Quality Contact vakoch@seti.org, ph. 650-960-4514 for higher resolution version suitable for publication. Bio at <http://www.seti.org/site/pp.asp?c=ktJ2J9MMIsE&b=179103>

Workshop Definitions of Space Art

“There is no vertical in outer space.”

Space Art can be considered as any art that connects and expands human consciousness and culture toward its cosmic context. These space arts (literature, poetry, music, dance, media art, conceptual art, performance art, visual arts, architecture, painting, sculpture and design) have included:

- Sky art
- Celestial art on the ground as well as in space
- Microgravity art in numerous parabolic flights and in orbit
- Partial gravity art, double-G art on earth and in space
- Cosmic art--art that addresses large cosmic structures, time-space constructions
- Henge Art--That which creates a ‘hinge’ between sky and earth:
- Celestial Architecture on the earth--telescope observatories, the ancient henges, i.e. Stone Henge --Greek drama performed under the stars
- Science Fiction/Fantasy literature
- Arts of re-perceiving earth from the perspective of space
- Art produced via photography, film, video, radio astronomy, visual astronomy, X-ray, infrared
- Art actually in outer space produced after Sputnik
- Art that can only exist in the outer space environment



Drawings On The Moon
Ayako Ono, Artist

Various arts have accomplished this cosmic connection for the past 40 thousand years, an accumulation and record of the arts addressing the skies and heavens from the earthbound surface. This has led to a rich array of artifacts and sites, connecting human consciousness to the cosmos in an assembly of evidence. Nevertheless, in the middle of the 20th Century, a critical threshold was crossed whereby humans realized that they could actually lift all the potential of body, heart and mind into outer space and cosmos through a myriad of new tools and technologies.

Background / Brief History

Human perception and understanding of our world, its nature and reason is intimately connected to our sense of the universe, the cosmic matrix in which we all hover. Often this led to the belief that outer space, the celestial sphere, leads to other worlds filled with life or death, gods and other life forms from the future or the past, or in fact even beyond.

Recently in the middle of the last Century it became possible to displace the whole of humanity, mind, heart and body from the surface of the earth to venture into cosmic space and time. From that moment a limited number of artists have been engaged with this new context to unfold its broader meanings. Projects known and unknown, public and private have engendered broad creative thinking and aspirations toward outer space within the various arts communities.

Workshop participants are seeing a recent expansion of the Space Art movement. It has in the past 30 years grown from a handful of artists to hundreds of artists scattered round the world. Now space art is becoming a broader interdisciplinary practice fueled by seminal efforts from the past 50 years.

In the process of the emergence of a space related art practice, there has been, by definition, close interaction between artists, scientists and technologists, as well as unusual institutional relationships, requiring openness toward unique interactions far beyond the usual frameworks and practice of the arts. This has led to the necessity to further understand and articulate the underlying structures that can best support artistic aspirations toward outer space.

This Workshop had a long set of precedents including: the 1983 NASA Space Station Task Force report, *Innovative Utilization of the Space Station Program*, *The Artistic Potential of the Space Station Program*, NASA Contract: NASW-3746, James Pridgeon, Principal Investigator; (which requires communicating space to the public through various forms including cultural means); documents and conferences produced by JAXA (Japan Aerospace Exploration Agency) beginning in 1993; and the May 2004 conference at the European Space Agency (ESA) Research Conference at Noordwijk, the Netherlands. These and other Space Agency Conferences have been preceded by a series of four Sky Art Conferences organized by the Center for Advanced Visual Studies at Massachusetts Institute of Technology (MIT), a series of nine space art conferences organized by Leonardo- OLATS/The Leonardo Observatory for the Arts and Techno-Sciences at various locations in Europe and arts activities at the International Astronomical Federation.

Possibly the most important set of developments to the space art community in the past decade is the establishment of a fundamental cultural policy within JAXA. This policy enunciates the goals of fostering the consciousness of

diversity and creating a new human viewpoint with the purpose of engendering a culture of human harmony and integrating science and technology with the humanities and social sciences.

JAXA funded a series of 5 artistic projects with five major arts institutions to explore artistic expression that exceeds the frame of the ground with a genuine perspective of outer space and explored different art forms and disciplines for outer space and in micro-gravity, as well as on the earth.

In recent years, important developments have occurred in such examples as the Arts Catalyst in London that organized partial gravity flights for artistic projects and scientific experiments with the Gagarin Cosmonaut Training Centre in Star City, Russia, in partnership with the Slovenian arts group Projekt Atol.

In 2001, the Arts Catalyst and Projekt Atol joined forces with a group of European and international arts organizations to promote artists' engagement with space activities. This network, called the MIR Consortium, has since expanded and currently comprises the Arts Catalyst in the UK, Projekt Atol in Slovenia, Leonardo-Olats in France, the USA/France V2_Organisation in the Netherlands, Transmediale in Germany, the Multimedia Complex of Actual Arts in Russia, SpaceArtOne in France and Mom in Spain.

In 2002, the MIR Consortium received European Commission funding to develop a program of artists' engagement with space, which was undertaken at the Gagarin Cosmonaut Training Centre in Russia. An international group of artists, writers and scientists participated. The outputs from this program are being presented to the public in film screenings, performances and exhibitions.

Most recently, in November 2003, ESA issued an open call for proposals for a 6-month, €75000 study on cultural utilization of the International Space Station. The aims of this study are wide-ranging, including increasing the visibility of the International Space Station, raising ESA's identity in the public mind, appealing to the hearts and minds of the European public, and generating revenue. The study will cover the arts, culture, entertainment and the media. The purpose of this study is to open the framework for broader cultural involvement with outer space development.

All of these and many other recent developments and projects place immediate urgency upon our gathering as well as upon our extended fellowship to act productively upon the potentialities before us and to expand the activities in the United States.

Potential Products and Expected Outcomes

As a result of the workshop that was held at Carnegie Mellon University West at NASA Ames Research Center Research Park, Moffett Field, California, February 10-12, 2005, an International Conference on Space Art is planned to take place at the NASA Jet Propulsion Laboratory in Pasadena, California in the spring of 2007. These locations were selected because of the opportunities for bridging the resources of space flight facilities, university programs, galleries and museums.

From this workshop, the organizing committee, in partnership with workshop advisors and participants, aims to create a set of guidelines. The workshop report will be placed on websites hosted by the STUDIO for Creative Inquiry, the Zero Gravity Arts Consortium and other institutions. Additionally the committee is confident that the workshop and guidelines will result in new residencies and collaborations with new products, catalogues, TV, radio, coverage and exhibitions and events. Institutional outcomes will result (universities, museums, and various media, radio, newspapers, TV, etc.) with their outreach to the public and to the entire educational system, particularly the public schools. Also envisioned is a plan for an International Conference on Space Art to be held at NASA's Jet Propulsion Laboratory, Pasadena, California in the Spring of 2007, where the Space art Residencies Guidelines document will be presented to key stakeholders.

To accomplish our goals, the committee proposed to gather resources ahead of time, and structure the workshop to include the following activities:

1. Accumulate a collection of case studies of existing and past space-art residencies at scientific institutions to extract significant lessons learned on environment, procedures, collaborative structures, etc. to inform the Guidelines.
2. Inventory past and existing experiences of insider-advocates (space agency and other scientists and officials) who have long supported the arts within their institutions. Invite a few of them to present at the workshops.
3. Gather ahead of time, and summarize at the workshop, a list of reports from other organizations that sponsor research in arts and interdisciplinary projects.
4. Provide opportunities for facilitated plenary and small group discussions for participants to contribute to the writing of the Guidelines and to the planning of the fall 2005 conference at JPL.

