

Psyche Inspired

Titanium Class

A COLLECTION OF ARTWORKS

Psyche Inspired Titanium Class

A Collection of Artworks

Executive Editor — Brooke Owen

Layout and Photo Editor — Alexandra Cook

Contributing Editors — Brianna Orrill, Adriana Talamante,
Christiana Shafer, Abigail Weibel, Dillon Briggs

Contributors — Catherine Bowman, Stephanie Germaine,
Lindy Elkins-Tanton

Cover Art — Luis Martinez-Mella

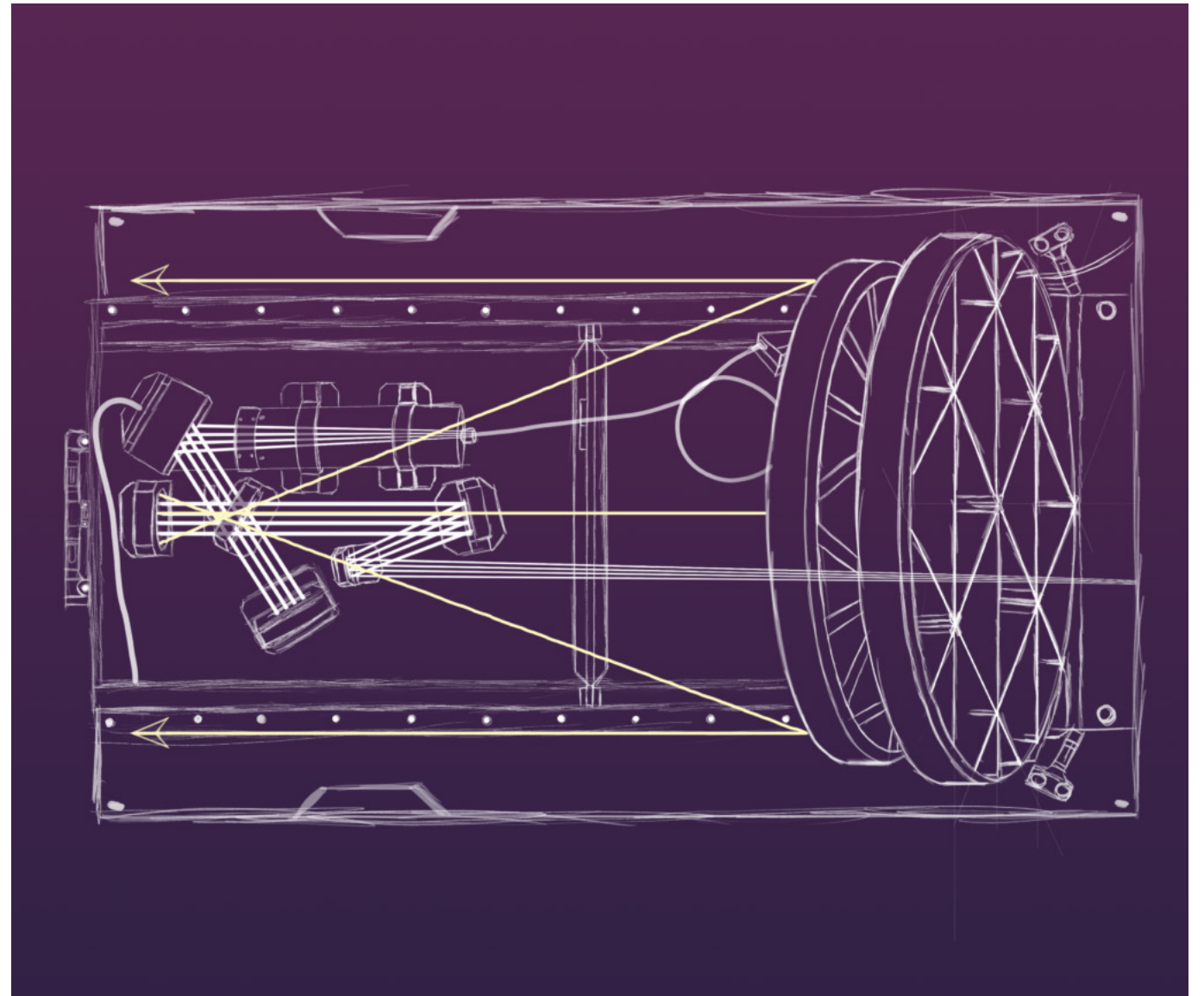
Published July 2018



nasa.gov/psyche
psyche.asu.edu

Table of Contents

Foreword from Lindy	4
A Note from Brooke	5
Introduction	6
Asteroid	7
The Mission	28
Spacecraft	48
Meet the Interns	65
Index	66



See these QR codes?



These allow you to experience more Psyche content online. To start, open the camera app on your iPhone/iPad or download and open a free app such as “QR Code Scanner” from the Google Play store for Android. Hold your smartphone or tablet over these barcodes. Once scanned, follow the generated link on your device to experience our interactive content online and enjoy.

Foreword from Lindy

July 13, 2018

Conway, Massachusetts

When NASA's Associate Administrator for the Science Mission Directorate, Dr. Thomas Zurbuchen, called me in January of 2017 to say the Psyche mission proposal had been selected for flight, he lost no time in also discussing a more ambitious student collaboration. He said to me, "We want to do a different kind of student collaboration. We need you to do more. We want you to go back to the drawing board." We felt that meant we could indulge our greatest wishes, instead of following this the way people had done in the past. And so we are actually breaking new ground with the Psyche mission in several ways, and one of the very most exciting highlights is the Psyche Inspired program.

We want to remind the world that it takes all of society to explore space. Not just engineers, and not just scientists, but space is for everyone in every discipline. It's for graphic designers, and artists, and people who do theater. It's for people who keep the accounts and do schedules. It's for every person who is interested in being a part of it. And so with Psyche Inspired we are bringing onto the mission team undergraduate creative artists from all genres and also from all majors.

In this, our very first year, we welcomed thirteen undergraduate artists, each with a different creative genre (though there was great breadth of talent and few stuck to just one medium), and each with a different major. About half our Psyche Inspired students are STEM majors, and the other half are largely arts and humanities majors. We love this diversity. And we love the art that has resulted!

When I was very lucky this year, I got to join the students, our leader of the program, Dr. Catherine Bowman, and our student intern project manager, Brooke Owen, in their Friday afternoon meetings. The energy and excitement in that room would carry me for the next week.

Ideas came along that we had never anticipated: a children's book; a giant papier-mâché asteroid that became everyone's favorite prop for selfies at public events; music composed for Psyche and then laid over stop-action videos by a different artist. The engineers working on the project at Jet Propulsion Laboratory started following all the art and clamoring to have art come to them. I love seeing the student art in offices and on the walls when I visit there. This program has already touched the public and the mission in so many ways, more than we anticipated. It's bringing us all together and sharing the inspiration of our challenge and our plan, even more than we thought it could. And so I write this with the greatest gratitude for everyone in our inaugural Psyche Inspired program: with deepest thanks, I salute the accomplishments of your year! And you have set the bar high indeed for all who come after. I hope these works of art give you the joy that they give the Psyche team.



Linda T. Elkins-Tanton

Principal Investigator, NASA Psyche Mission

A Note from Brooke

July 14, 2018
Jerome, Arizona

In its inaugural year, the Titanium Class of Psyche Inspired interns created over 50 artworks inspired by different aspects of the Psyche Mission. Interns were given about a month to complete each work they proposed. This book contains those creative projects, which demonstrate the growth that each intern experienced while participating in Psyche Inspired.

During the internship, students learned about the mission by talking to ASU and NASA staff, scientists, and engineers. The interns met weekly to discuss their projects, ask questions, receive feedback, and collaborate. They were challenged to create engaging artworks that speak to a broad audience about scientific topics.

Beyond the science, interns also drew inspiration from the engineering designs for the spacecraft, the Greek mythology behind the name of the asteroid, and the everyday interactions of the people who work on this mission. With such a wide variety of influences, these artworks make it easy for anyone to feel connected to the Psyche Mission.

Brooke Owen

Student Manager, Psyche Inspired and Psyche Student Collaborations

What is Psyche Inspired?

Psyche Inspired is a program that brings undergraduate students from any discipline or major together to share the excitement, innovation, and scientific and engineering content of NASA's Psyche mission with the public in new ways through artistic and creative works.

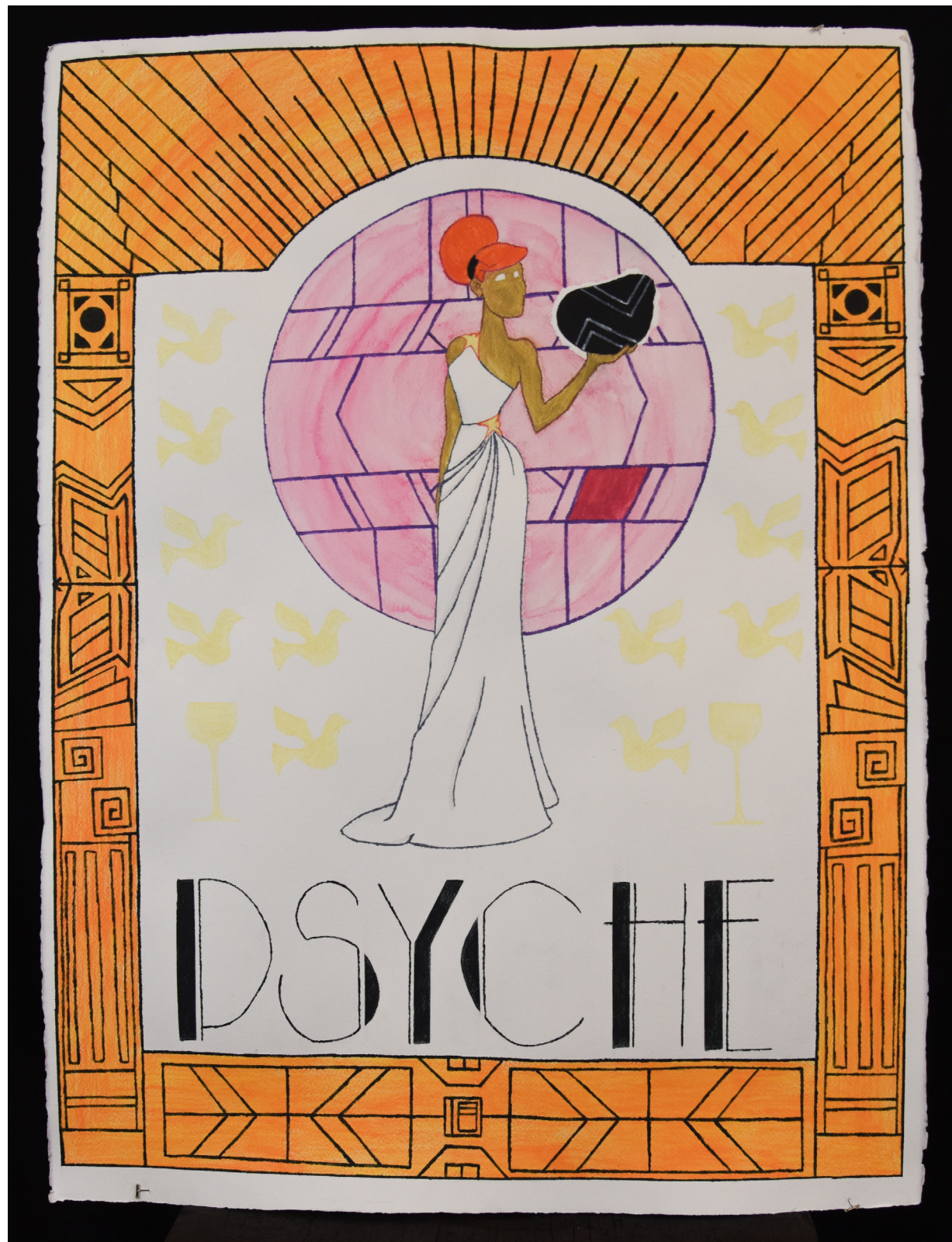
Asteroid

Deep within the terrestrial planets, including Earth, scientists infer the presence of metallic cores, but these lie unreachably far below the planets' rocky mantles and crusts. The asteroid Psyche offers a unique window into these building blocks of planet formation and the opportunity to investigate a previously unexplored type of world.

