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Representational Art

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SPACE ART: THE IMPACT OF SPACE-AGE TECHNOLOGY ON REPRESENTATIONAL ART

Michael W. Carroll*

1. Introduction

Throughout history, the arts and sciences have shared a common characteristic: they have served to expand the mind of man, helping him to look beyond his horizons as well as into himself. Never before has art been so drastically affected by science and technology as it has been in the past few decades. This great influence has its roots in the exploration of space and the resulting 'space-age' technology.

During the Renaissance (1300–1600 A.D.), established artistic motifs and rules were challenged by a changing political, religious and technological atmosphere. Medieval feudalism gradually gave way to city-states with the beginnings of centralized governments. Past religious fanaticism was replaced by open theological debate and a more generous tolerance of curious exploration. The exploration of new continents outside of Europe was in full swing. Art was—as it is today—a reflection of the society which spawned it. As such, many Renaissance artists incorporated reports from distant lands into their paintings. This was the primary way that the general public learned about the science of their time.

The role of art in modern society has changed somewhat. The general public is much better informed on all scientific fronts. We live in a time of rapid communication through the press, television and radio. Artists no longer need to fill the same niche that they did in the 15th century. The artist's role is not to inform, but to enrich. This enrichment serves to put modern technology into the context of everyday life for the common man.

2. The Space-Art Movement

The tendency in modern art has been, in general, to push away from representational imagery. However, several recent movements involving representational accuracy have come into the forefront of the art world. These include Photo-Realism, the 'New Realist' movement in Pop Art, and, earlier, Precisionism. Out of this tradition has evolved a new school of art which combines the discipline of scientific accuracy with the philosophical and visual sensitivities of fine art. This movement is becoming known as the Space-Art School.

A subset of this school—considered by some to be its purest form—is Astronomical Art. Astronomical art takes the discoveries of astronomers, astro-physicists, planetologists, etc. and attempts to put this knowledge into a comprehensible form for all segments of society. It translates scientific data into concrete scenes, becoming an extension of those renaissance art forms which depicted strange new creatures and lands in Africa and the Americas.

3. The Execution of an Astronomical Painting

To better illustrate this representation of science in art, let us take a specific example. In 1979 *Voyager I* and *II*, a pair of spacecraft launched by the U.S.A., gave mankind the first detailed look at the giant planet Jupiter, along with its four planet-sized moons. Much invaluable scientific information was beamed back to Earth, including thousands of inspiring photographs. The four largest moons of Jupiter (named the 'Galilean satellites' after their discoverer, Galileo Galilei), turned out to be enigmatic worlds of beauty. But these alien worlds are difficult to relate to at a range of hundreds of thousands of kilometers.

What if a human being could stand on the surface of a moon such as Europa (Fig. 1) and gaze across its icy landscape into the dark void of space? The proposition of the viewer actually 'standing' on this landscape is much easier to relate to than a photograph taken from such a distance, and astronomical

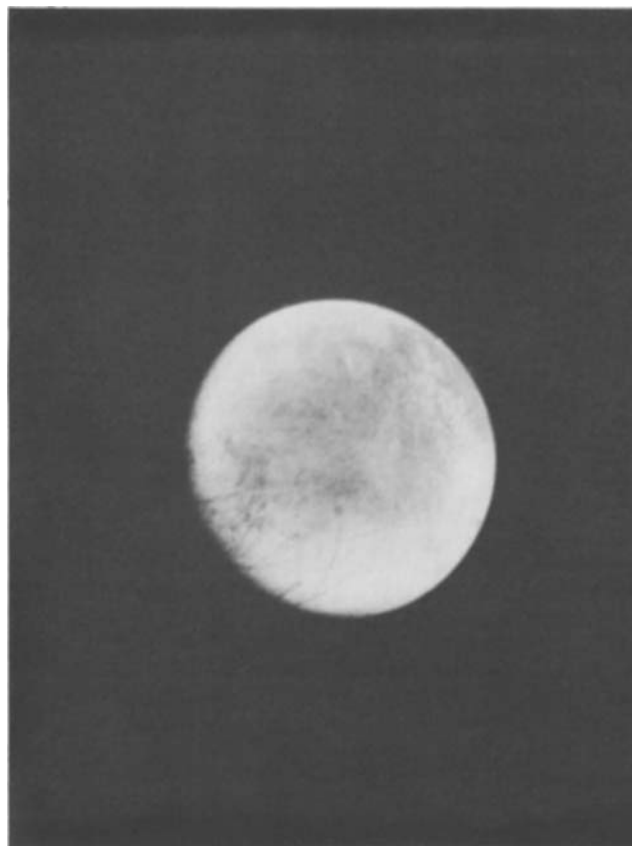


Fig. 1. Jupiter's moon Europa. Photograph taken by Voyager 1. (Courtesy NASA/JPL, U.S.A.)

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artists can demonstrate the concept visually. To depict a scene on Europa, for example, some mathematical calculations must first be done. How large does Jupiter appear from Europa? How much area does the artist's field of view cover? When these are established, an accurate size is found for Jupiter in the European sky.