We intend to develop the cultural/artistic edge by engaging the abilities of artists and artistic communities in imagining and communicating STEM education, (National Science Foundation term for preK-12 science, technology, engineering, and mathematics) the future of outer space and its meaning on earth. This will be done by creating a secure, sure-footed road map for new initiatives involving other collaborating institutions and agencies, in new sets of policies. From the long experience as well as more recent experience of those invited, our Focus Groups will propose the best methods for productive engagement and collaboration with artists and their related cultural institutions. This broad cultural initiative will create a new cultural/artistic seedbed with sets of projects and collaborations. Equally, we intend to call upon the participation of a limited number of relevant foundations and other governmental agencies, collaborating universities and cultural institutions. This will have many diverse outcomes, ultimately reaching and inspiring an even wider public through various institutional outreach systems.

This cultural/artistic edge is needed especially in the United States in light of recent developments within ESA in Europe and with JAXA in Japan. ESA recently conducted a study and exhibition called the “Innovative Technologies from Science Fiction for Space Applications” on the impact and roots of space exploration. They talked to early space scientists and asked them where their ideas came from and why they did it. The scientists and engineers said that it came out of what they read and saw as children in fantasy books and pictures about space. The study then showed side-by-side imagery of science fiction and the real technologies that are being developed. This is powerful evidence of artistic expression motivating and inspiring new generations of people who work in the space community. Paralleling this, JAXA has included the funding of art and cultural activity in its mission. Naoko Hamada presented 5 art projects proposed for the International Space Station during the Science, Technology and Art Conference sponsored by ESTEC, May 2004 in the Netherlands and ranged from partial gravity experiments to architecture and design for the space station.

Structure/Design of the Workshop

This Workshop convened a group comprised of exceptionally skilled, talented interdisciplinary, experienced professionals, **(SEE APPENDIX Page 39-43: For a list of Workshop Participants)** including practitioners from a broad spectrum of art, science, education and engineering. The collective skill set of art professors, university administrators, scientists, NASA officials and professional artists, some of whom have long-term experience working with NASA, built on previous experience and knowledge. Tasks at the workshop included:

- 1) Develop a document that outlines practical guidelines for hosting and supporting artistic residencies and collaborations.

- 2) Work with the STUDIO for Creative Inquiry to deliver our reports/findings to a targeted audience comprised of science museum educators, space agencies, universities, aerospace companies, youth and the general public.
- 3) Identify agenda topics for a conference and exhibition on space art that is planned for late 2006 or Spring 2007 at NASA's Jet Propulsion Laboratory, Pasadena, California.

In order to reach our goals we did the following: collect and discuss case studies of various art/science collaborations, get input from people who have supported the arts within space agencies, and discuss a list of questions that range from the challenges of artists in the scientific process to how to mobilize the larger community of artists interested in space. The intention is to enhance the appreciation of arts, science, technology, engineering, and mathematics and further the goals of NASA's informal education and the NASA Art program.



Boundless Lunar Cubic Aperture
Lowry Burgess, Artist
Space Shuttle Discovery departs with an 'artistic payload' created by Lowry Burgess onboard.

Workshop Format

The workshop at Carnegie Mellon University West at NASA Ames Research Center began with a plenary session to establish the task framework and timetable.

The Workshop participants had opportunities to work in small groups to extract the themes and components of the Guidelines document.

A core group, with a representative from each Pod /focus group, has created a draft document to present to the whole group. Participants were broken out into pods that addressed themes including:

- Defining space art
- Supporting space artists' residencies and collaborations with museums, university art departments and fine art institutions
- Serendipity: balancing the benefits of art and science
- Institutional solutions - space agency response
- Establishing space art programs at universities and art schools
- Bringing space art to the public and public relations
- Carnegie Mellon, the STUDIO model for building bridges between art, science and technology

Each small group developed a specific theme to integrate in the final draft. One breakout group established themes and goals for the follow up Conference to be held at NASA Jet Propulsion Laboratory. The groups reported back to and briefly discuss results with the whole group. The draft document will be presented to the Workshop Advisory Committee, the space art community and other concerned individuals via the Internet through the fall of 2005 and will be presented at the International Conference on Space Art planned for the Spring of 2007. The follow up conference will instigate responses and actions, from key stakeholders, based on the recommendations of this workshop report.

The document will be presented to space agency officials, to appropriate academic and artistic research centers, granting agencies and foundations as well as appropriate media producers. The follow up International Conference on Space Art will be held to obtain responses and actions based on the Guidelines.

It is our intent that workshop advisors, participants, space artists, space agencies, universities, space art organizations and other key stakeholders continue to support the process of editing this report by adding to, editing and negotiating the concepts and processes presented in the following text by adding that input to the 'discussion' section in the Workshop's Community Zero / Space Culture interactive website. To join this site please contact any member of the Workshop Organizing Committee (**SEE APPENDIX Page 38**).

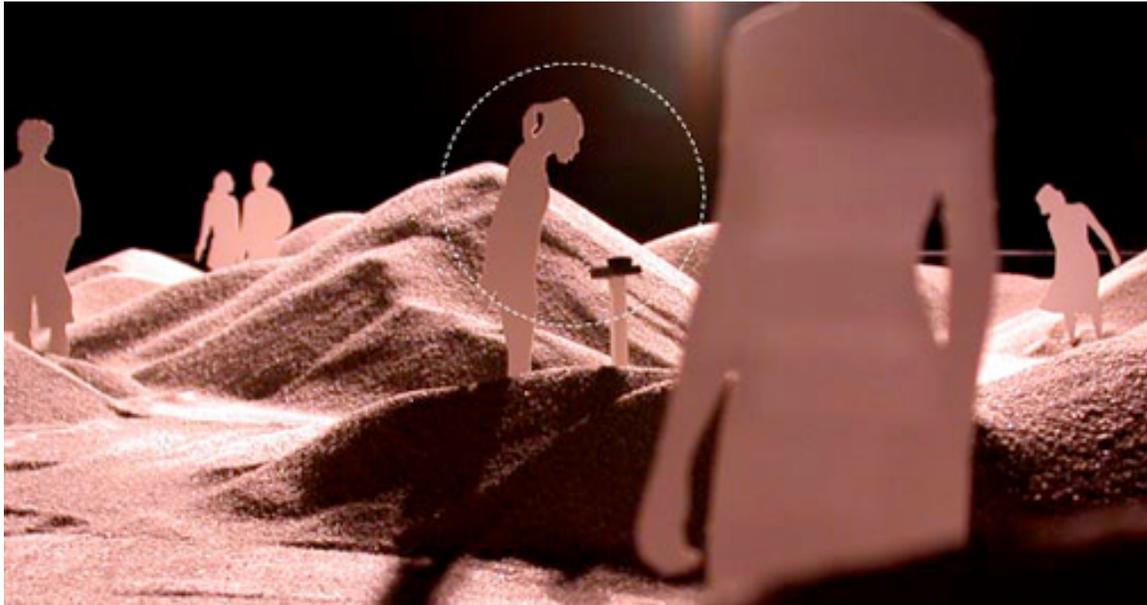
Questions Addressed

What institutional conditions create the most productive residencies and collaborations?

What are the best conditions to create new integrations of art, science and technology?

What steps or what set of methods and processes will develop a rich set of resources both institutional and fiscal to yield a deeper experiential base and deepen the knowledge base?

How do we respond to the demand in research and higher education for interdisciplinary, collaboration, creativity and new forms of integration and learning in all areas of invention?