Only the 16th asteroid to be discovered, Psyche was found in 1852 by Italian astronomer Annibale de Gasparis, who named it for the goddess of the soul in ancient Greek mythology.

What gives asteroid Psyche great scientific interest is that it is made of metal. Scientists think Psyche is the exposed nickel-iron core of an early planet, one of the building blocks of our solar system. Psyche is most likely a survivor of multiple violent hit-and-run collisions, common when the solar system was forming. The asteroid Psyche may be able to tell us how Earth's core and the cores of the other terrestrial (rocky) planets came to be. It is the only known place in our solar system where we can examine directly what is almost certainly a metallic core of an early planet.

Scientists have combined radar and optical observations to generate a 3D shape model of Psyche. This model shows evidence for two crater-like depressions. It suggests that there is significant variation in the metal content and color of the asteroid over the surface. But remember, no one has seen the Psyche asteroid yet, so we will not know what it actually looks like until the spacecraft arrives.



Psyche the Goddess

Jeremy Seidner

Watercolor

For this piece, I used a blend of Greek and Art Deco themes to portray the goddess Psyche holding the metal asteroid named after her. The Psyche spacecraft is also hidden in the design. The color scheme is taken from the Psyche Mission logo. The piece is symbolic, including the sun presiding over the galaxy and the butterfly, which Aristotle named Psyche ($\psi\upsilon\chi\acute{\eta}$), the Greek word for the soul. The eyes are the window to the soul for some, so the goddess's face is blank except for her eyes, a mirror for anyone to gaze at and see themselves. The goddess's lover, Eros (better known by his Roman name, Cupid) is represented by his wings near the sun. Ionic columns were used in the temples to the gods of ancient Greece, who drank ambrosia, the nectar of the gods, brought to them by doves. Dimensions: 22.5" X 30"

"I would describe my artistic process as organic: The direction for my pieces usually changes throughout the process as new ideas emerge. If those new ideas are capable of merging with the overall theme of the piece, they're also incorporated. I prefer not to have all the details prepared beforehand so that the piece is a living work of art."

- Jeremy Seidner

Psyche: Then and Now

Nikka Bacalzo

Paper and foam

These two pieces that I cut with an X-Acto blade show the “then” and “now” of Psyche. I layered multiple different cut-outs, separated and framed by foam core, to create the final piece. The Psyche asteroid was named after a Greek goddess, which inspired the idea of hands presenting the asteroid, as well as the wings she had that float behind. Fast-forwarding to 2026, the expected arrival date of the Psyche spacecraft, the second piece includes people looking through a telescope at Psyche, as well as Jupiter and Mars, which are near Psyche. Dimensions: 8.5” X 6”



“I wanted to be a part of Psyche Inspired because not only was I enticed by the connection to a NASA mission, but also this internship seemed to allow a lot of creative freedom. There aren’t many internships that allow you to create whatever you want with only a few creative restrictions so I wanted to challenge myself with different mediums and subject matters, and space exploration is a great place to start.”

- Nikka Bacalzo



Impact

John Domenico

Ceramic tiles

Inspired by the hypothesis that Psyche could be the core of a planetary body that went through a massive collision, this pair of wall hanging slaps captures the tension in the moment immediately before impact of bodies in space. Dimensions: 12" X 15.5"



Psyche to Scale

Morgan Baerwaldt

Watercolor

This piece compares the sizes of (16) Psyche to Earth and the Moon. If the Earth were the size of a small grapefruit, Psyche would be the size of a poppy seed. That's food for thought! Dimensions: 10.5" X 6"

"Psyche Inspired has been a great way to practice my art, and a good excuse to make time to make art because my major is pretty demanding."

- Morgan Baerwaldt

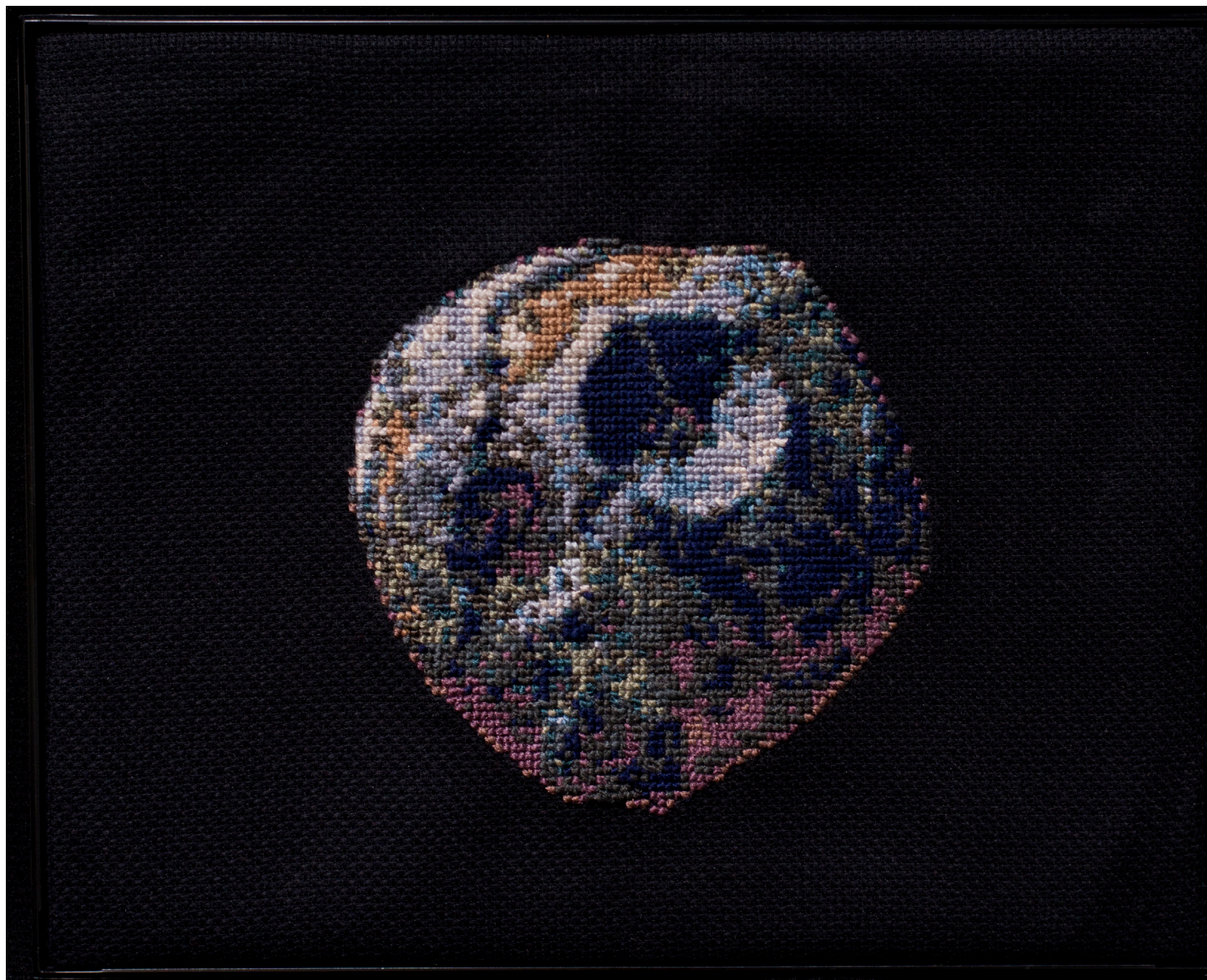
Psyche Cross Stitch

Abigail Weibel
Cloth and thread

This cross stitch is based off the current artist rendering of the Psyche asteroid. I chose to exaggerate the image by using a lot of color to help it pop off the black background (and because there are only so many choices of grey thread!).
Dimensions: 8" X 10"

"I first became interested in art around age 12, when I was gifted my first point-and-shoot film camera. I focused on landscape photography after that, and it was a great excuse to spend more time outside! That eventually morphed into a fascination with geology in my mid-twenties and is why I decided to get a degree in geology."

- Abigail Weibel



Scan for the
detailed pattern
and thread colors.

Asteroid Belt

Brianna Orrill

Chalk and concrete

I wanted to create a fun interactive piece that not only engaged the public but also shared a little history. In the ASU Asteroid Belt, I included three asteroids that humans have already visited, Eros, Vesta and Ceres, as well as Psyche, which will be visited in 2026. The public was welcome to fill in the smaller surrounding asteroids, creating an amazing mashup of imagination and creativity. Dimensions: 40' X 6'

"Science can sometimes be difficult to wrap one's mind around, and art can help simplify those concepts. Art can also evoke emotions and feelings that may be present but hidden within complex scientific ideas."

- Brianna Orrill



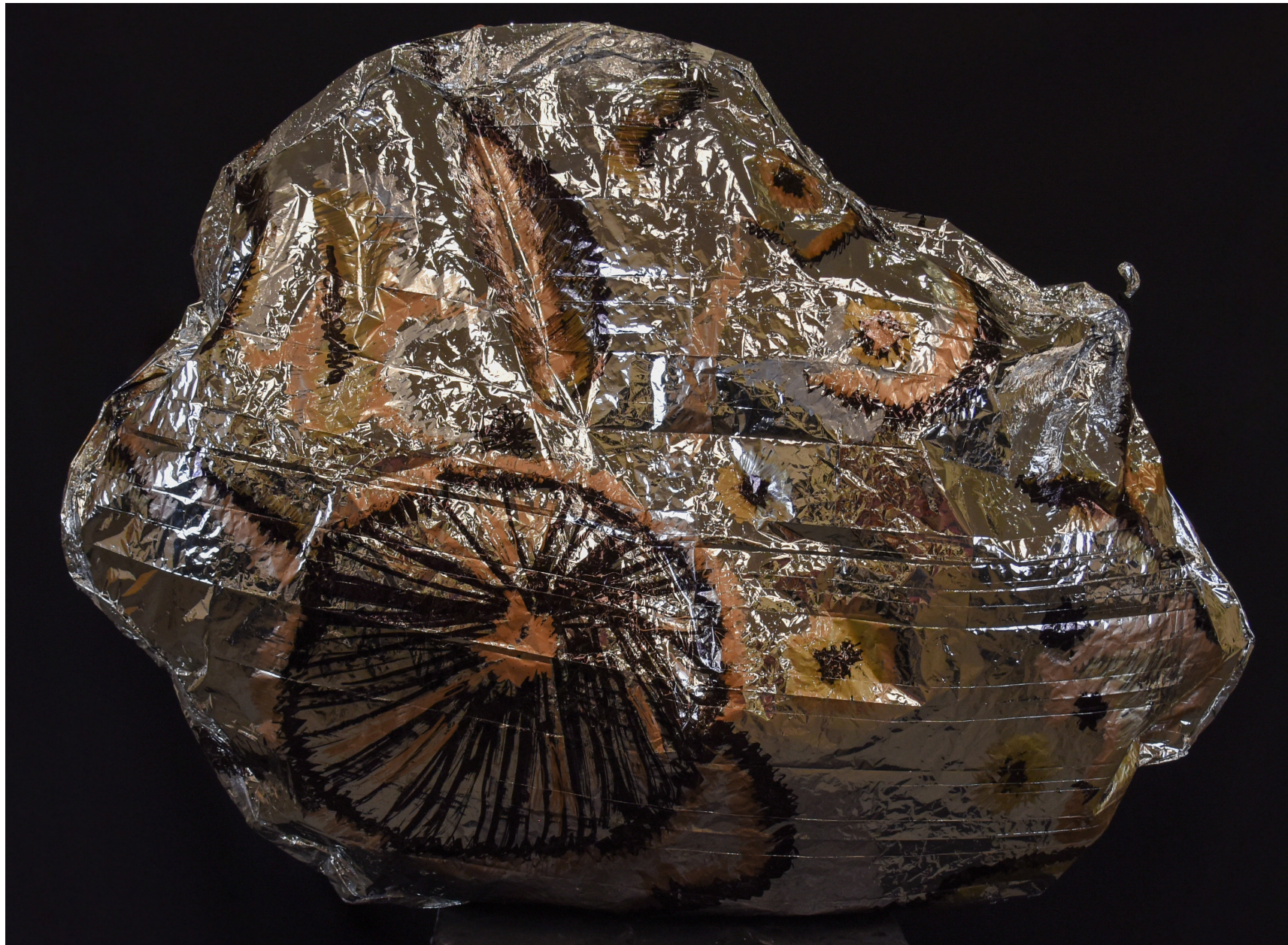
70	PSYCHE	1
60	METAL WORLD	2
50	IRON CORE	3
40	DENSE	4
30	PROTOPLANETARY CORE	5
20	JOURNEY TO A METAL WORLD	6
15	MULTISPECTRAL IMAGER	7
10	GAMMA RAY AND NEUTRON SPECTROMETER	8
7	MAGNETOMETER	9
4	DEEP SPACE OPTICAL COMMUNICATION	10