The next consideration is the viewer's location. In my painting 'The Icy Corridors of Europa', the viewer is 'standing' on one of the dark lines which cross the face of that moon (Fig. 2).



Fig. 2. 'Icy Corridors of Europa', acrylics, canvas 50 × 75 cm, 1979.

At this stage, a series of facts must be considered. Europa is a very cold place. Its surface temperature was measured by *Voyager II* as being about 150 K (-123°C). Scientists have calculated a very low density for Europa, implying that a thick crust of water ice covers its surface. This ice may be as deep as 90 km.

Close-up photographs of Europa's surface show visual similarities to areas in Earth's polar regions. This fact, along with those just mentioned, gave me a good hint about the textural qualities I needed to incorporate in the painting. From this point on, as long as scientific limitations were observed, artistic considerations became of primary importance.

The most visually complex element of the painting was to be Jupiter. The composition, therefore, was keyed to leading the viewer's eye in that direction. This was accomplished by establishing a vanishing point on the horizon just below Jupiter. The ice ridges cause movement, compositionally, in the direction of this point. Another scientific fact that I had to consider was that Europa is very flat. The highest ice ridges rise only a few hundred meters above the surface, so I chose not to make these ridges appear as snowy mountains, but rather as cliffs. By observing ice flows, faults, and cracked terrain such as salt flats here on Earth, I was able to execute this painting as an educated guess, probably an approximation of reality.

The painting serves three purposes: (1) It illustrates a scientific concept; (2) it provides an arena in which laymen can relate to the cosmos; (3) it is an object which can be viewed on a purely aesthetic level.

The research required in preparing an astronomical painting is considerable, much more than is normally done in other kinds of painting. It is not unusual for space artists to spend one hundred hours doing research on a painting which takes only ten hours to execute.

4. The Depiction of Spacecraft

The depiction of mankind's tools in works of art dates back to prehistoric cave painting. Since technology has given birth to today's Space Art, it is appropriate that technological elements be included. The techniques used to obtain information for a space scene can themselves become the primary subject of a painting.

Tools are an extension of man's physical body and senses. When a tool such as a spacecraft is placed within the context of an astronomical painting, the viewing public sees itself in that painting. This not only establishes an intimacy between viewer and painting, but also provides some human scale. For example, in the painting 'In the Shadow of the Rings' (Fig. 3) I chose as my subject the *Voyager* spacecraft, which has been the tool that has often inspired space artists.



Fig. 3. 'In the Shadows of the Rings', acrylics, canvas 40 × 50 cm, 1980

Through careful placement and choice of size of the spacecraft, the immensity of the planet Saturn is conveyed. The airbrush treatment of the planet's surface gives the background a blurred effect. The contrast of the out-of-focus planet background with the sharply defined craft gives a 3-dimensional depth to the work. In the lower left corner the dark shadows of Saturn's rings strike the planet's surface, providing a dark value to balance the deep values found in the planet's northern latitudes (at the upper right).

S. Science Futurist Art

If Astronomical Art is one end of the Space Art movement's spectrum, the other end is the science futurist art (at times referred to as Science Fiction or Science Fantasy Art). This category of Space Art covers a wide range of styles as well as treatment of the subject. The common thread is the depiction of mankind's close relationship to science and technology. This is portrayed in 'Souls of Saturn' (Fig. 4) where human heads replace the rocks found in the rings of Saturn.

Art is an on-going force which is molded and shaped by the culture and society which gives birth to it. The cycle becomes complete when culture and society are influenced by the art. As mankind moves out from the world whose qualities and experiences have been the sole artistic subject, art must expand to meet the new worlds and new realities which are encountered. Space Art is a manifestation of the necessity of bringing science and technology into a context of everyday life for the common man. It is a reflection of the optimism which mankind sees in his future.

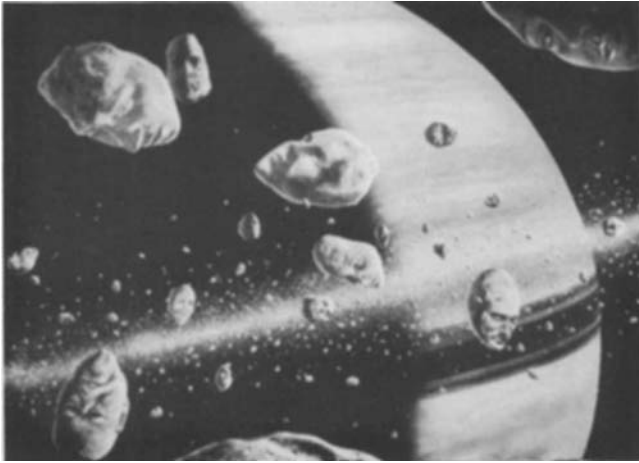


Fig. 4. 'Souls of Saturn', acrylics, canvas 45 × 60 cm, 1981.