The Big Playground

Daniel E. Goods, Artist

If a grain of sand represented an entire galaxy, you would need seven rooms full of sand to contain all the galaxies in the universe. I have taken a single grain of sand, which represents our Milky Way galaxy, and drilled a hole 1/10th the size of the grain of sand into it. This hole represents where we have already found over 120 planets. The grain is seen under a magnifying glass. A space where people could play in this enormous amount of sand and imagine running their fingers through millions of galaxies will be memorable. Each grain of sand, or galaxy, contains 100's of billions of stars. To see the insignificant area we have looked for earth-like planets is powerful. Dan Goods is the Artist in Residence at the Jet Propulsion Laboratory, more can be found at: <http://quad.bic.caltech.edu/~dangoods> or contact him at daniel.e.goods@jpl.nasa.gov

Themes Addressed

Broaden space exploration to include aspects of culture

Enlarge cultural and institutional awareness of space art

Expand the conditions and resources for the arts in relation to space exploration

Create greater awareness of the cultural dimensions of outer space and its various effects on earth culture

Foster natural and productive zones for interdisciplinary inquiry to embrace a broader symbiosis in creativity between people engaged in science, technology, engineering and mathematics and those people engaged in creating art

Discussion Sessions / Focus Group / Pods

POD 1: Residencies

(How to expand the general concept of residencies):

Charge:

The most successful collaborations are usually 1-to-1 relationships between artist and scientist. A common drive or interest allows for the natural and mutual progression of exploration. The complexity of both art and science enriches the reciprocity of the collaboration. There's a need for a symbiotic partnership to create work that takes audiences to a new level of wonder, reflection, education, and enlightenment.

There are residency structures such as open structures, art driven, science driven, institutionally driven, technology driven, project driven. Depending on how the residency starts and what is driving it, it will have a different development, ecology and unique relationship to the personnel and facilities in which it develops.

Problem Statement:

Space art residencies are few and far between. There are unique conditions that foster the best results for such residencies even though the residencies may be varied in every aspect. How do such residencies lay the basis for further and more varied opportunities for all the arts in space?

It is often stated that the largest inhibiting factor to such productive residencies is the inertia of built in bureaucracies. How to minimize these stifling effects?

Response and Discussion:

Essential to productive residencies is a sense of mutual trust and respect. This mutual trust is augmented by the need for conditions that foster open play, improvisation and exploration toward mutually inspiring goals that are often open ended and not necessarily understandable at the moment but could be useful later. Such artistic transformation of ideas and materials in science has creative potential for the general science world, and may stimulate new forms of application, uses and research.

One-shot residencies are good but they need to be longer and more deeply structured for optimum results. These more complex residency models should include:

1. Networking and travel to related settings and projects or facilities,
2. Plans and deadlines for presentations and interaction with the wider public, publications of other media to document and share the process, the knowledge gained, and products of the residency.
3. Periodic updates of the process can help the outside world understand the work, appreciate it, be more related and interested in the results of a collaborative process and project and provide valuable information to the public concerning the magic of art/science/space exploration.
4. Residencies for scientists to work in art institutions that would familiarize the arts world with the language and process of science and vice versa, while training scientists to communicate with artists and understanding their languages and processes and histories. Scientists in art settings should be financed by science due to the disproportionate funding inequities between the arts and sciences. Such scientific residencies in arts institutions will have creative effects upon the dialogue and processes of science itself as well as within the discourse of artistic practice. There is a more than thirty year history of such productive interdisciplinary experience within interdisciplinary centers such as the Center for Advanced Visual Studies and the media Lab at MIT, the STUDIO for Creative Inquiry at Carnegie Mellon University as well as similar centers at Arizona State University in Tempe Arizona, as well as ZKM in Germany and various research and educational centers in Gifu, Kyoto and Tokyo, Japan.
5. Corporate residencies where artists are allowed to play and experiment with materials and technologies to discover new applications. Corporations are quite often research-oriented and have money and other resources to support such residencies.

Further, it is important to develop the models for the most productive residencies at institutions with centers or institutes having deep experience with interdisciplinary and collaborative projects. In such situations, given several different projects and models, an appropriate fertile culture can evolve and be transplanted to other sites or institutions.

For example, the Kellogg Foundation has long supported research residencies outside the normal expertise of the researcher.

Administrative networks to support these residencies should be established. Such networks should include experts in development and fundraising. Project operations and administrative staff can also help support the production and creation of space art projects.

We are seeking a greatly expanded definition of such artistic/cultural residencies with a much expanded and imaginative mission to seek encounters and collaborations with the space-science/technical communities to further mutual creative and imaginative exploration.

Immediate Actions and Goals:

There are immediate opportunities for space art residencies and collaborative projects. The arts communities need to organize to address these opportunities. A few of these are:

Establish projects for the Lunar Orbiters in 2008-09. Get something onto at least one of the lunar orbiter missions. It must be small, simple and have low impact. For example, The Sundial and CD of the Comic figures on Mars Rovers. Seek contact with ESA Education and Public Outreach.

SMART-1 (ESA) now in lunar orbit
Chandrayaan-1 (ISRO ? India)
Chang'e 1 - China
Selene (JAXA)
Selene Relay subsatellite
Selene Vrad subsatellite
Lunar-A (JAXA)
Lunar Recon, Orbiter (NASA)
Moonrise orbiter
Polar orbiter proposed by European University team

Identify specific locations for the most productive residencies and begin to structure them with appropriate funding.

Long-term Goals:

To evolve a system of sustained and mature residencies with appropriate funding and institutional ties to be broadly effective both within the space communities and with the broader interested public. These residencies must develop an international network of communication among the various residencies to maximize the sharing of experience and re-enforce our broader space art community.

We must also evolve and win the argument that a more holistic approach to the imagination and creativity will be of mutual benefit to both the Arts and Sciences. It is essential that the whole of human intelligence and creativity be directed toward the exploration of our cosmic matrix. The affective, the 'feelingful', the poetic sensibility and its artistic manifestations are essential forms of knowledge that often reach out and even guide the acquisition of other forms of knowledge.



'Drift Painting' in a Microgravity Environment

Frank Pietronigro, Artist

(Original Video Footage: Courtesy of NASA)

POD 2: Collaborations

Charge:

What is the chemistry of collaboration? (Large group or small group, toward what kinds of problems?) Collaboration requires enormous skill and experience. Is collaboration necessary? Does training in the arts and other fields prepare us to collaborate in general?

Problem Statement:

In general collaboration is a demanding and difficult process and much training is needed even when people are coming from similar disciplines let alone when collaborators involve highly differentiated disciplinary subcultures. In many of the arts there is little or no collaborative training, rather, much emphasis is placed on individual action and creativity.

Response and Discussion:

The discussion developed the contrasting situations of formal collaboration between artists and space institutions, versus informal, individual projects. Formal collaboration could produce big results but can lessen individual freedom. There are reservations concerning an institution's ability to exert pressure on the outcome. Informal collaboration could be freer both for scientist and for artist, though the work might be smaller in scale and funding. Members of our group had experienced both types of collaborations.

The group debated the question of the artists' role and responsibility in collaboration, whether artists needed to create more formal organizations, such as the Zero Gravity Arts Consortium, from which to approach the scientific community. Issues of trust, language and stereotypes between the two disciplinary cultures became the middle of this debate.

The group discussed our culture's greater support and funding for science than for art; but that it also noted that there is a great deal of transformation happening in both fields, funding and institutions are changing. There are opportunities to change them from within as well as to create new ground between them; for example, bringing art and art history instruction to science students, science instruction to art students. A point was made that successful scientists are working in highly unorthodox ways, that new science is in the field of ideas for example Watson and Crick, the arenas in which the sciences and the arts can meet is growing. The group talked about the fact that monoculture and introversion in science and art are not healthy for either domain/discipline.

In imagining future collaboration the group listed several points:

- Maintaining an archive of successes and failures in the past
- Finding new ways to approach the questions
- Finding a common relevance for the greater public
- Finding the individuals within institutions who are ready for collaboration

A new ecological model of creativity was addressed mentioning *Ten Ways to Intervene in the System* by Donella Meadows, Dartmouth, University. The need for art in the context of long-term space environments, for inhabitants of the International Space Station and future space colonies was elaborately discussed.