Psyche Eye Chart

Anne Norenberg
Digital illustration

This work was inspired by Luke Dubois' *Hindsight is Always 20/20* project. I made a Psyche Stylized Snellen eye chart, which helps determine a patient's eyesight from the ability to measure the distance from the chart while reading the letters. I also took words that were important to the Psyche mission and included them as the lines on the eye chart. Dimensions: 66.6" X 50"



Mylar Psyche

Chris Vasquez

Mylar and marker

I created a custom Psyche asteroid Mylar balloon so you have the opportunity to see the metal body floating through space. Your party has never been more metal! Dimensions: 41" X 35.5"

"When creating a piece, I start with an idea or theme, and from there I research the subject in order to understand it as best I can. Then I try to approach it in various ways before deciding on what to begin fleshing out. Once that's been done, I work and revise until I feel it is ready."

- Chris Vasquez



Iron

John Domenico
Stoneware

I find it intriguing to think about how the element iron exists in space compared to its presence on Earth. Iron on Earth, in the presence of oxygen, naturally oxidizes. These oxide states of iron have a vast array of color possibilities, ranging from red to brown to yellow to black. The exterior of this piece reflects on the spectrum of color we are familiar with in reference to iron. What will be the state of the iron on Psyche be?
Dimensions: 14.5" X 10.5"



Psyche Paper Quilling

Nikka Bacalzo

Paper

I outlined the word "Psyche" with white cardstock and chose colors similar to the Psyche logo to fill in the letters. I chose to run the yellow colors through the middle of each letter and surround the letters with white wavy pieces to create more movement since Psyche will be orbiting! Dimensions: 17" X 6"

"My favorite part of being in Psyche Inspired was seeing what the other interns created. I loved hearing everyone's weekly updates and their trials in getting their project finished. Seeing everyone else's creative process was more motivation for my own work."

- Nikka Bacalzo



“I’ve noticed a change in how I relate to projects that are bigger than just one person. Before, I was hesitant to get involved in things, fearful that I didn’t have enough to offer. Now, I engage with new opportunities with my assets and skills in mind, not worried about what I’m lacking. I’ve become bold.”

- Caralie Cedarleaf

Metal World

Caralie Cedarleaf

Wax, water, iron

Metal World is a speculative iron landscape that could be found on 16 Psyche. This speculative landscape started as a layer of burn-out wax from the Foundry at the School of Art at ASU. Wax that is burned out drops several feet onto a pool of water and is collected for reuse. The result is organic in shape and resembles aspects of planetary geology such as impact cratering and volcanism. Wax is melted out of ceramic shells, which is the final step before pouring molten metal. Dimensions: 15.5” X 22”



Mixed Metallic

Abigail Weibel

Acrylic paint on glass

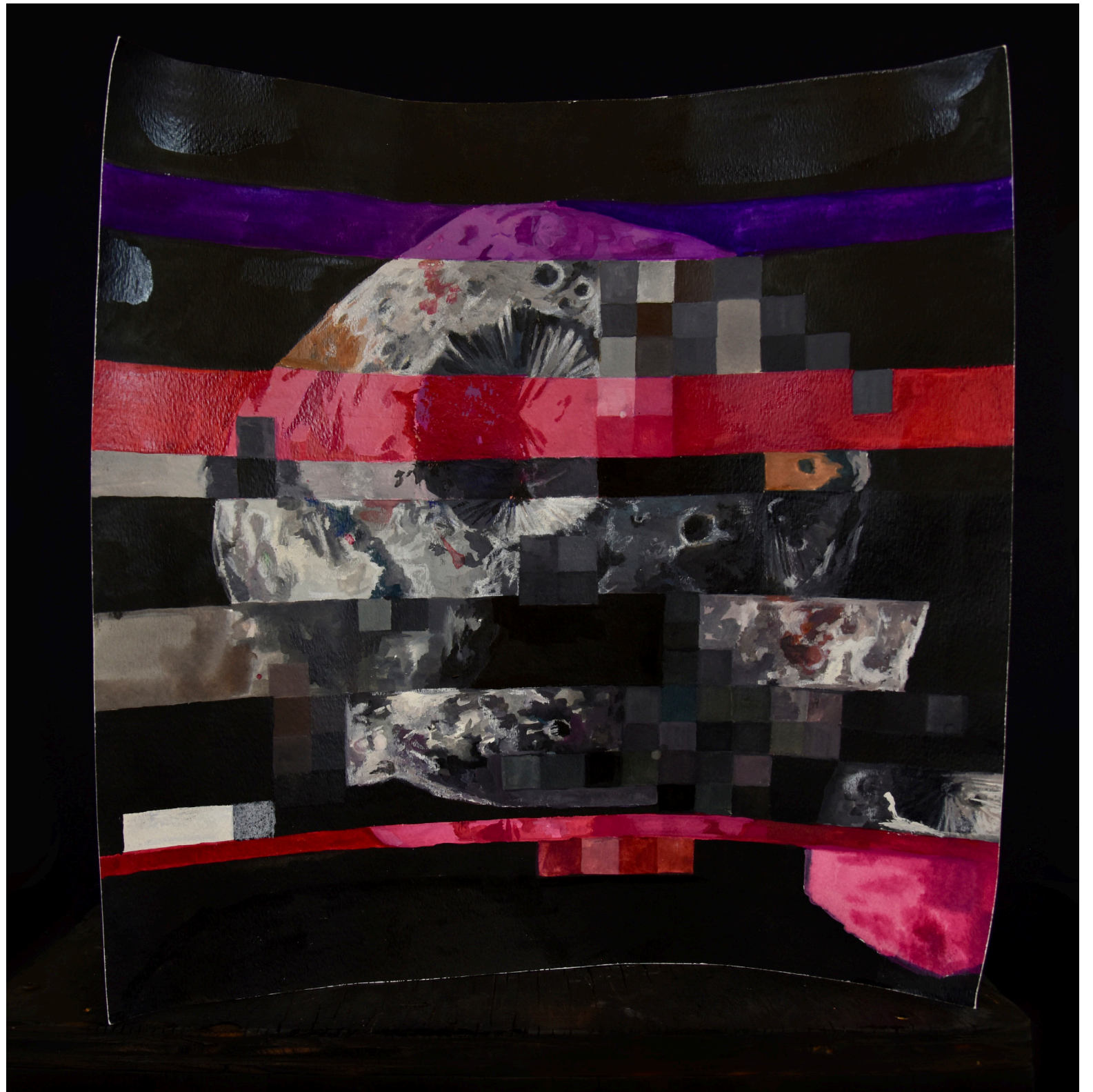
This painting was inspired by the color palettes of the current artist rendering of the asteroid and my fellow Psyche interns' recent artworks. It seemed fitting to me to create an abstract piece that allowed for greater interpretation and imagination, similar to the interpretations that are resulting from the small amount of data we currently have on Psyche. Dimensions: 13.5" X 17"

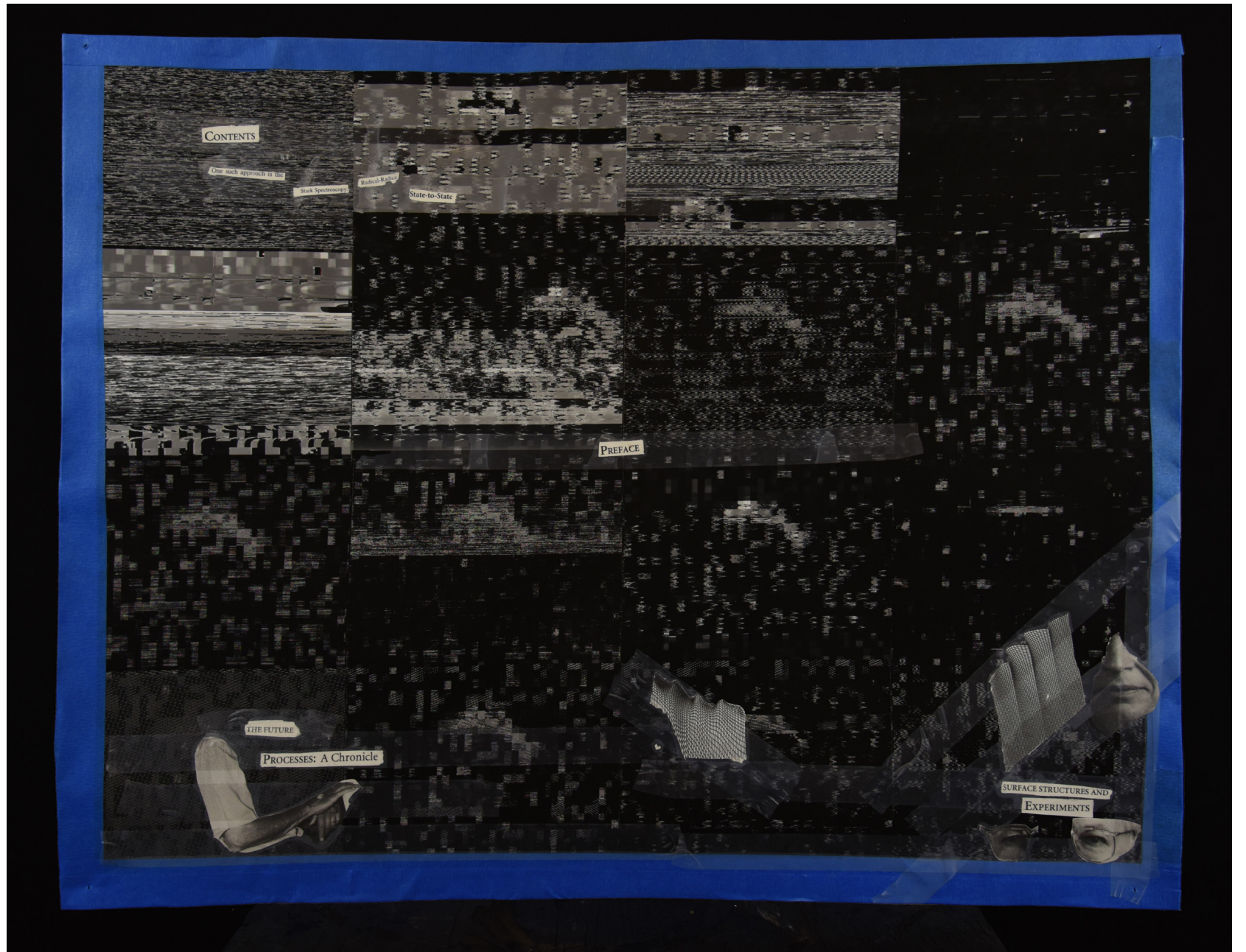
Pixelated Psyche

Sofia Garcia

Watercolor pencils on cold-pressed watercolor paper

I incorporated the pixelated image from the latest radar observations of Psyche for the inspiration in my image. Psyche is still so unfamiliar to us, so this is my interpretation: the thought of discovering the unknown and the pieces that we need to put together.





