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Contemporary Arts Practice and Outer Space: A Multi-Disciplinary Approach (3)

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SPACE SCIENCE AND ART: THE CREATIVE SIDE OF STEM

Abstract

Space science is a field that bears diverse and vibrant fruits. Unfortunately, because many people find the language of science to be confusing, much of its beauty is lost in translation, yielding a negative effect on public and student engagement. Funded by the Woodrow Wilson Fellowship, this study jointly addresses the intersection of art and science, and describes technical thinking in terms of the artistic process.

To better understand space science through the lens of those who practice it, twenty-one researchers, instructors, and artists were interviewed as part of this Johns Hopkins University Internal Review Board (IRB)-approved study. Many interviewees expressed a common sentiment: the beauty of the field lies beyond a steep learning curve. Art shares these notions of beauty and discovery, but is much more accessible.

The author used astrophotography as a starting point for this study. Requiring the use of carefully calibrated telescopes and fluency in imaging techniques, astronomical data must be taken in spectra specific to the object being imaged. Artifact-laden images are returned in black and white and must be assigned to color channels and cleaned by hand to produce the familiar, colorful deep-space images found in mass media and scientific articles alike. The appearance of deep space objects whose light spectra are invisible to humans depends on the artistic and scientific vision of the individual who creates the photo.

In addition to their mutual importance in astrophotography, space science and art share theoretical similarities. For example, both exist in a physical space derived from abstract models. Pure mathematical constructs, which are used to model everything from spaceflight trajectories to astrophysical principles, have no precise physical implementation without introducing uncertainty. Raw creativity exists in a similar abstract space, and its physical implementation is art. Individuals who create a work of art undergo an abstract-to-concrete thought process, similar to those who engage in space science or technology.

By using the artistic process as a means to engage the public, space science can be made accessible to those who may otherwise lack the background and terminology to engage. It is hoped that these discussions may reframe the way space science is presented to students and to the curious public, encouraging them to better appreciate and actively participate in the pursuits of today's science and aerospace communities.