Immediate Actions and Goals:

Ecology of intervention, different models, identify institutions that are ready. Start with the scientists that are willing,

Institutions are no longer monoliths. There are openings for soft models of intervention, and reciprocity of institution and artist. Institutions are changing and becoming more hospitable to interdisciplinary collaborations and projects. Interdisciplinary and collaborative work is becoming valuable or recognized as part of credential and tenure review.

It is important to identify an ecology of intervention, different models, and identify institutions that are ready.

Identify a selected set of such institutions for space art project development and connect interested art historians and curators to these projects to develop trust and communication between the disciplines seeking to resolve the issues of language and different disciplinary cultures. Such collaboration could create a more diverse and productive set of understandings and a new integrative culture.

Long Term Goals:

Question about interdisciplinary -- is there a new way or a new terminology we can make that will engender a more deeply 'integrative' process and outcomes?

Can outer space become enjoyable? Can enjoyable environments be created in space so that people will hope to go into space? An example: the Moon's gravity would be comfortable for people in advanced age-- a utopian elder's space station.

To create enjoyable environments in space, so that people who hope to go into space.

There is a deep need to develop a qualifying entity among artists, to find an authorization procedure for artists that will create more equality for artists with scientists.

POD 3: Funding

Charge:

Type and source of fiscal support from inside an institution versus outside makes a difference. Who is a stakeholder, what outcome is expected, and who benefits. What are types of funding such as in-kind, hard programmatic funds, grants, matching, leveraging, educational, etc. -- all impacts outcomes. How has this worked in the past? What new specific individuals, agencies and foundations, new types of relationships between various partners might exist? Is longer-term support for larger more complex projects available?

Problem Statement:

At present sufficient funding for any significant engagement between space science and the arts is widely unavailable and when it is, it is spasmodic, generally unstructured and isolated. The results generally do not become part of the broader professional discussions, let alone part of public consciousness.

Response-Discussion:

Individuals worldwide spend \$1 billion each year looking for the experience of space.

There is a need to promote space art as an experience of space on earth and to connect it to the people who seek it? (E.g. The Chabot Space and Science Center and other Science Centers).

Potential space art situations require knowledge of the funding culture of each organization. It is not just money but people and facilities. How much, from where, what kind, what is the benefit in return for support.

Space artists should participate in human exploration of space as long-term investment.

It is less expensive to participate in smaller robotic explorations yielding more immediate results.

Examples of Funding Sources

Competitions:

Reactivate through NASA, opportunities for artists to create Non-Scientific art Payloads. Use the existing personnel policies and procedures and their respective competitions that are based on the original agreement that NASA has with the American people as specified in the documents congress created to establish the institution of NASA.

The International Planetary Society is planning seven lunar orbiters and will select projects via a competition. It involves \$1 million from membership funds. The art community could/should invent a selection process for art on the orbiters.

Student zero g flights have included artists in their 6 person teams. Frank Pietronigro group was all artists. The cost was \$30 - 50K. A NASA representative reported that artists are good at media relations which make \$ easier to get. There is the potential for industry sponsors. \$4K from NASA. Plus in kind mentoring etc. equals \$20 to 30K.

NASA and other Government Agencies:

A possible 1% of various appropriate budgets at NASA for space art
1% EPO at NASA for Space and Earth Science that is not human space flight, similar to
Space Grant (59 million), which is divided by K-12, Higher Education and outreach.

NASA Ideas: Initiative to Develop Education through Astronomy and Space Science.
\$25K per year for up to 2 yrs. Managed by Space Telescope
Partnership with Space Scientists and members of other communities.

NSF Informal Science Education (Annual allocation for K-12 and non-classroom science education).

Could the National Endowment for the Arts fund fellowships or space projects (as in the 1980s such as the Sky Art Conference at MIT and Lowry Burgess's Quiet Axis Project)?

Foundations:

Research those likely foundations that are initiating arts/science support for large initial grant such as the Rockefeller Foundations, Ford, Langlois, Sloan, Luce, Getty, Markle, etc.

Corporate Support:

Look outside of traditional aerospace industry to video games industry, candy company (Mars), individuals such as John Spencer and co-billionaires who are creating the space tourism society, and for example the Red Planet Ventures for Mars simulation. Industry seeks relationship for workforce development and PR, marketing and impact or evaluation. Outer Space is everybody's playground. The Zero Gravity Arts Consortium has investigated sponsorship opportunities with corporations and discovered that marketing departments in corporations require quantitative research statistics that support their goals before they will contribute funding. Business advisors suggested approaching corporation foundations whose funding criteria relate to the goals of particular space art projects.

Partnerships:

Space artists to partner with a limited number of relevant organizations, for example the

Space Science Institute in Boulder, CO that has 5-6 yrs funding from NASA, where art and artists could be added to the mix or research entities like the Carnegie Mellon STUDIO for Creative Inquiry with its facilities in both Pittsburgh and at Carnegie Mellon University West at the NASA Ames Research Park at Moffett Field, California. Such partnerships can be sought with the European Space Agency's research facilities at Noordwijk, The Netherlands and with the Japanese Space agency and its various collaborations with artistic institutions in Japan as well as the already productive relationships with the Star City complex and the Russian Space Agency developed through the Arts Catalyst in London.

Another area is the meaning of outer space to the various religious communities that the questions that cosmic exploration place before the theological communities. It may be an area for the exploration of new relationships between science and religion being sponsored by the Templeton Foundation and Metanexus. Other such possibilities are the broad-based interfaith groups such as the Interfaith Center in New York City that has high-level connections to most religious leaders.

Membership by Public Support

A Space Art 'Organization', 'Society' or 'Institute'

Appeal to the arts community and general public for money to distribute the best projects through a public space art website to obtain many small donations for collective use by the membership through its best knowledge and experience but also open to public participation as in the case of the Planetary Society. Such an organization needs a clear vision and mission understanding the broad public appeal of space art. Part of its responsibility is to define for the public what is the artist's role in the exploration of the cosmos.

Immediate Actions and Goals:

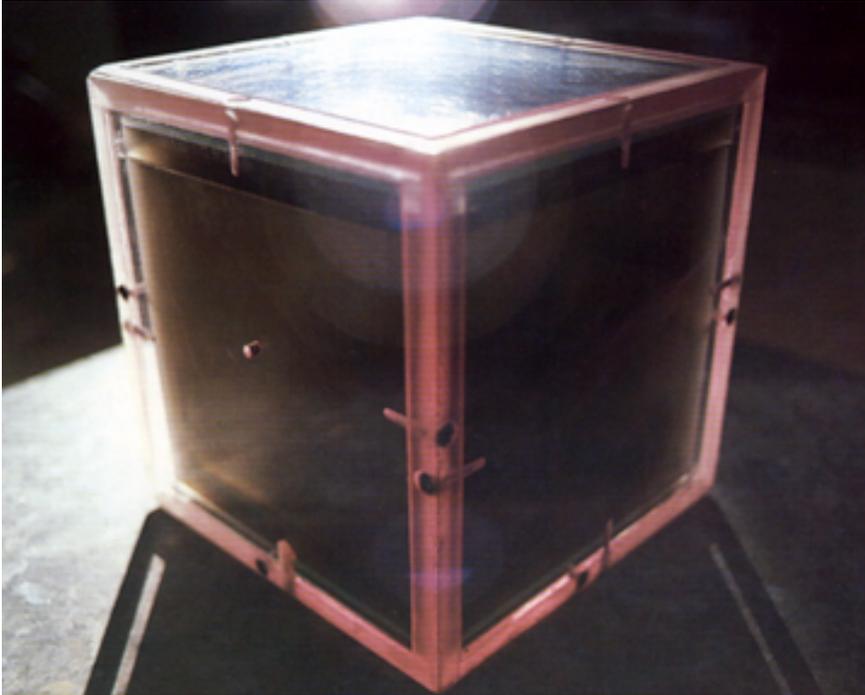
Start to investigate financial models that will facilitate a general increase in the funds that flow into the space art community.