(16) Psyche

Megan Bromley

Ink-printed paper, cellophane tape

This work underscores the mysterious nature of the asteroid and the importance of the mission. It emphasizes that our current images and predictions about the asteroid are useful, but ultimately can be distortions, not unlike the images I've made. To create this work, I converted a pixelated image of (16) Psyche into a sound file, applied 16 different combinations of sound filters to the file, converted those 16 results back to image files, and added each edit as a tile in a larger grid of 16 images. Taped over the top is an accompanying collage poem. Dimensions: 23.5" X 18"

Crater

John Domenico
Stoneware

Given that Psyche is believed to be primarily metallic, I am intrigued by what kind of deformation the surface would undergo when impacted by other objects in space. This piece for me explores what plastic deformation looks like in the context of a crater. To do this I constructed the form of the jar and then covered it in slip (a liquid clay), a very plastic material, and proceeded to impact the surface with various sized objects to create a crater-like surface. Dimensions: 23" X 16"





Psyche Bloom

Brianna Orrill

Chalk on canvas

I wanted to create a bright, flower-like piece to represent all the blooming ideas that have bloomed into success from the minds of the engineers all the way to the artists on the mission. Dimensions: 16" X 20"

"When creating for Psyche Inspired, I really had to think about how other people would view the image. I realized I wouldn't always be around to explain my thought process or the meaning of my pictures, so during the creation I had to consider the result of every action and how it would appear to the public. With that said, it has been really cool to hear that some viewers are interpreting my work in ways that had never even occurred to me."

- Brianna Orrill

Papier-mâché Psyche

Chris Vasquez and Kari Sanford

Wire, foam, paper

For this project we made a replica of the Psyche asteroid roughly the size of a laundry basket. We used a Papier-mâché technique in order to achieve this goal, using wire, foam, and paper. This provides a tangible way for people to “interact” with the asteroid. Dimensions: 32.5” X 30”

“Seeing how everyone, regardless of major or walk of life, worked together as a team to create an amazing internship experience as well as amazing artworks was a significant inspiration for me.”

- Chris Vasquez





Eye of Psyche

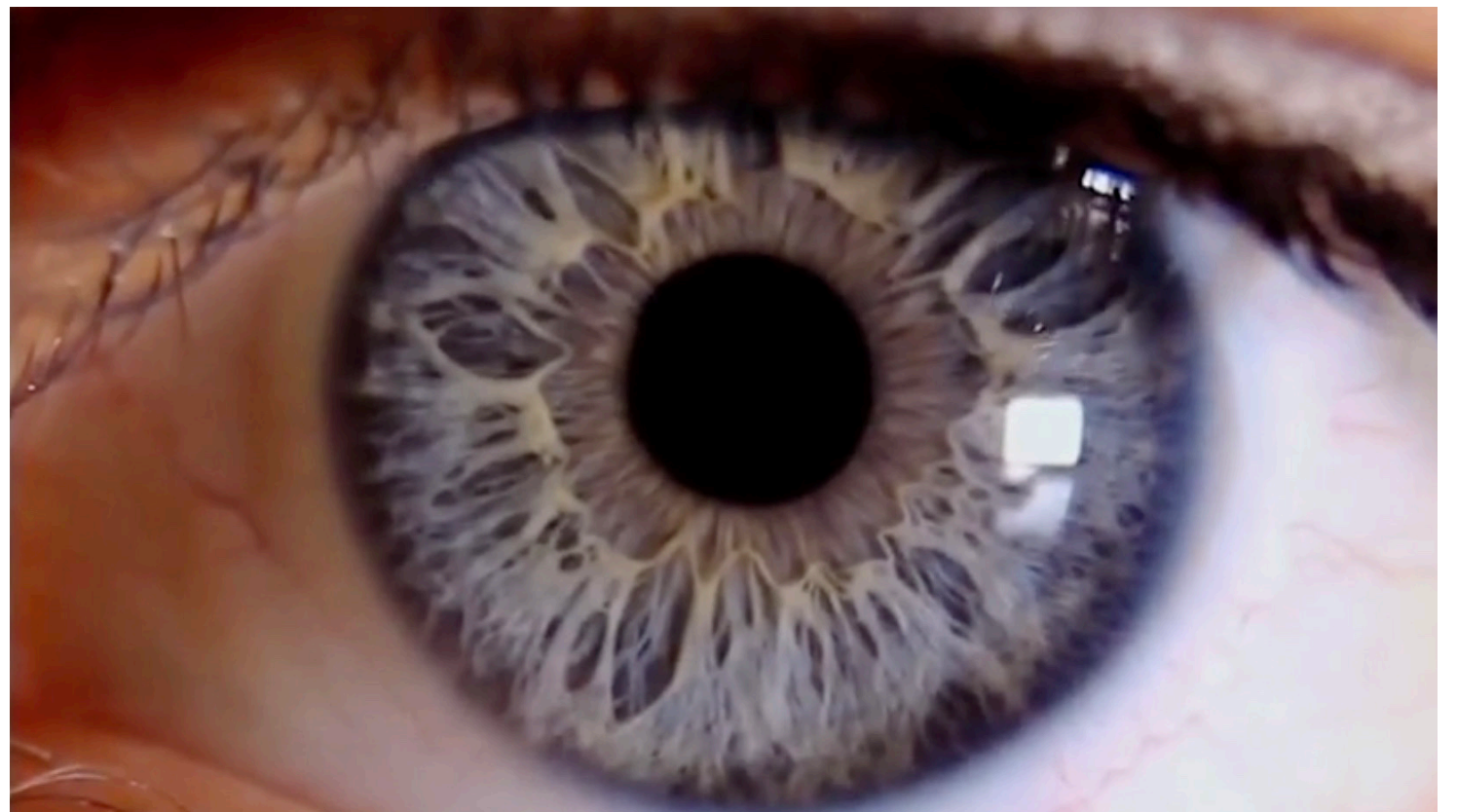
Anne Norenberg

Short film

This is a looping video created in Adobe After Effects that takes the viewer on a journey through the Eye Of Psyche. I used MaxMSP to display projections with the help of David Tineapple.



Scan code to view
the full video.





Psyche Paper Lamp Shade

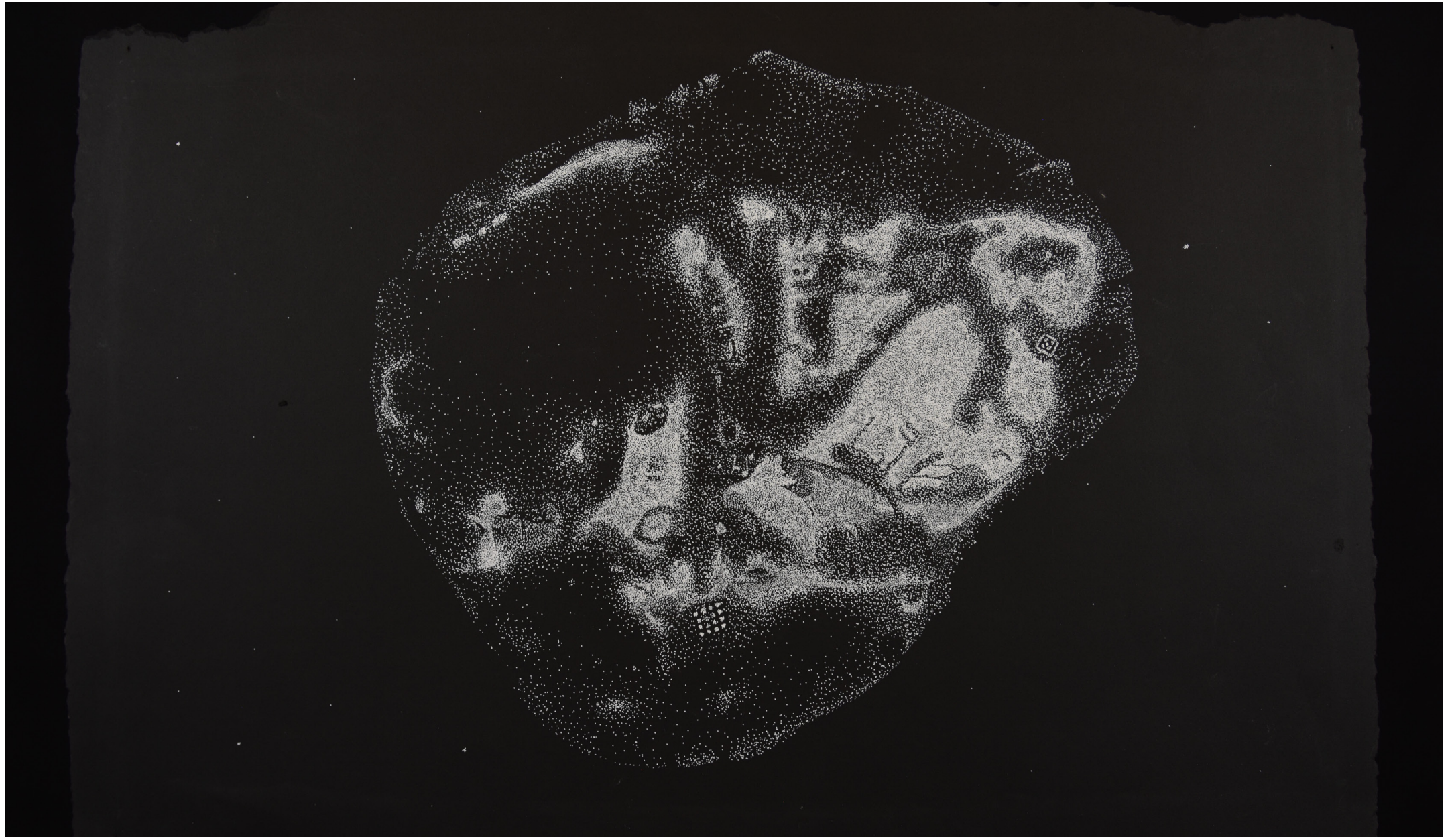
Nikka Bacalzo

Paper and acrylic paint

This lamp shade was constructed from 11 “flower” templates that I spray painted then textured with black and three different shades of matte silver acrylic paint. I decided to cut each “petal” irregularly to give more texture that Psyche may have. I cut each “petal” halfway through so all of the templates interlaced with each other and there was no glue necessary. Dimensions: 19.5” X 8.5”

“Before beginning a project, I do quite a bit of research to see what other artists have done, how others have interpreted a certain subject, and what techniques I could use. Once I have an idea of certain elements I want in my final product, I like to sketch out multiple renditions, make a lot of prototypes, test materials, and get outside opinions. I don’t like to start on my final product until I know what I will do and approximately how long it’s going to take.”

