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**MARSHALL SPACE FLIGHT CENTER
THE UNIVERSITY OF ALABAMA**

**Our Space Future: A Challenge to the Conceptual Artist
Concept Art for Presentation and Education**

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Introduction: Art and Human Culture

The history of visual representation is as old as the history of humankind. The Paleolithic drawings that are found in caves present our collective need for recording our dependence on the life-sustaining animal populations. Our wishes for their fertility (and for our own) comprise much of the art we find in these prehistoric drawings. As well, the cycles of the Moon are recorded in Paleolithic art—relating to women’s estrus cycles that link the perpetuation of our species with the cosmos.

Art became our initial way of description and a way of envisioning our future goals. At the time when pictograms began to form humanity’s first written languages, we also started to use art to invoke favorable forces and ward off devastation. Another important application of visual art became the conceptualization of tools, buildings and ideas that were impossible to describe by other means.

Humans have a historical tradition of considering visual images as vehicles to inspire us to pursue a different way of thinking through our ability of envisioning. Complex concepts can be described visually and have the ability to convey information on many different levels. Conceptual art is a tool that can describe wide-ranging ideas from religious insights to currently unfeasible engineering projects and visionary dreams for humankind.

Some Preliminary Summer 2002 Applications of Conceptual Art to MSFC Programs

“Moonstruck Millie” was part of a project called “Rocket Racers,” an animation project for NASA’s Marshall Space Flight Center’s web page. She was conceived as a vehicle to instruct children, age’s kindergarten through fourth grade about the excitement and importance of space exploration. The other characters include “Rocket Rob”, who will be one of the 6 or 7 characters comprising the ongoing instructional animated web site. “Moonstruck Millie” is portrayed as a young teenager who is interested in history and has the ability to move backwards and forwards in time, thereby enabling the her audience to meet historical figures involved with space travel.

I worked with Jack Hood, who had constructed an adolescent girl for another project. In my contribution to this project, I worked with him refining the figure and turning her into “Moonstruck Millie”. In this effort, we applied the three-dimensional animation software program LightWave Modeler™.

Art Contributions to an MSFC-Sponsored Workshop

The In-Space Manufacturing of Space Transportation Infrastructure Workshop was organized by Ann Trausch and supported by Gwen Artes and David Harris from Les Johnson’s In-Space Propulsion Research group in the Space Transportation Directorate at MSFC. The workshop was scheduled for June 11-13, 2002 and held at the Huntsville Marriott. Various experts from

academia, government, and industry attended this workshop and presented their ideas on creating an expanded in-space infrastructure.

Ann Trausch and Gwen Artes requested that I sit in on various workshop discussion groups and sketch concept drawings of the following workshop themes: “Travel & Entertainment,” “Research and Development in Space”, “Space Manufacturing,” “Solar System Exploration,” and “Gateway Outposts.” Other sketches to be worked on were included under the category titled “Legs.” These include:

N-Integration, A-Ascent, O-Orbit, I-Interplanetary, Li-Libration Points, G-De-Integration.

The process of doing the drawings included researching existing NASA CAD-CAM constructions, engineering drawings and web searches for metaphoric material. Gwen Artes supplied the contact names of Debbie Soloman in MSFC graphics and Chieko Inman at the photo lab in the MSFC multi-media center. After meeting with them, Debbie Soloman at the photo lab burned a CD of images of next generation space transportation concepts. In preparation for my initial presentation, I incorporated these images with others from *NASA Tech Briefs* and *Innovation* magazines. Suggested websites for additional images included microgravity.nasa.gov, nasarp.msfc.nasa.gov and <http://stin.nasa.gov>. Other sources were brochures obtained during the NASA Summer Faculty Fellow tour of MSFC that included the Friction-Stir Welding Facility and the Thermal Spray Productivity Enhancement Complex.

The process of researching the images continued with further meetings where I would prepare drawings or research concepts and present them. Ideas would evolve as I met with Ann Trausch and we spoke of the goals of the workshop. The dialog continued to underscore the importance of Space Manufacturing and how it would enable us to achieve the “Stepping Stones” that would result in the ability to, “Go anywhere, anytime”. Further discussion concluded that I work with both sketches and approved concept icons that would be collaged into my final drawings.

A Sampler of the Workshop Sketches

A total of 12 images were completed for the workshop proceedings volume. After scanning in or downloading imagery, collages were prepared and manipulated using the Adobe Photoshop™ computer software package on a Macintosh G4 computer. Some of these are presented below.