Identify the most likely initial funders for various projects and institutions,

Begin to develop relationships with such funders and request their presence at the JPL Conference.

Long Term Goals:

Develop a sustaining economy for space art and its broad interaction with the public.



Boundless Lunar Cubic Aperture
Lowry Burgess, Artist

POD 4: Space Art to the Broader Public

Charge:

What happens after the artwork is done? These considerations need to be part of the planning: interactions with the public through showcasing facilities, museums, galleries, etc. as well as holding conferences and symposia, provide educational programs, classes, etc. including contacts with the media (print, private and public radio, TV, and the internet.

Problem Statement:

Artists feel alienated by science and science is alienated by art. Both feel alienation from the broader public. There is no two-way relationship between the space art community and the aerospace and science communities. The two communities have faulty modes of communication. They lack the ability to effectively engage each other and similarly encounter problems engaging the public. The way space art is related to the public and interpreted often aggravates this communication barrier between the artistic and science/technological communities. The right and left hemispheres of the imagining brain are separated by a glass curtain of alienation, which further excludes participation with the public.

Response and Discussion:

Space art and its reception by the public are predicated to some degree by the relationship shared between the artist community and space industries and agencies. The problem is the way in which the two communities are experiencing alienation from the general public. Additionally, how is the public experiencing space art in particular as well as the byproducts of both fields of art and space science? This leads to questions regarding the mediums and modes of communication, also venues and various forms of integration. The public needs to be engaged with space art beyond paintings and illustrations of space exploration. Space art needs to make the public feel like it is participating and they have access to the process. The public needs to be invested in the emotional, physical or cerebral aspects in order to feel engaged with outer space and the cosmos. Inspired by our reactions to the expanded presence of the cosmos, Space art is a manner of perceiving and emoting in a fundamentally different mode within the larger framework of human culture. Space art needs different strategies to communicate within related disciplines, with the science and technological communities, as well as the broader society its unique insights and truths.

The products that result from space art collaborations are many and diverse and include: planetarium shows, teacher's guides, evaluations by outside evaluators, workshops for teachers, model project courses, dynamic and exciting images, maps, and graphic representations of scientific data, websites, games, interactive experiences for kids and adults, as well as performances in unusual settings. These activities could generate exhibitions, mass media television and radio shows and other unique experiences for the public in immersion environments such as CAVEs and virtual reality and other outdoor public settings. Such direct experiences may foster a greater investment in the general public to want to learn more about the arts, science, technology, engineering and mathematics.

Space art is part of an expanded communication framework to communicate values, emotions and thoughts that are constrained by the nature of scientific languages and communication. On the other hand, space artists have their own unique insights and truths, methods procedures and logics that often have the capacity to anticipate and reach beyond any particular moment of science. Most succinctly stated in the metaphor of the two sides of the cultural brain. The interaction of both right and left-brain cultures are profoundly required for any human or society to survive and prosper. Science does not have a monopoly on human experience. Generally, science is challenged by the notion of the unquantifiable, the immeasurable and the emotive that engender its deep reservations about the life of the archetypal mind and feelingful intuitions. Space art must expand to many forms of play in and among the direct scientific and technological experiences of the cosmos representing the full impact of newly evolving cosmic consciousness. Further, the broader domains of art need to

breathe with and be opened by all our new awareness brought by the insightful gifts of science and technology.

Further, it is clear to the Workshop from various conversations throughout the working groups that an initially small cadre of both scholars and curators needs to be developed so that fully informed decisions concerning presentations to the public through exhibitions and the various media can be undertaken from a broader base of knowledge and by such experts who actually know many of the artists and have deeply informed background knowledge.

Space Art and Space Agency Public Relations Departments

Space agency public relations department representatives and the press should be invited to work with space artists, from the onset of a space art project, so that they can contribute to the goals, the evolution, communication and outcome of a project. If space agency representatives are involved with space art projects, from the onset of a project, they can advise and educate the artists to their public relations objectives, concerns and opportunities understood from their point of view. Such cooperation will be of educational benefit to the artist and space agency, increase understanding, and build trust.

Space Art and the Media

How can we help media do justice to topics that are complex and political, like space art especially at this critical point in the history of the development of this genre? How can we help insure that articles written on space art capture the depth of work being created by space artists? Do we want stories that reflect only the façade of space art if such coverage does not advocate well on our behalf with agencies such as NASA, JAXA and ESA? Should space artists write papers and/or publish books so that the communications about our work reflect the intentions and goals of the artist? Should space art public relations be supported by professional service organizations that handle public relations? What guidelines can be developed if the objectives of the public relations departments of partnering organizations differ from the objectives, intentions and plans of the space artist?

Solutions

New content arises in intersections of these organizations and the space artists should be mitigated through guidelines that address such issues. Space artists should be supported by a professional space art organization whose purpose it is to advocate on behalf of the space artists.

Media coverage should help support the mission of all collaborating partners involved including the media outlet, space agencies, universities, business partners, as well as the artist. It is the responsibility of the space art community to take steps to communicate with the media. To support this, long-term relationships should be established with reporters, editors and media representatives.

Media representatives could be offered opportunities to work in partnership with space artists so through the process, they can learn about complex of political, social, educational, theoretical, technical, economic and creative challenges faced relative to each project. If members of the press become more intimately involved with space art projects they will be better equipped to communicate the depth of space art stories in ways that can better serve the artist, space agencies and the media's audience.

We want the reporters to reflect the science and research as well as the creative and cultural aspects of our work.

But it is the responsibility of the space artists or organization to specifically communicate such information to the reporters. Space artist, their organizations and representatives should be prepared for interviews with the press. Consequently, we should be develop 'press' talking points that support the communications we wish to see published about their work. One example of a talking point could be: mentioning the importance of space art inspiring a new generation of people to learn about math, science, engineering because of the imagination sparked by images of artists working in space.

Immediate Actions and Goals:

- Represent our Workshop at conferences in Hungary and Switzerland.
- Start building long-term partnership with media representatives and space agency public relations departments

- Make links to the Moscow Aviation Institute and space artists in Moscow that is organizing a space art segment at their conference in October 2005.
- Become intensively involved in planning upcoming space art exhibitions and conferences in Paris, London, New York, Moscow, Los Angeles, Houston and Tokyo to be extensive and challenging.
- Foster the production of NOVA or Discovery-like programs (like the 1982 *Artists in the Lab*) on space artists and programs that currently exists: - making space art visible to a broader public working with such institutes as the Massachusetts Institute of Technology, Carnegie Mellon University, International Space University, Penn State U, UCLA, San Francisco Art Institute, UCSD, Space Science Institute, Boulder, etc.). The reach of the production would be international including projects and artists from the entire world.

Long Term Goals:

Evolve the reach of space art in the general media as an essential activity of the expanding human imagination and the general public's interest in learning about art, science, technology, engineering and mathematics.

Set up a support organization that helps space artists with their public relations efforts

Develop comprehensive Space Art Public Relations Guidelines to address public outreach from international and regional perspectives.

Education

While there was no focus group on education, it became clear in all the focus group discussions, as well as in our plenary sessions and individual conversations, that various aspects of education were critical parts and themes throughout all our conversations. Many of the participants have experienced direct interests expressed by students and colleagues that if such programs were initiated there would be many students more than interested. Concerns and hopes for such activities were continually expressed and in that many of the participants at the Workshop were high level and active educators the topic became a generalized background to the entire Workshop.

Broadly, we discussed the need for a various space art curriculum including institutions identified by the active presence of such programs with faculty,

graduate students and undergraduate students as well as appropriate facilities in all the arts and humanities pursuing the general thematic of the arts in space. The highest level of our discussions were about the need for artists working in cross disciplinary areas and projects to have the PhD level of certification to help equate artists with their scientific and technical partners. Almost needless to say, it would take a serious high-level academic commitment to make such a degree program both deep and effective.