- Nikka Bacalzo



Star Dust

Jeremy Seidner

Paper and white ink

This piece portrays the darkness of space and the loneliness of Psyche, even within the asteroid belt: a black sheet of poster board stippled with white ink. To serve as a model for the possible shapes and textures of the asteroid, I used a chunk of iron to mimic the nickel-iron core. A pointillism style felt appropriate to serve as a metaphor that the asteroid, like all of us, is made up of "star dust". Dimensions: 22.5" X 15"

"Space exploration interests me because of the places we could discover. Explorers have always roamed our planet. Crossing oceans of uncertainty, they have always learned something new or unexpected. I want to be a part of that."

- Jeremy Seidner

The Mission



Psyche is both the name of an asteroid orbiting the Sun between Mars and Jupiter — and the name of a NASA space mission to visit that asteroid, led by Arizona State University. The mission was chosen by NASA on January 4, 2017 as one of two missions for the agency's Discovery Program, a series of relatively low-cost missions to solar system targets.

The Psyche spacecraft is targeted to launch in summer 2022 and travel to the asteroid using solar-electric (low-thrust) propulsion, arriving in 2026, following a Mars flyby and gravity-assist in 2023. After arrival, the mission plan calls for 21 months spent at the asteroid, mapping it and studying its properties.

The Psyche Mission consists of six phases, labeled A-F. These phases span the years 2015 to 2028, from initial studies and selection of the mission by NASA for its Discovery Program, through building and testing of instruments and the spacecraft, to launch, cruise, and arrival at the asteroid, and finally to orbit and the closeout of the mission.

A History of Space Exploration

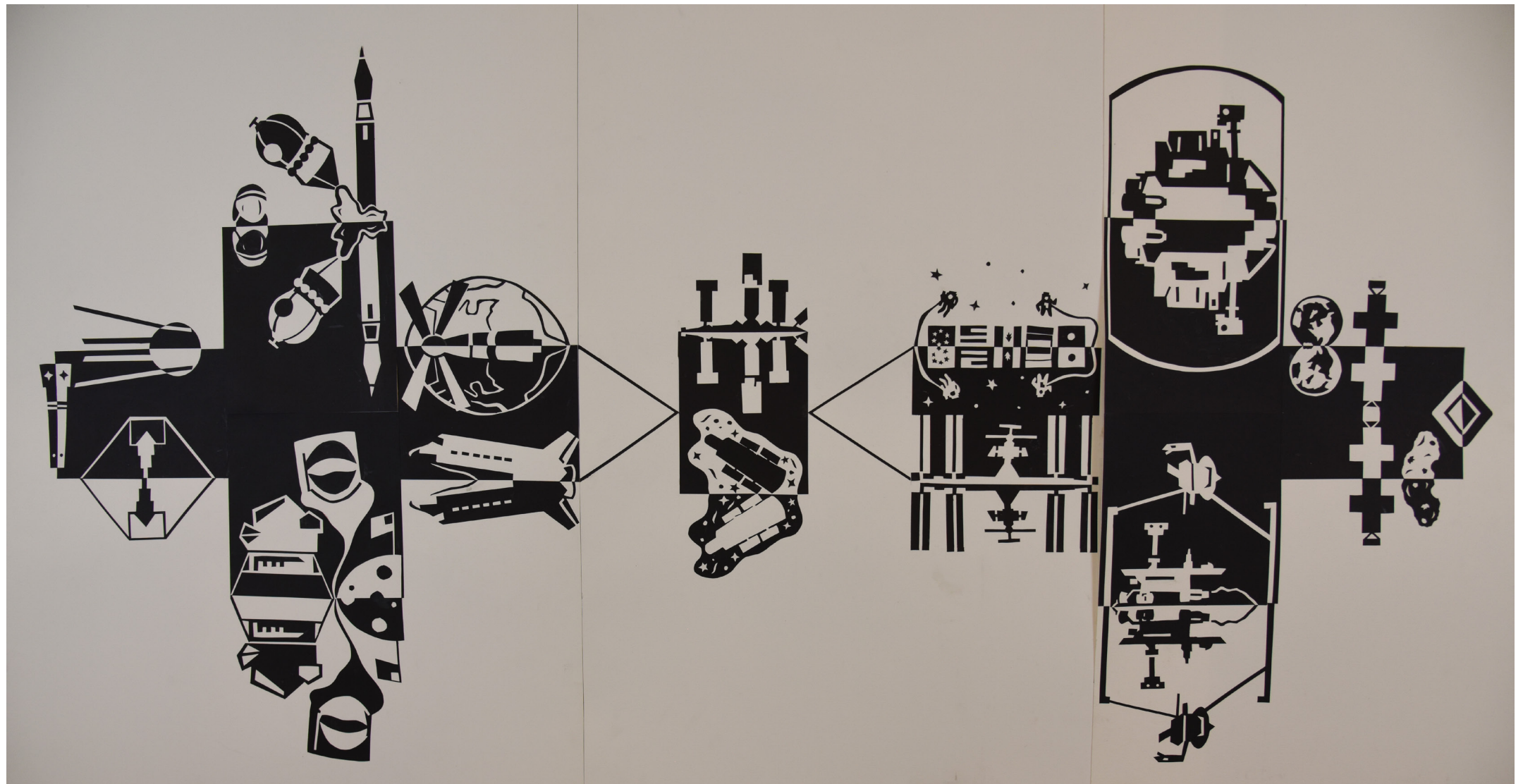
Brianna Orrill

Paper

This piece is based on the Japanese art style of Notan, which focuses on stark contrasts. Designs and shapes are cut into black paper and reflected to the outside, creating a mirror image. The piece takes the overall shape of the Psyche spacecraft, while cut into the main structure is the history of space exploration. In this piece, you can see Goddard's first fuel rocket, Sputnik, the first human space flight, a Saturn rocket used for the Apollo missions, the lunar landing, Skylab I, the Space Shuttle, Mir, the Hubble telescope, the International Space Station, Voyager, the Spirit rover, the Curiosity rover, and finally Psyche, the next step in our exploration of space. Dimensions: 62.5" X 38"

"Space is so vast and unexplored that I have always been drawn to it. There are so many unknowns out there to be discovered. Some small part of me is also frustrated by the seemingly impossible task of wrapping my head around just how old and immense space is, and space exploration may be the only cure for this."

- Brianna Orrill





Coming in 2022: Psyche Mission

Anne Norenberg

Illustration in Photoshop

For this project I created a Psyche Mission movie poster to highlight the curiosity of the mission. I created flames depicting a question mark with the Psyche asteroid as the period of the question mark to show the mystery and endpoint of the mission. Dimensions: 24" X 36"

"I've always loved science and the outdoors and space because we don't know that much about space, and we're learning more and it's just a great industry."

- Anne Norenberg



“Nobody is working on anything all by themselves, and I thought it was really cool of everybody on the team to recognize that. And I think that is an important misconception to break down to the public, you don’t have to work on anything by yourself you can come together and I think that is where the truth growth happens for people.”

- Kari Sanford

Psyche Word Cloud

Kari Sanford

Digital illustration

I wanted to tell the stories of the minds and hearts behind the Psyche Mission. With the team’s help, I approached scientists, engineers, journalists, and students associated with this mission and solicited their feedback. All of the words/phrases in this word cloud are theirs. Psyche has created a community through engagement: we are all connected through our pursuit of knowledge in deep space. Dimensions: 46” X 35”



Psyche Inspired Intern Portraits

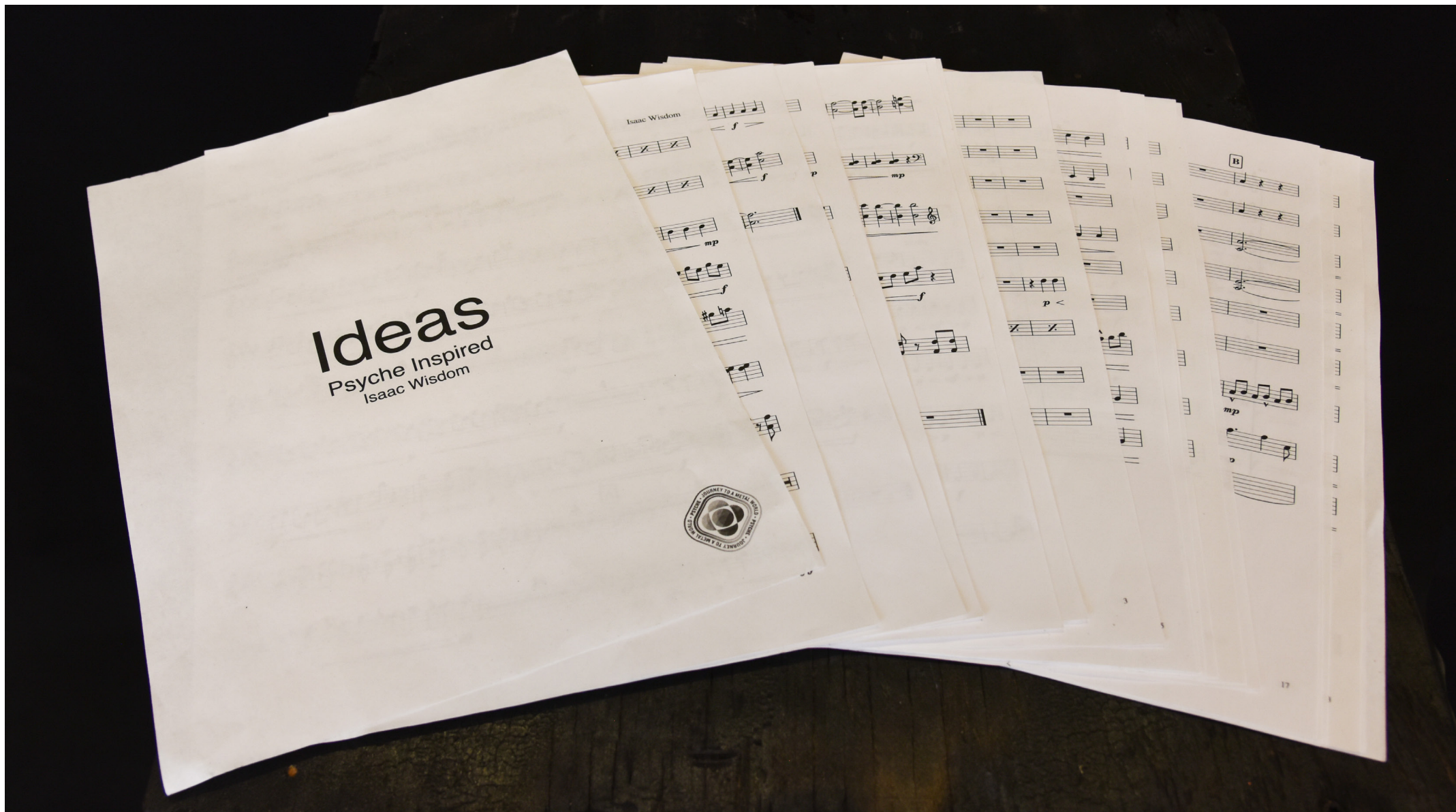
Abigail Weibel
Photography

Headshots of (most of) the inaugural Psyche Inspired interns taken for the Psyche website. (My headshot was taken by Brooke Owen, the Psyche Inspired student manager).

Dimensions: 18.5" X 21"

“Within my photography I’m inspired by massive landscapes, color, and bold people. I decided to branch out to painting and cross-stitch for this internship and, although still inspired by the massiveness of space, I felt more influenced by my fellow interns, human’s innate motivation to explore and the small amount of data we currently have on Psyche (the asteroid).”