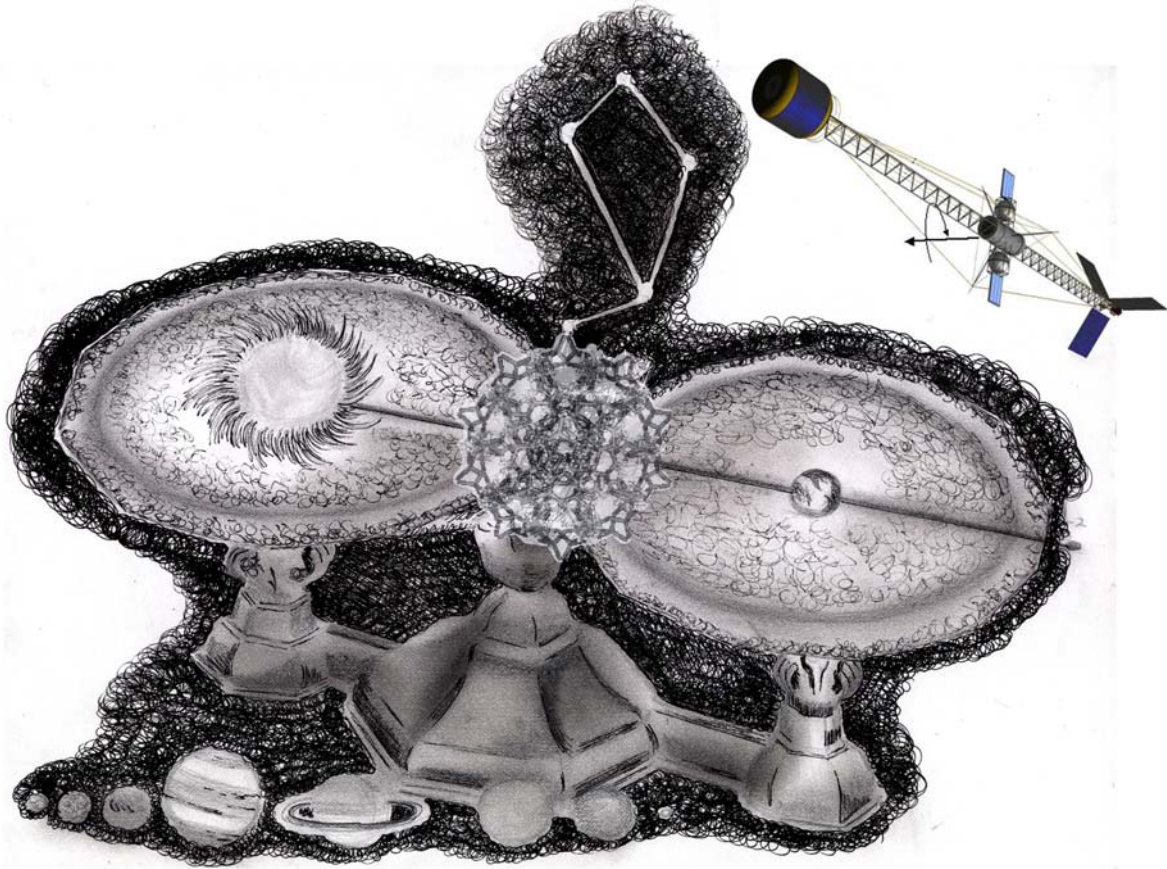


Figure 1: Libration Points and Artificial Gravity Concept Vehicle

This collage, which includes a drawing, a CAD-CAM spacecraft concept, and Web-downloaded imagery, refers to the “gravity neutral” points between the Sun and the Earth. At the Libration points in the Earth-Sun system, solar and terrestrial gravity influences balance.

To present this concept, I drew an image of a scale with the Sun and Earth equally balanced. The other planets of the solar system are shown as they all have libration points in their relationship to the Sun. The constellation above the scale is “Libra,” which symbolizes balance.

The “Artificial Gravity Concept Vehicle” collaged icon also includes the concept of balancing, at the center of it is a rotating centrifuge-like compartments that provides simulated gravity for the spacecraft’s crew. Finally, a Web-downloaded cross section of DNA is between the Sun and Earth on the L1 Libration point as a reference to humankind’s potential use of these concepts to spread life beyond the Earth.