Otherwise, we informally talked about a “Zero Gravity / Partial Gravity” curriculum and the fact that there are many things to do that are very simple that can give direct experience to gravitational disengagement and the fact that it would be easy to gather all these exercises from the participants and make them available to other artists teachers professors and docents.

There were also multiple conversations and statements around the general theme related to the resources that are available within the educational frameworks both at university levels and in public education, including science museum education -- pointing to such spectacular precedents as the Exploratorium in San Francisco that has been, for more than thirty years, a focus for successful artistic residencies and projects.

All of these “educational” discussions lent force to our general proposal to found a **Space Art Institute** that could cohere, in conjunction with other involved institutions, the possibility for such curricular and educational opportunities and networks of resources.

This institute must also attract and train an appropriate group of scholars and curators surrounded by the appropriate resources (archives and information) to appropriately foster the promulgation of space art to the public.

This concept has been discussed for some time at many of the Sky Art Conferences and is reflected in projects such as the Zero Gravity Arts Consortium’s Space Artists Education Program.

Immediate short-term actions and goals:

Begin the process and discussions concerning how to create such educational foci and resources where, with whom, what funding, etc?

Create such an educational focus topic for the JPL Conference.

Long-term goals:

To create a broadly based educational framework of projects, curricula and programs, experts and students as well as facilities and resources that would inhabit all layers of our educational structures.

POD 5: Archiving, Chronologies, Bibliographies, Databases and Scholarship

Charge:

Generally there is a need for public awareness of space art as well as expanded peer-to-peer awareness of the space art history. Culture is what creates memory and institutionalizes shared memory. Can we create a space art 'culture' with an accurate memory including: scholarly databases, chronologies, bibliographies for documentation and educational use in new multimedia archiving systems and other communication and education products?

Problem Statement:

There is, at present, no accurate and extensive record of space art. The various histories of space art are scattered, very fragmented and incomplete. No single institution/museum has claimed space art as its prime mission to solicit key archives for space artists. The various space art communities are unfortunately isolated and operating on parochial knowledge that is often fed by rivalries and various forms of nationalism, aggravated by lack of resources to provide critical connections and networks for a fuller scholarly accountability.

This set of problems is further exacerbated by the lack of generally shared definitions as well as generally agreed upon domains for different interrelated forms of artistic practice let alone the disjuncture between the classical forms of artistic practice (poetry, literature, the visual, arts, music and dance, architecture, design and drama) unfortunately fed by traditional rivalries. By definition space art is international and even global in its artistic mission, yet practitioners and their colleagues are often captured by institutional and national constraints and isolated from both their known and unknown colleagues.

How do we locate an international project in an American institution? Do we want to? How do we build a consortium of international resources to fund an international archive and database?

Response and Discussion:

There is a need for a center/institution, preferably international, that assumes the long term responsibility for collecting, preserving and archiving space art according to international library, archiving and scholarly standards so that its resources are accessible in multiple languages and through various interconnected library systems.

What about the International Space University?

What about the UN Office of Outer Space Affairs (OOSA) At UNISPACE III (1999), the United Nations adopted into its "Vienna Declaration" a proposal to develop a global space education archive. Could the space art archive participate in this UN initiative?

Nancy Kranich, former president of ALA, has worked on national digital initiatives. A multi-lingual database was created for EXPO200Hannover. It could help establish a model.

Such an effort should include:

A. Source Materials

B. Chronologies

C. Bibliography of History of Space Art

D. Narratives

Unofficial/Official artworks, major figures, original artists
papers/documents and media should be collected and donated, Oral
History Projects on Space Artists, e.g. the first generation Space Artists

1. US, Japan, European, Russian, Chinese, and Indian artists

2. Art proposals that were not funded or accepted

3. Contracts/Guidelines/Policy for launching space art

E. Archives

a. Primary--artwork, artists/scientists' documents

b. Secondary--contemporary related documents

Recordings, documents, images, multimedia, objects

c. Press reportage

F. Databases

a. Web and Real Archive

b. Attract Librarians to Archive

c. Attract Scholars of space art

d. Smithsonian to develop space scholarships

G, Archival multimedia technologies issues, transfer and preservation

Immediate Actions and Goals:

Expand Community Zero

Leonardo/Oats and its electronic database -- Roger Malina, Annick,
Bureau and Arthur Woods and what their agenda is and how it might fit into a
vision for future database/archive development.

Web-Publish an extensive chronology of Space Art
Web-Publish an extensive bibliography of Space Art
Web-Publish laws/contracts/policies regarding Space Art

Locate an interim institution to base and expand the L/O archive. Approach CMU/STUDIO for Creative Inquiry and invite them to provide space for such web work and conferences.

Identify a cluster of existing space art scholars who have published historical research, i.e., Annick Bureuad, Ron Miller, Ann Collins Goodyear--organize a gathering of those and other interested scholars.

Contact Russian scholars and artists using the contacts through the Arts Catalysts to bring to the surface the history of Russian space art.

Approach key institutions for archiving artists' works and papers. Approach the Smithsonian and other institutions for support of a space art archival program.

Identify, interview and archive the first generation space artists.

Do early planning for technology that would be used to archive space art data, create the template. How do we preserve, code, identify, and make accessible space art materials to international library systems?

Long Term Initiatives and Goals:

Have space art understood as a mainstream discipline and domain. This would require that Space Art become instantiated as a legitimate domain of artistic practice with all the attendant faculty, studio/laboratories, museums, and presentation media, etc.

Identify or establish some form of international institution/institute to foster such long-term goals.

An extreme proposal is to establish a very long-term space art Archive on the Moon.

<http://www.Spacearts.info>--offers a prototype that includes multiple language access. Who curates this database?

<http://www.imdb.com> - The Internet movie database is a database that might serve as a model.



The Big Playground

Daniel E. Goods, Artist

The most difficult aspect of finding a planet like earth is that stars are very big and bright and earth-like planets are small and dim. JPL is inventing ways of blocking out the starlight so we can see the small planets. From it's light we will be able to tell if it has elements, like water, that make it suitable for life. To communicate these ideas I project a movie onto a large wall/surface. At the same time a spotlight projects a white light against the wall. This light is so bright it washes out the movie from the projector. The spotlight is on the ground so that as soon as you walk in front of the light, the person's shadow hits the screen and reveals the video inside their shadow. The more people inside, the more of the video they can see. Dan Goods is the Artist in Residence at the Jet Propulsion Laboratory, more can be found at: <http://quad.bic.caltech.edu/~dangoods> or contact him at daniel.e.goods@jpl.nasa.gov

Conclusions / Next Steps, JPL Conference

There are two major outcomes from the Workshop:

The first effort is to circulate this report among the various stakeholders for purposes of identifying a limited set of institutional (universities and agencies), foundations and philanthropists, and other supportive resources to gather at the

JPL Conference for discussions concerning the implementation of the initial recommendations of this document.

The task associated with this action is to identify an immediate set of likely projects for appropriate levels of support and host institutions.

The second is to act upon the major recommendation of the Workshop that is to establish an *International Space Art Institute*. The *Space Art Institute* would initially be largely virtual and would instantiate itself periodically at appropriate locations and times in the US, Europe, Japan and Russia.

The formation of this institute would be a major topic for the JPL Conference.

And finally, the Organizing Committee members want to thank the many people who helped us in having such a productive and actually fun filled Workshop at Carnegie Mellon West at NASA Ames Research Park as well as our artistic enjoyment at the SETI Institute nearby. We want to extend a special thank you to our Workshop Sponsors, Advisory Committee Members, and all of those Workshop Participants who extended such generosity in attending the workshop.