- Abigail Weibel



Ideas

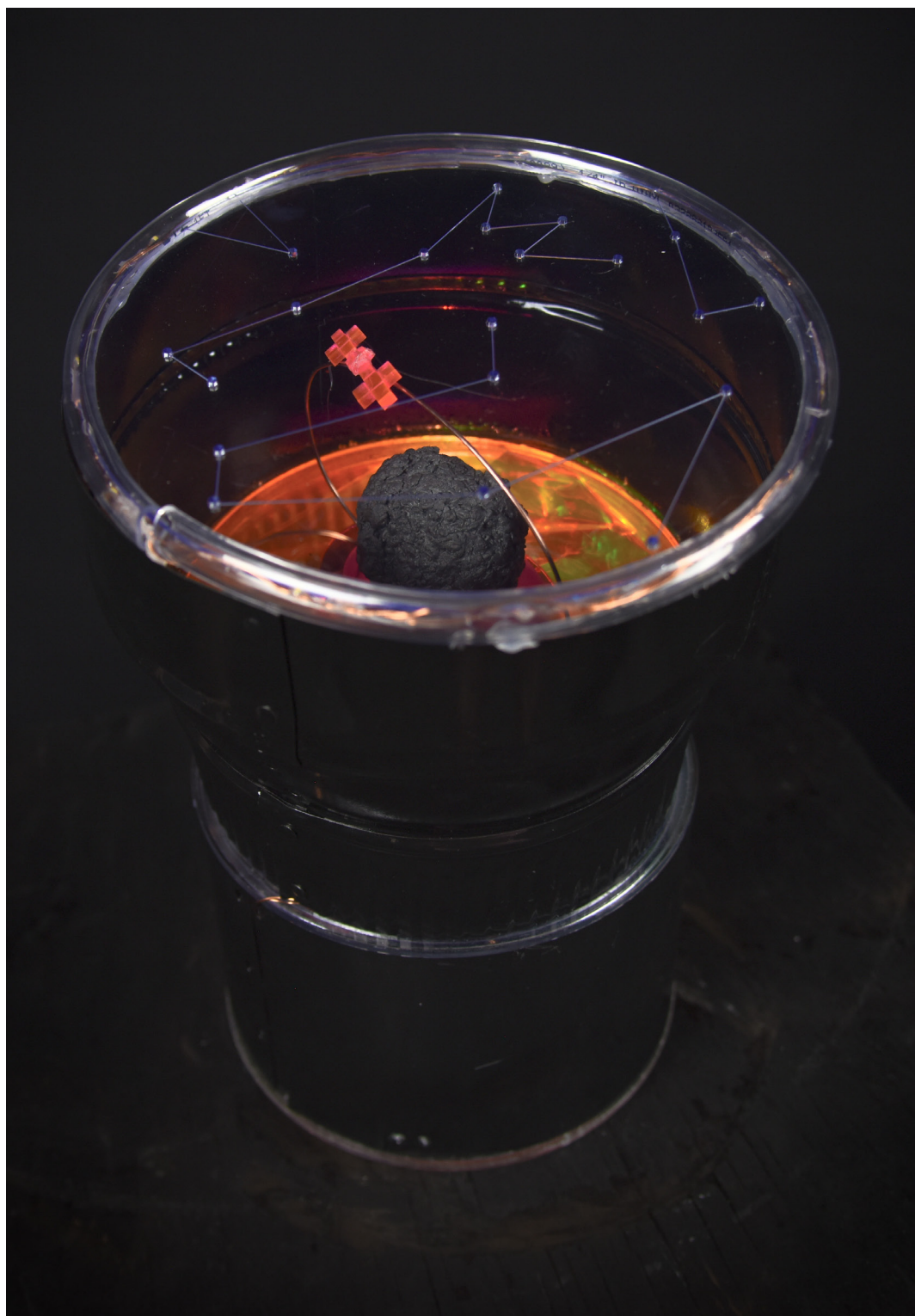
Isaac Wisdom

Composition

“Ideas” is a piece I wrote for a mallet ensemble that was inspired by the feelings and emotions that might have been felt by the person or group of people as they were first conceptualizing Psyche. Certain instruments are meant to be on either the left or the right side, which allowed me to write the music with interest to the spatial relation between instruments. Interpretation of music is always subjective, of course, but hopefully you will feel the curiosity, wonder, and excitement that was present during the conception of Psyche; and that I convey through this piece.



Scan code for full piece and more.



Backyard Telescope

Caralie Cedarleaf

Cast iron, acrylic, LEDs, copper wire, dichroic film, aluminum ducting

Backyard Telescope represents the accessibility of the asteroid (16) Psyche to scientists and non-scientists alike because of the Psyche Mission. The asteroid in the center is cast in iron, an element in Psyche's composition. The laser-cut Psyche spacecraft orbits the asteroid on a copper wire, referencing Arizona's role in the mission. The star patterns are designed after sculptures of the goddess Psyche from the era of the asteroid's discovery. The dichroic film – which was developed in the late 1950s by NASA and the Department of Defense to protect sensitive instruments from cosmic radiation and to shield astronauts' vision from unfiltered sunlight – represents the decades of great scientists and engineers who have made, and continue to make, space exploration possible. Dimensions: 10.5" X 7.5" X 5.5"

"My great grandpa worked on a few NASA missions, so it's been really fun to be involved on this level, even though it's not the same way he was. But to be able to make art about something that has a lot of relevance in my family history is amazing."

- Caralie Cedarleaf

**Planets pass me by all day,
But in the asteroid belt I stay.
Floating through outer space
The sun shines on my face,
Even from 3 AU's away.**

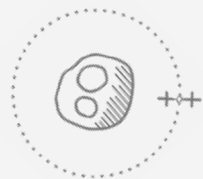


**Science has many questions for you.
We heard you were metal, is that true?
We're sending a probe
From our earth's green globe
To find the answers we pursue.**

**You say you will be leaving soon.
Will you fly around the moon?
Or zoom past a rocky world-
I'm sure Mars would be thrilled!
And I'll see you at five past high noon!**

**Calculations are complete!
Spacecraft launch was a feat
We achieved as a team.
Yes, Mars was in our scheme
To ensure that one day we'd meet!**

**Hello! Welcome! How are you?
Finally I can make my debut:
Reveal my landscape,
Show off the big scrape,
And tell you why I never grew.**



**Exploring space has been so fun.
With you in sight, I've found the one.
We have lots to measure,
Since you're a rare treasure-
An insight to how planets have begun.**

Psyche Limericks

Kari Sanford

Limericks

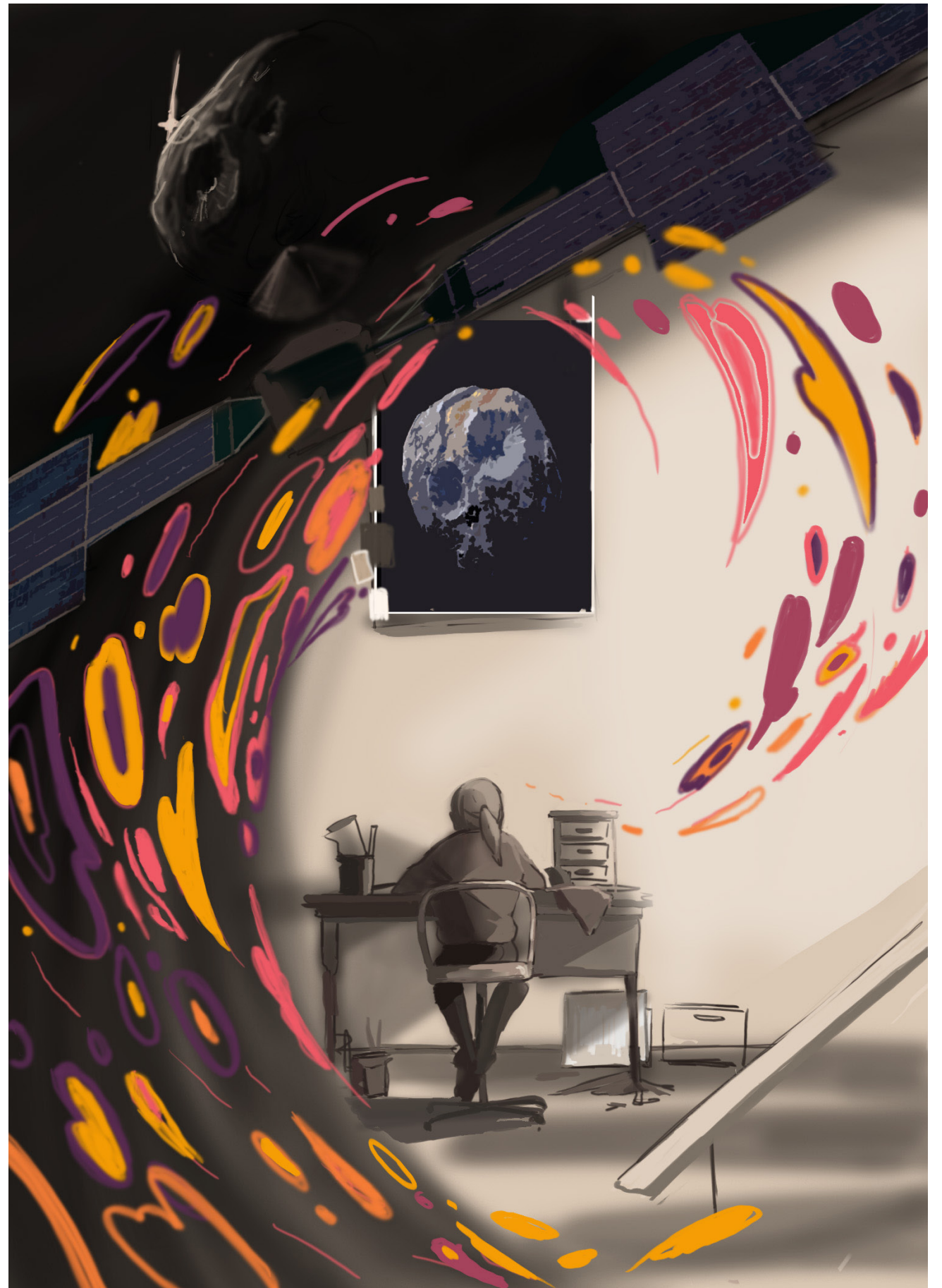
I wrote a series of limericks. Each poem's first letter spells out "Psyche." The limericks alternate between the perspectives of the asteroid and spacecraft as they chat with each other. Since limericks are short, quirky, and silly in nature, I tried to give each of the Psyche's that personality through poetic dialogue.