Figure 2 : De-Integration with Gateway, Mars Lander and Lunar Lander

This drawing/ collage features a cosmic flower that is spreading its seeds out to the cosmos. The collaged images feature a proposed Gateway architecture, the launch of a Mars Lander and a Lunar Lander. The line drawings feature an antimatter propulsion system, an advanced chemical propulsion system, a microwave lightcraft, a portion of a space solar-power station and a solar-electric propulsion concept. These concepts would enable humankind to manifest our destiny as Carl Sagan affirmed.

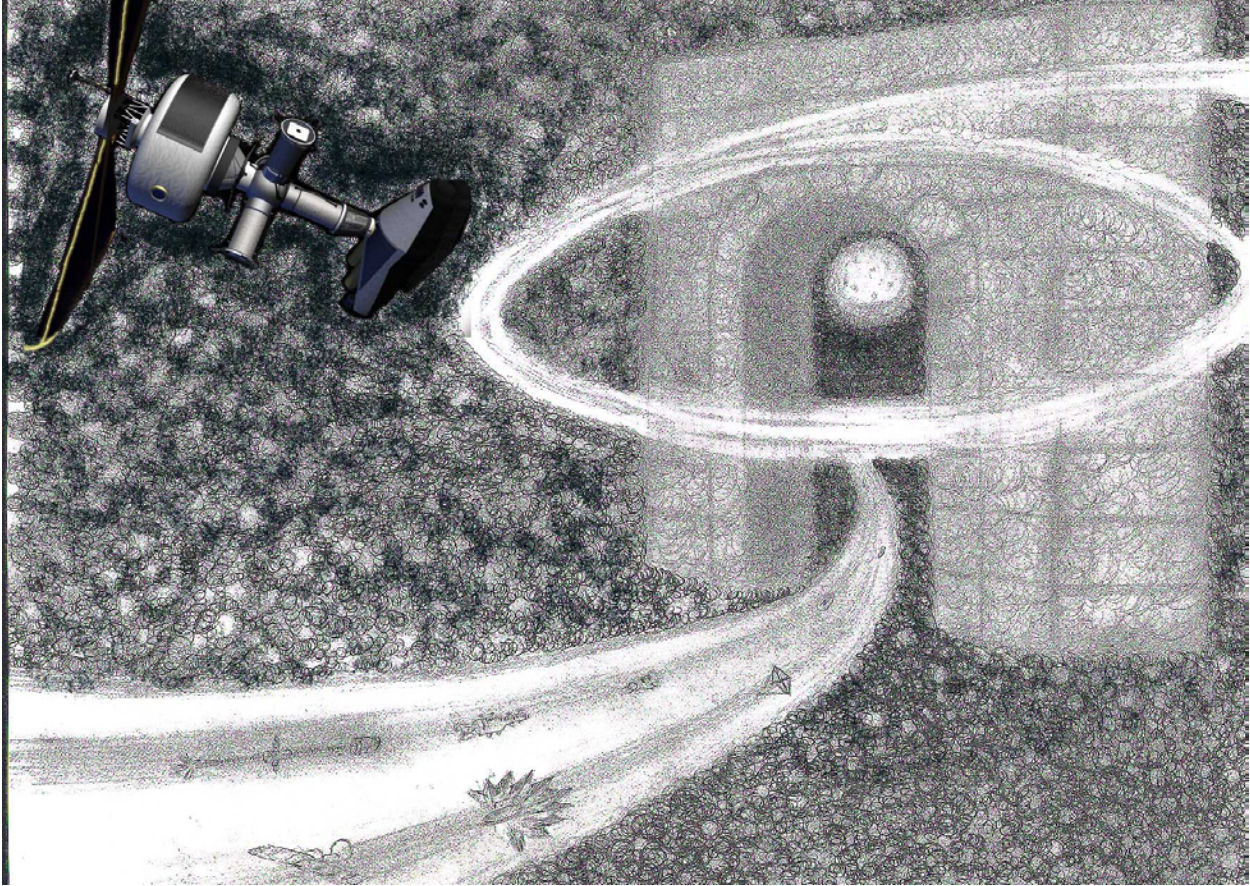


Figure 3. Gateway and Libration Highway with Tug

The Gateway is a phantom Roman arch that is positioned at the L1 Libration point where the cosmic highway encircles the Moon and then swings out to Mars and beyond. The vehicles that move along this highway include the solar-electric propulsion concept, a solar sail, and an artificial gravity concept vehicle among others too small to see clearly. Featured above is a CAD-CAM lunar tug.

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