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The Art and Science of Juno

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Abstract

The importance of the intersection of art and science has been recognized as a hallmark of renaissance periods throughout history. In ancient Greece, artists and scientists routinely worked together. This is also true in the period of the Italian renaissance. Today, we are experiencing our own renaissance. The intersection of art and science is more widely recognized today than ever before. The NASA mission Juno has embraced this intersection to not only engage artist but to involve them in doing science. Juno develops both art-science projects inspired by the exploration of Jupiter as well as developing outreach products specifically designed to stimulate a dialogue within our society engaging both artists, scientists across the globe.

1. Science and Art

Juno's art-science products include unique films illustrating planetary science, both from a science and artistic approach, and choreographed music by artists. The JunoCam visible camera is designed to engage the public in creating images from the observations of Jupiter downlinked by the spacecraft. Because of the art-science nature of the project, a significant fraction of the images created and posted on the mission Juno website are artistic expression inspired by Jupiter and Juno's exploration.

The Juno team embarked on a collaborative relationship with Apple that was announced to the public on July 4, 2016, in celebration of the Jupiter Orbit Insertion. The creative pairing provided inspiration and education, connecting space exploration and creative expression. A wide range of musicians ranging from Rap, Jazz, Classical, Rock and Contemporary music created original compositions and creative remixes using the sounds and data collected from Juno. Born from this unique relationship, the film Visions of Harmony combined the story of music, art and science woven to an original musical score. The Apple collaboration resulted in a Destination Jupiter ibook and a suite of songs that are available on Apple Music and itunes. Juno art-science films have been shown at Coachella, Amazon MARS conference while images from Juno's visible light camera have been shown at DPS and other art-science conferences and museums.

Juno detects radio waves associated with Jupiter's auroras and disturbances in the charged particles infusing Jupiter's magnetosphere. These waves sometimes exhibit interesting and, at times, bizarre structure in frequency and time. It is natural to convert these waves to the audio frequency range and listen to them. While typically not used in direct scientific analyses, the audio representation brings an abstract Juno measurement into a realm that can be appreciated by scientists and non-scientists alike. Many such 'space sounds' have been used as inspiration for or actually incorporated into musical compositions involved in the Apple collaboration as well as direct collaboration with the Juno team.

Art-science projects by the team have also involved museum exhibits, talks at the United Nations, concerts by Vangelis at the Temple of Zeus, exhibits and talks at Art Basel in Switzerland, and exhibits at South by Southwest. Other projects have involved concerts or productions with a number of musicians and artists including album covers, videos developed for MTV, and the creation of the original astronaut on the moon used by MTV as a symbol.

A sampling of videos and films will be shown as well as sample of art-science images and musical compositions inspired by the art-science campaign of Juno.

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