Many Minds

Sofia Garcia

Digital illustration

This is a work reflecting the many minds that make the Psyche mission. It all began somewhere: the inspiration and motivation to live out what is beyond human comprehension. This is based off a story I created for the Psyche mission. Young minds inspired to live out the unimaginable. Dimensions: 18" X 25.2"

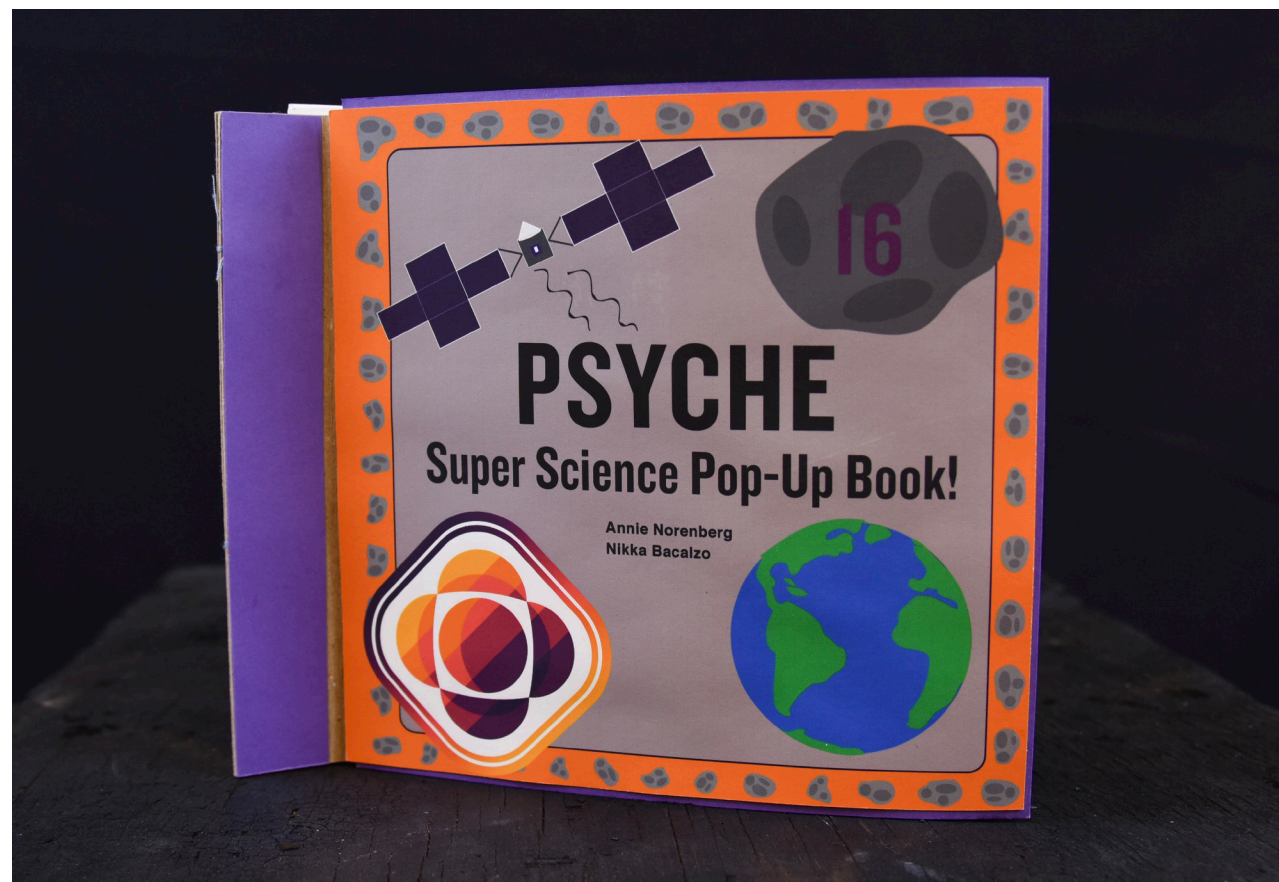




Psyche Pop-Up Book

Anne Norenberg and Nikka Bacalzo
Digital illustration, paper, and thread

This informative book was a collaboration between Nikka Bacalzo and Annie Norenberg. Annie designed the pages of the book, and Nikka elevated the pictures with foam core as well as added the pull-tabs and pop-ups with cardstock, cut with an X-Acto. The book outlines a little history of Psyche, its instruments, the launch date, and the purpose of the mission.
 Dimensions: 8" X 7"



Scan code to view the pages of the pop-up book

Psyche's Journey to a Metal World

Chris Vasquez, Jeremy Seidner,
Caralie Cedarleaf and John Domenico
Creative writing and digital illustration

This children's coloring book tells the story of Psyche's journey. Dimensions: 8.5" X 11"

"My favorite part of being in Psyche Inspired was the collaboration. Allowing myself to work on artwork with others and surrender direction created inspiring pieces that I couldn't have imagined myself. This was the first time I was involved in collaborative efforts with my art."

- Jeremy Seidner



Scan code for
a PDF of the
children's book.

PSYCHE'S JOURNEY TO A METAL WORLD





"I'm inspired by the fact that this Psyche Mission could tell us more about our own planet. Just wondering what we could discover about our own beginnings and what happens in space has been enough inspiration to create within the program. It's also inspiring to think about all the people working on the Psyche Mission and the insane amount of knowledge they have to execute something like this."

- Nikka Bacalzo

Psyche Stop Motion

Nikka Bacalzo

Paper art stop motion film

This stop motion shows Psyche leaving Earth and passing the Moon, Mars, and a few meteoroids on its way to Psyche. All pieces were hand-cut from weighted cardstock. Dimensions of the Psyche spacecraft are 2" X 0.75". The music is a piece called "Ideas," written by fellow Psyche Inspired intern Isaac Wisdom! Cinematography by Matthew Berger.



Scan code to view full video.



Psyche Poems

Kari Sanford

Poetry

For the ASU Open Door public event on February 24, I wrote approximately 30 personalized poems, with space words chosen by the participants. These half-sheets also have a link to the Psyche website, coupled with coloring images of the Psyche Logo and an artist's rendition of the asteroid.

My favorite poem I wrote that day was:

*Staring up high,
guided by an azimuth,
I spy a star
hidden in a
labyrinth.*

Psyche Acrylic Pop Art Posters

Caralie Cedarleaf

Transparent acrylic

The Psyche Mission is possible today because of NASA's work in the late 50s into the early 60s and 70s. Inspired by the Pop Art Movement that thrived during those decades, the Psyche Posters celebrate that era of advancement. Details were cut from transparent acrylic; brightly colored solid pieces fit together with the detail pieces. A colorful image is cast behind each poster when lit from one side. Dimensions: 29" X 37"

"I'd have to say that my favorite pieces are the first two pieces I made, which are the Psyche posters... Something about that project was really exciting, and it got me to learn a couple new programs in order to be able to make them and new processes. They're just really colorful, and I'm a nut for color!"

- Caralie Cedarleaf





Psyche Zine

Megan Bromley

Paper and ink

This work is a one-page “zine” about Psyche that anyone can make and read. It is printed all on one side of a page and, when folded correctly, makes a small 8-page book. There are both images and written facts and poetry about Psyche. It is designed in black and white so the reader can color it and add their own art to it. Dimensions: folded 2.75” X 4” unfolded 8” X 11.5”



Scan code for the Psyche “Zine”.

Title: Beep, Boop, Beep, Boop, Asteroid

Lyrics:

Beep, boop, beep, boop, asteroid
Where are you in the dark void?
Flying fast around the Sun,
Passing Mars is lots of fun!
Beep, boop, beep, boop, asteroid
We'll find you in the dark void.
Our spacecraft will make the trip,
Collect data, send a blip.
Then we'll see your special shape,
Reveal a secret landscape.
Beep, boop, beep, boop, asteroid
We found you in the dark void!



Psyche for Kids

Kari Sanford

Lyrics and graphic design

These two works are designed to engage younger students in the mission. The song, called “Beep, Boop, Beep, Boop Asteroid,” about finding Psyche, is set to the tune of “Twinkle, Twinkle, Little Star.” The coloring sheet is an outline of the ASU Psyche badge.

“Psyche Inspired has really challenged me again to communicate all of these pieces in a way that everybody can understand without freaking them out or intimidating them or making them feel nervous. It is just very general and very exciting, and that is a communication skill I plan to carry with me for the rest of my life.”

- Kari Sanford



Scan code for the coloring sheet.



Psyche 3D Book

Nikka Bacalzo

Paper, string, and watercolor

The Psyche 3D book is intended to inform viewers of one of the mission goals: to explore a world made of metal. I ended up creating 20 templates of the Psyche shape, used watercolor to show varying textures, folded each template, glued them together and then strung them in order for them to fan out evenly when you open the book. Dimensions: 4" X 7"



Psyche Pour No. 1

Brianna Orrill

Acrylic paint, canvas

With this piece, I wanted to do something unexpected. We really don't know what Psyche will be like when we get there, and it was a similar process with this painting. The acrylic pour just consists of mixing some colors together, pouring them on a canvas, and letting the paint run wild. As the paint spreads and dries, new patterns emerge and spread unexpectedly. This gives each painting a unique and otherworldly feeling.
Dimensions: 10" X 10"



Kari's Psyche-dellic Experiences X

https://psyche.asu.edu




NASA PSYCHE

February 13, 2018

Kari's Psyche-dellic Experiences

By Kari Sanford

Blog

Share:   

My first exploration of an “all-metal” world was in seventh grade. It started with *Iced Earth* and *Testament*, but I quickly found a favorite with *Metallica*’s “Wherever I May Roam.” Little did I know, I’d be contributing in two different ways to a “heavy metal” NASA mission that would send a probe roaming through space.

Psyche, the perfect pair: (1) the name of an asteroid orbiting the Sun in the Asteroid Belt, (2) the name of an ASU

Psyche Blog

Kari Sanford

Blog

My first exploration of an “all-metal” world was in seventh grade. It started with Iced Earth and Testament, but I quickly found a favorite with Metallica’s “Wherever I May Roam.” Little did I know, I’d be contributing in two different ways to a “heavy metal” NASA mission that would send a probe roaming through space.



Scan code to read the blog.



“My best creative ideas appear when I’m zoning out, such as going for a walk or cleaning my apartment. When I act on the idea, I try my best to be open to changes - things rarely go as planned! I also enjoy collaborating with others, and it’s exciting to see where an idea ends up after a simple brainstorming session with someone else.”

- Abigail Weibel

Curious

Abigail Weibel

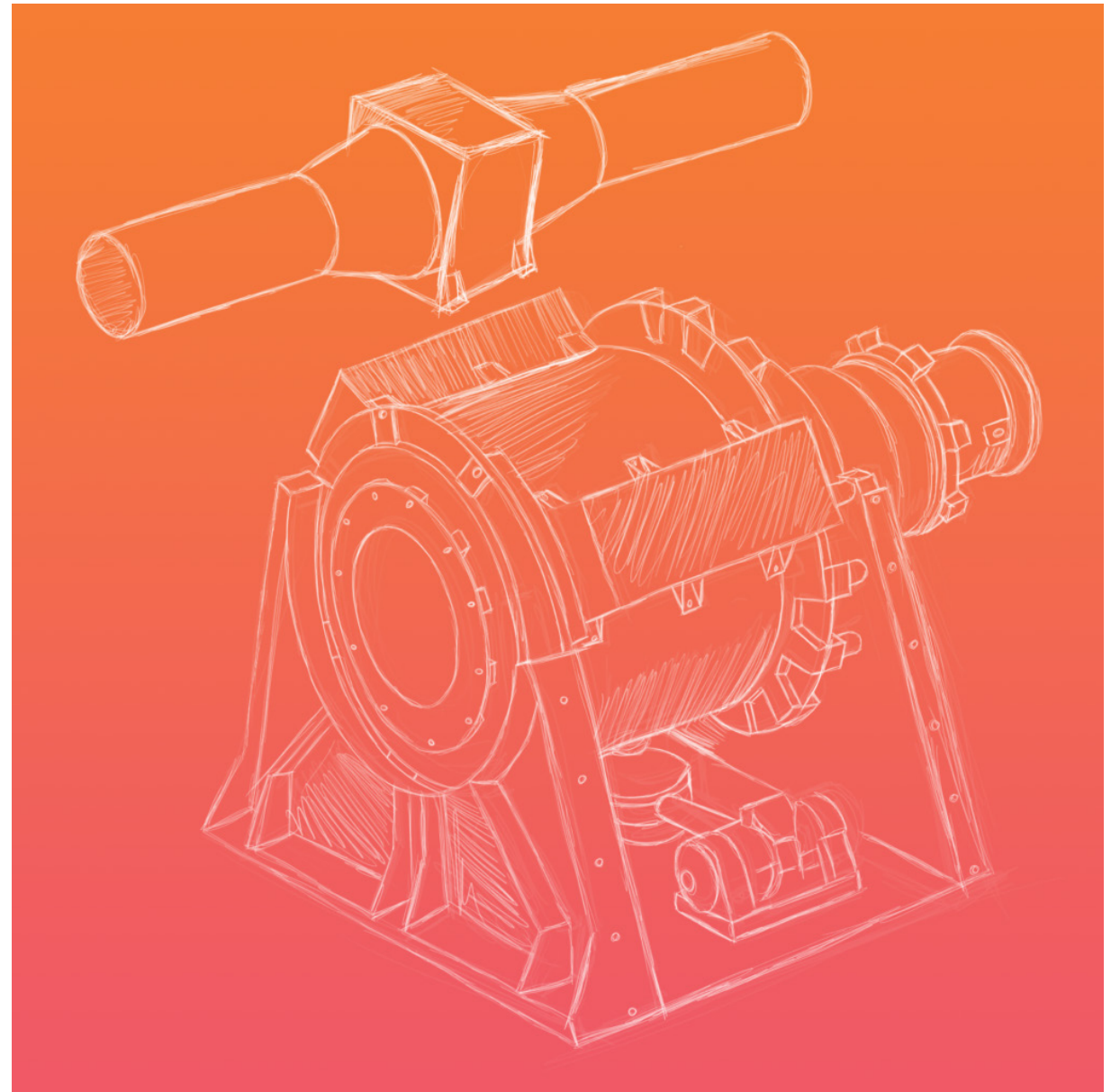
Acrylic paint on canvas print photograph

Curiosity is the theme for this piece. To signify this I chose to position the model looking outwards and upwards. The color gray is representative of the unknown, black of space, and brighter colors of the new information we will gain through the Psyche mission. Curiosity is innate in all humans and does not belong to one type of person. I chose to emphasize this by providing the model some anonymity by covering her eyes and to further accentuate her line of sight. Dimensions: 10” X 13”

Spacecraft

The Psyche spacecraft, comprised of the bus (body), two solar arrays in a cross formation, and the instrument payload, will use solar electric (low-thrust) propulsion to travel to and orbit the asteroid.