We wish to extend a special thank you to our contributing sponsors: Lowry Burgess, Margaret Myers and the STUDIO For Creative Inquiry, the California Space Grant Foundation, Carnegie Mellon West, the Center for Science Education at the Space Science Laboratory at University California, Berkeley, Burke Fort and the Foundation for Space Exploration, the SETI Institute, the Zero Gravity Arts Consortium, and Zero One: the Art and Technology Network.

Appendixes and Addenda

Appendix A: Workshop Sponsoring Organizations

Aerospace Education Research Operations Institute
The Arts Catalyst
The California Space Grant Consortium
Center for Science Education @ Space Science Laboratory (CSE@SSL), UC Berkeley
Foundation For Space Exploration
The Leonardo Space Arts Work Group
NASA Jet Propulsion Laboratory
The OURS Foundation
STUDIO for Creative Inquiry, College of Fine Arts, Carnegie Mellon University
Zero Gravity Arts Consortium
ZeroOne: The Art and Technology Network

Appendix B: Key Personnel

Working with the Advisory Committee, the Workshop Organizing Committee invited a limited number of participants including artists, university faculty and staff, museum curators, governmental agency representatives (including NASA officials), and community based space art organization representatives to attend the Workshop on Space Artist's Residencies Collaborations.



Workshop Organizing Committee
(From left to right: Lorelei Lisowsky, Lowry Burgess, Daniel Goods, Frank Pietronigro, with Advisory Committee Member, Margaret Myers – Missing: Isabel Hawkins)

Organizing Committee

- Lowry Burgess (lb30@andrew.cmu.edu), Professor of Art, STUDIO For Creative Inquiry College of Fine Arts, Carnegie-Mellon University, Pittsburgh, PA
- Dan Goods (daniel.e.goods@jpl.nasa.gov), Artist in Residence, Jet Propulsion Laboratory, Pasadena, CA
- Isabel Hawkins (isabelh@ssl.berkeley.edu), Senior Fellow, Research Astronomer and Director, Center For Science Education at Space Sciences Laboratory, University of California, Berkeley, CA
- Lorelei Lisowsky (spacegirlin0G@hotmail.com), Co-Founder and Co-Assistant Project Director, Zero Gravity Arts Consortium, Devon, United Kingdom and Ojai, CA
- Frank Pietronigro (frank@pietronigro.com), Co-Founder and Project Director, Zero Gravity Arts Consortium, San Francisco, CA

Advisory Committee

Annick Bureaud, Leonardo Space Arts Working Group, Paris, France
James D. Burke, International Space University, Sierra Madre, CA
Richard Clar, Leonardo Space Arts Working Group, Paris, France
Burke Fort, President, Foundation For Space Exploration and the Director, Texas Space Grant Consortium, University of Texas, Center For Space Research, Austin, TX
Laura Knott, Zero Gravity Arts Consortium, Boston, MA
Debra Ladwig, Office of Exploration Systems, NASA, NASA Headquarters, Washington, DC
Alan Ladwig, Zero Gravity Corporation, San Diego, CA
Richard Lowenberg, Founder, RADLab, Davis, CA
Rob LaFrenais, Arts Catalyst, London, United Kingdom
Roger Malina, Leonardo Space Arts Working Group, Paris, France
Marko Peljhan, Director Projekt Atol Flight Operations, Professor Interdisciplinary Studies, University of California, Santa Barbara
Dr. Guenter Riegler, Director of Science, NASA Ames Research Center, Moffett Field, CA
David Raitt, European Space Agency Research and Technology Center, Noordwijk, The Netherlands
Chiori Santiago, the Zero Gravity Arts Consortium, Berkeley, CA
Jean-Luc Sorret, Space Arts Working Group, Paris, France
Nicola Triscott, Arts Catalyst, London, United Kingdom
Mike Wiskerchen, the California Space Grant Consortium, University of California at San Diego,
Arthur Woods, Leonardo Space Arts Working Group, Basel, Switzerland

Workshop Participants

Lowry Burgess

Dean, Professor, School of Art, Carnegie Mellon University
Distinguished Fellow, the STUDIO for Creative Inquiry and Member for the Center For Arts and Society, Carnegie Mellon University; Co-Organizer, International Workshop on Space Artist's Residencies and Collaborations Pittsburgh, PA

James D. Burke

International Space University
Sierra Madre, CA

Caroline (Lin). Burke

Dalcroze Society
Sierra Madre, CA

Margaret Burke

Fine Artist
Sierra Madre, CA

Edward George

Flow Motion
London, United Kingdom – See Anna Piva Below For Details

Dan Goods

Artist In Residence, NASA Jet Propulsion Laboratory; Co-Organizer, International Workshop on Space Artist's Residencies and Collaborations
Pasadena, CA

Dr. Isabel Hawkins

Space Sciences Laboratory, University of California, Berkeley; Co-Organizer, International Workshop on Space Artist's Residencies and Collaborations
Berkeley, CA

Dr. Holly Henry

California State University, San Bernardino
Member of Space Generation Advisory Council
San Bernardino, CA

Steven M. Jones

Jet Propulsion Laboratory, California Institute of Technology
Pasadena, California

Joseph Landon

Yuri's Night: The World Space Party
Los Angeles, CA

Karen Lau

creativ xplorer, Designer and Art Director
°Lau Design Lab,
Yuri's Night: World Space Party, Space
Generation Congress
Glendale, CA

Michael Light

Michael Light Studio
San Francisco, CA

Lorelei Lisowsky

Performance Artist, Co-Founder and Co-Assistant Director, Zero Gravity Arts Consortium; Founder and Director, Zero G Arts Lab; Co-Organizer, International Workshop on Space Artist's Residencies and Collaborations
UK and USA

Richard Lowenberg

Cultural Agent
Founder, RADLab
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Dr. Ioannis MICHALOU(di)S

Visual Artist, Research Affiliate, Massachusetts Institute of Technology, Center for Advanced Visual Studies
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Margaret Myers

Associate Director, the STUDIO For Creative Inquiry,
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Ayako Ono

Artist, MFA in Oil Painting, Tokyo National University of Fine Arts and Music
Tokyo, Japan

Frank Pietronigro

Interdisciplinary Artist
Co-Founder and Project Director, Zero Gravity Arts Consortium
Associate Fellow, the STUDIO For Creative Inquiry, College of Fine Arts,
Carnegie Mellon University; Co-Organizer, International Workshop on Space
Artist's Residencies and Collaborations
San Francisco, CA

Claire Pillsbury

Program Manager, Chabot Space and Science Center
Oakland, CA

Brad Pitts

MIT Center for Advanced Visual Studies (CAVS); MIT Man-Vehicle Lab
MIT Department of Aeronautics and Astronautics
New York, NY

Anna Piva & Edward George

Flow Motion/Hallucinator
London, United Kingdom

Peter Richards

Senior Artist at the Exploratorium
A Museum of Science, Art and Human Perception
San Francisco, CA

Dr. Guenter Riegler

Director of Science, NASA Ames Research Center
Moffett Field, CA

Todd Rising

Zero Gravity Arts Consortium, Documentation and Ephemera
San Francisco, CA

Chris Robinson

Department of Art/NanoCenter
University of South Carolina

David Ethan Sanders

Director/ Cinematographer

Chiori Santiago

Arts Writer, Advisory Board Member, Zero Gravity Arts Consortium
Berkeley, CA

Joel Slayton

Chair, ISEA 2006 Symposium, Director, CADRE Laboratory for New Media,
President, C5 Corporation
Los Angeles, CA

Jean-Luc Soret

Président, Space Art One
Directeur Artistique of the @rt Outsiders International Festival
Advisory Board Member, Zero Gravity Arts Consortium
Paris, France

Beau Takahara

Founding Director
ZeroOne: The Art and Technology Network
San Jose, CA

Fumiaki TANIGAKI

Associate Senior Engineer
JAXA (Japan Aerospace Exploration Agency) Space Environment Utilization
Center
Tsukuba, JAPAN

Meredith Tromble

Faculty, San Francisco Art Institute, Co-Publisher, Stretcher
San Francisco, CA

Douglas Vakoch

Director of Interstellar Message Composition, SETI Institute
Deputy Chair, International Academy of Astronautics Study Group on Interstellar
Message Construction
Mountain View, CA

Michael J. Wiskerchen, Ph.D.

