

# Making Space

## A workshop on data-driven art, space, and society for artists and educators

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### Summary & Aim

Art is a critical tool for exploring complex ideas and can be leveraged in public outreach to help facilitate the broad discussion of our relationship to space happening in society today. In the age of climate change, the burgeoning private space industry, and a science literacy crisis, it has never been more important to facilitate critical discourse on role of science in society, how and why we explore space, and who is shaping that narrative.

Making Space is a multiday workshop where we use art as a tool to explore scientific concepts and humanity's relationship to space. The aim of the workshop is engage artists directly in discourse and help them connect to science in their own context. **By incorporating ideas and techniques they learn into their own works and careers, participants are empowered to facilitate learning and interdisciplinary dialogue in their own communities.**

### The Art of Planetary Science

This workshop is an extension of The Art of Planetary Science (TAPS) founded by Molaro in 2013. TAPS is an annual exhibition to bring together artwork that is inspired by planetary science alongside works of science or data-driven art, sometimes called SciArt. SciArt is art which communicates scientific ideas and/or is created from scientific data, made with the intent to both teach and provide enjoyment. These events create a unique perspective on space and a vertex for dialogue between scientists, artists and makers, and the public. Since 2013, TAPS has held 14 exhibitions, including an annual show in Tucson, AZ at the University of Arizona and satellite events at scientific conferences across the country. These events have engaged several hundred individual artists and thousands of attendees hungry to engage with science in a new way. The annual show typically displays ~250 pieces of art each year.



From top left: Cosmic Geometries by Carol Kucera, Margaret's Moon by Jamie Molaro, Asterism by Caroline Bowen, Exoresonance by Josh Lothringer, Genesis by Mica Post

### Art in Science Communication

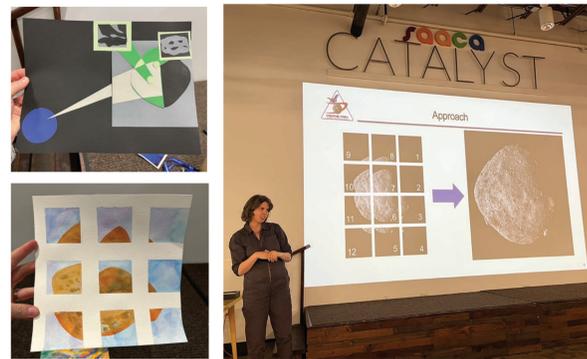
Our work with TAPS has shown us that art can be a powerful tool for facilitating public engagement, interdisciplinary learning, and discourse:

- Creating/engaging with science and data-driven art provides the opportunity to form a meaningful, personal connection to science outside the confines of a classroom.
- As a tool, art offers new ways to explore ideas and worlds, leading to new understanding and perspectives.
- As self-expression, art allows people outside academia to participate in defining how and why society values and benefits from scientific knowledge.

### Workshop Content

As an extension of our exhibitions, we aim to facilitate interdisciplinary learning and discourse more directly with artists and makers, not only helping them engage with the science we're doing but giving them the tools and training to create data-driven art of their own. Making Space is a three-day workshop about space and society where we use art to explore scientific concepts and humanity's relationship to space. Participants learn how scientists use spacecraft observations to explore other worlds, how to access data from missions, do collaborative discussion and art activities, and practice creating SciArt through directed artmaking "labs." At the end of the workshop, participants create their own works of science-driven art and organizers arrange their feature in a free, public art exhibition. The workshop is targeted towards an adult audience with backgrounds (hobby or professional) in art, science, and/or education.

**Talks** focus on science-art connections, techniques in SciArt, science and society, the history of space art, and accessing public data from space missions. Science talks by guests cover topics in planetary science, with emphasis on how spacecraft observations teach us about other worlds.



**Small group discussions** encourage dialogue about our relationship to space and the purpose and value of exploration.



**Collaborative art-making prompts** create connections between exploration and creativity.



**Labs** are directed art-making activities that model actual techniques in incorporating scientific ideas or data into a work of art. For example, in Star Scenes participants use an online planetarium to collect classification information about constellations, and the steps of the lab teach them about different attributes of stars which they represent visually in the artwork. In the Orbital Music Box, participants learn about orbital resonances in planetary systems and abstract the concept into a piece of music for a mechanical music box. In Seeing in a New Light, participants use images of Jupiter taken in different wavelengths to explore and portray what differences in the cloud appearance tell us about the giant. Labs use a variety of mediums and are done as parallel solo activities.



### Workshop Outcomes

The pilot workshop was held in April 2022 in Tucson, AZ. Of the 25 participants, half had backgrounds in art, a third in education, and the remaining in science or other fields. Our feedback was overwhelmingly positive! The next workshop is planned for Pasadena, CA in spring 2023. These events are supported by NASA's Solar System Exploration Research Virtual Institute (SSERVI). I am currently searching for a venue for Pasadena and funding for additional events.

**"As an artist I've always felt alienated by science even though I was interested in it. But now I feel like you've broken down barriers that I had put up for myself and I can interact with the world in a completely new way."-Violet Brand**

**"I think I might try using art as a way to meditate on and progress my own research."-Anonymous**

**"This lab really shows how art can be used as a different way of learning something. I want to try using it in my class."-Dr. Michelle Wooten**