Director - California Space Grant Consortium, University of California, San Diego,
La Jolla, CA

Jackie Wong

Space Sciences Laboratory, University of California
Berkeley, CA

Appendix C: Initial Limited Bibliography

The team has drawn from the following publications and papers in the creation of this workshop:

ESA Publication 2004 BR-205 Science Fiction & Technology Fact
Conception, David Raitt, Re'doctor, Barbara Warmbein, Mise en page et infographie, Leigh Edwards

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How-To Kit for Artists' Communities Administrators: A collection of model administrative documents pertaining specifically to artists' communities, available from the Alliance of Artists Communities www.artistcommunities.org.

Appendix D: Space Art URLs

7th Workshop on Space and the Arts: Space: Technology and the Arts
2004 Proceedings
<http://www.olats.org/setF3.html>

@rt Outsiders Festival 2003 - Space Art
<http://www.art-outsiders.com/archives3/index.html>

Art Technologies / Richard Clar
www.arttechnologies.com

Aerospace Education Research Operations Institute
<http://www.aeroi.org/>

Ars Astronautica
<http://www.spaceart.net/>

Space Art URLs (CONT'D)

Art Catalyst's Microgravity Interdisciplinary Research
http://www.artscatalyst.org/projects/space/Space_MIR_INDEX.html

California Space Grant Consortium
<http://calspace.ucsd.edu/casgc/>

California Space Grant Foundation
<http://www.csgf.org/>

Center for Science Education @ Space Science Laboratory (CSE@SSL),
UC Berkeley
<http://cse.ssl.berkeley.edu/>

Copernica: The NASA Art Program
<http://www.hq.nasa.gov/copernica/#>

Cosmic Dancer Sculpture - Space Art Project by Arthur Woods
<http://www.cosmicdancer.com>

Foundation For Space Exploration
<http://www.spacex.org/>

Frank Pietronigro, 'Drift Painting In Zero Gravity'
<http://www.pietronigro.com/space/overview.htm>

International Association of Astronomical Artists
<http://www.iaaa.org/>

Isadora.Orb The Final Metaphor
<http://www.rickyseabra.com/isadoradotorb.html>

KEO Project of the 21st Century
<http://www.keo.org>

Leonardo On-Line
<http://mitpress2.mit.edu/e-journals/Leonardo/isast/isastinfo.html>

Leonardo Space Art Project - Dedicated to the Advancement of Space Art
<http://spaceart.org/leonardo>

l'Observatoire Leonardo des Arts et des Techno-Sciences
<http://www.olats.org/>

Space Art URLs (CONT'D)

NASA's Microgravity University
<http://microgravityuniversity.jsc.nasa.gov/>

O.U.R.S. Foundation Non-profit Cultural and Astronautical Organization
<http://www.ours.ch>

Research Project Number 33: Investigating The Creative Process In A
Microgravity Environment
<http://mitpress2.mit.edu/e-journals/Leonardo/spaceart/NASAproj33/>

Richard Clar/Art Technologies
www.arttechnologies.com

SETI Institute
<http://www.seti.org>

Sky Art Conference 2002
<http://web.mit.edu/cavs/skyart/>

Space Arts Network Database
<http://www.spacearts.info>

The STUDIO For Creative Inquiry, College of Fine Arts, Carnegie Mellon
University
<http://www.cmu.edu/studio/>

Tate in Space
<http://www.tate.org.uk/space/default.htm>

Zero Gravity Arts Consortium
<http://www.zgac.org>

Zero One: The Art and Technology Network
<http://www.zero1.org>

Appendix E:

Space Art Is:

Definitions contributed by Workshop Participants

Space art is art by way of any medium both static and time based in the service or pertaining to any way to objects, places, people, materials, thoughts, theories, philosophies and sensations that relate to space and space travel

David Sanders

Artwork responding to an/or portraying and/or possibly incorporating interpretations and ripping off of space science and/or astronomy and/or cosmology sciences and/or space 'culture'.

Human expression of explorations of extraterrestrial worlds and associated terrestrial activities.

Creative expressions and contemplation of how we, as human beings, experience space.

Any creative activity or object that links human culture to the cosmos.

PAST: Illustrations of planetary landscapes space architecture, visions of space travel and settlement.

PRESENT: a mess

FUTURE: a seamless body of work that communicates processes of both sides of the spectrum, illuminating and enlightening our understanding of our existence irregardless of our physical or spiritual location.

- 1) A term that might help a retrospective understanding of an incredibly range of practices in dialogue with the cosmos – a term that suggests a kind of archaeological project.
- 2) Space art is the earth bound folk art, for the cosmos
- 3) Don't be one.

Field of Dreams and Imaginations where everyone plays

Space art is a work which is imagined to use space (universe someday).

F. Tanigaki

Space Art is Artistic Expression that has the cosmos as its muse (or source of inspiration)

Space Art: all artistic practices inspired by space research of space activities.

Work created to experience, explain and explore the endless and unexplainable that is the zone between earth and other, between humans and the other and to inspire future life in that zone.

- Any artistic expression related to space exploration space technology, space life, space culture
- Any representation of the idea of space
- Judged on the ability of something to invoke an emotional response

Any art that directly relates to an anti-geocentric perspective replacing the idea that the earth (or its environment) is the norm

Arts related to space

A movement

Away from Earth

Art related to space

What it is – it can be concrete or abstract: colors and shapes, useful?

What it isn't – How can we know until we have been anywhere long enough to judge "Art"

So, we have to change if we will label things or concepts as Art

Art which engages with ideas/concepts/material of, from, about space

Art which connects concepts of outer and inner space

Nothing is definite, everything is flowing and changes constantly.

Space Art is many things. SPACE ART IS...

A space artist provides a new perspective on space travel.

Space Art is...describing the wonder and experience of space.

SPACE ART: CRITERIA

What's the matter?

What's the difference?

What's the use?

RL1

Space Art: not limited by any restraining definition re: location; any human-guided effort that attempts to synthesize our own location (temporal/historical, physical, geopolitical, cultural, etc.) with that of the ultimate concept of "the other's locations/experiences; including ourselves..."

The cowboy to end all cowboys...

COWBOY

OF

the

VOID

Manifest Destiny, leading to ownership of nothing!

Space Art is a new genre that includes experiencing those works or endeavors that reference or utilize space, or future technology in some way

Space art operates in the

- Political
- Social
- Economic
- Ritual
- Artistic
- Realm.

It may exist in tangible form or not.

SPACE ART is a process that leads to a product. The process of creation can happen anywhere and can be deliberate (commissioned) or accidental (inspired).

The product consists of (a) object(s) and

(b) the impression on the observer, (s), both immediate and lasting

To be space art at least some element of the product must exist off Earth.

JD Burke 11 Feb 05

Any work that celebrates and reinterprets the visual and philosophical human response to space. This includes the graphics of space exploration, and the art being made from it. Going further, it includes the kinetic activity – dance, music working between Space and Earth. Video imaging is a most economical way to transmit this response. Poetry and creative writing are powerful aspects.

Space art needs to remain open to re-definition as artists and scientists continue to work together.

Diverse expressions of our understanding of space in all its forms; an exploration and interpretation to space not limited by media, time, philosophy or earthly boundaries

Space Art is any art that carries or directs us away from any center of the Earth,(gravity) i.e. heart and thence hopefully returning.