The spacecraft will include a Gamma Ray and Neutron Spectrometer, a Multispectral Imager, a Magnetometer, and an x-band radio telecommunications system. The Psyche mission will also test a sophisticated new laser communication technology, called Deep Space Optical Communication (DSOC), that encodes data in photos to communicate between the spacecraft and Earth.





“The desire to explore beyond our boundaries seems innate to humanity. The farther we go, the farther the horizon seems to get. I think it’s that constant discovery that keeps us interested.”

The Heart of Psyche

Chris Vasquez

Illustration in Photoshop

For this project I created an illustration depicting both Psyche the asteroid and Psyche the spacecraft. I drew the latter as an exploded diagram, with all the pieces orbiting/surrounding the asteroid as if it were the heart of the spacecraft. I intend to portray the importance and reason for the mission at a glance while also acknowledging the complexity of work being put in by all involved parties. Dimensions: 36” X 28.8”



Construction

Isaac Wisdom

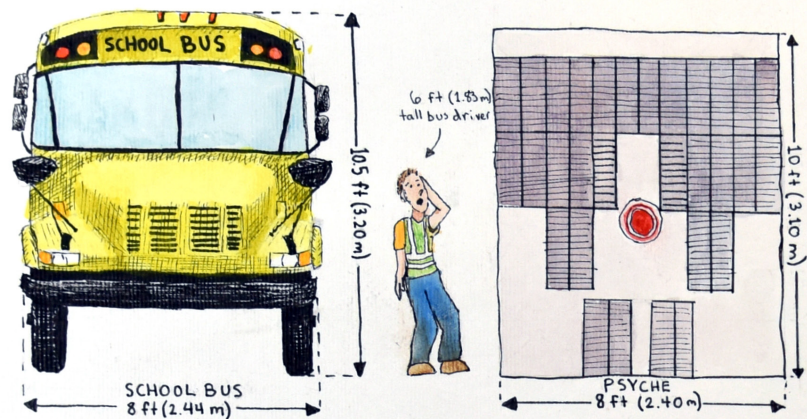
Composition and performance

“Construction” is my interpretation of the construction of the Psyche spacecraft. The tune is upbeat and happy, which I feel fits the emotions the technicians will feel as they fit together the pieces that will become Psyche. Along with the written score is a live recording and a music video where I play the parts of the piece. This video features me playing the trumpet, trombone, alto and tenor saxophone, upright bass, and piano. I recorded and edited the music using Apple’s GarageBand software, and I created the video using Adobe’s Premiere Pro CC software.



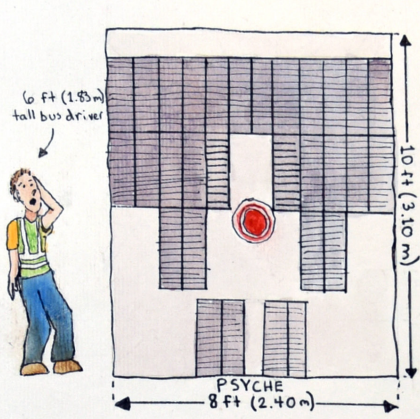
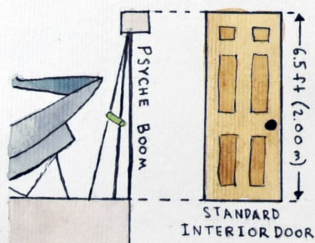
Scan to watch,
listen, or download
the score.

How BIG WILL THE PSYCHE SPACECRAFT BE?

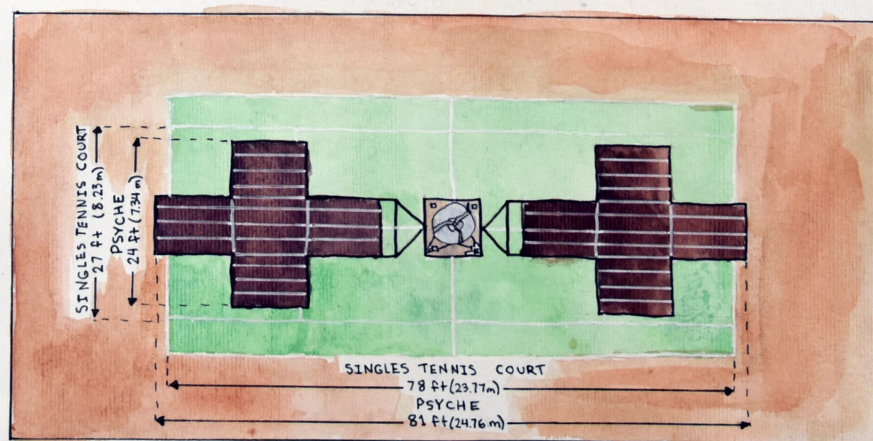
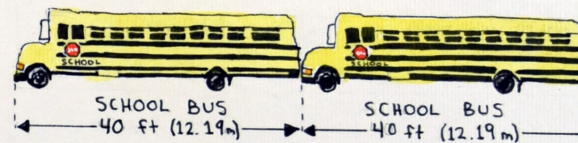


One face of the Psyche "bus", the main body of the craft, will have an area similar to that of a school bus.

Psyche has two "booms", which act as arms that hold up some of Psyche's instrumentation. They will each be as tall as a standard interior door.

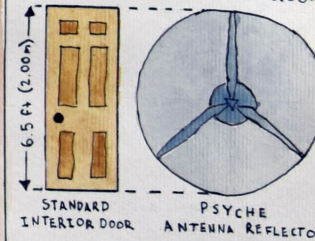


With its solar panels outstretched, it will be about as wide as two school buses lined up end-to-end.



Including its solar panels, the spacecraft will be approximately the size of a standard singles tennis court.

Psyche has an antenna reflector mounted on top of the craft. Its diameter is the height of a standard interior door.



"My first piece that I did, it compared the size of the Psyche spacecraft to like a school bus and a singles tennis court. People always see the school bus and they get excited, and it's exciting for children, and everybody recognizes of course the bus."

How Big will the Psyche Spacecraft Be?

Morgan Baerwaldt

Felt-tip ink pens and watercolor on cold press watercolor paper

A visual comparison may help people imagine the size of the craft more than the descriptions alone. School buses are a common, relatable size, so I chose to use those for the first two illustrations. I added in a six-foot-tall bus driver, who is clearly very confused about why the Psyche bus is sitting next to his bus, to make the drawing more fun and add more context. I chose to show Psyche sitting on top of a tennis court. While not everybody knows where the singles lines are on a tennis court, most people have seen a tennis court and can see the relationship. It turns out that a standard interior door is nearly exactly the height of Psyche's booms and antenna reflector. I used felt-tip ink pens and watercolor on cold press watercolor paper. I drew it in pencil, inked over it in pen, erased extra marks, and then watercolored over that. Dimensions: 13" X 10"

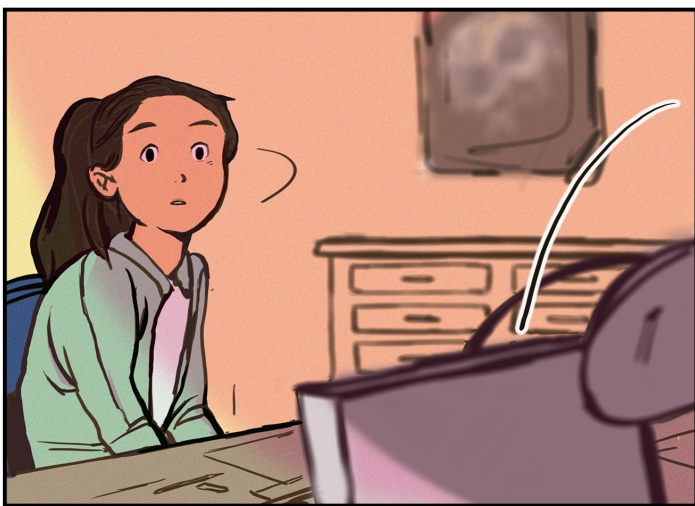
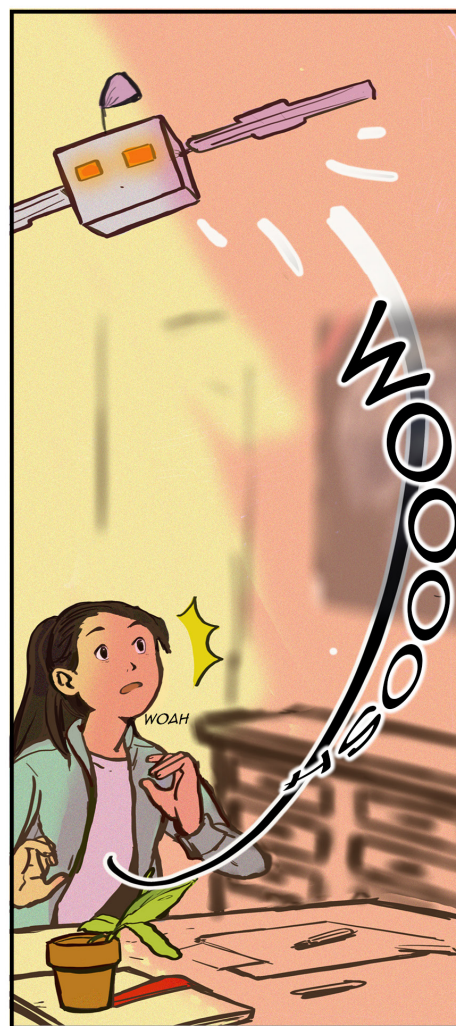
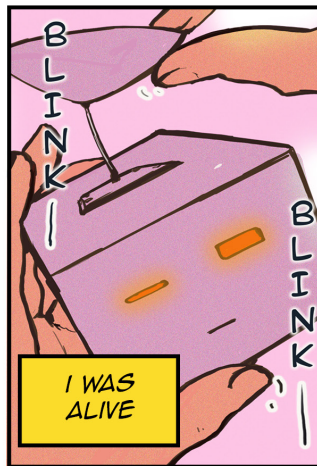
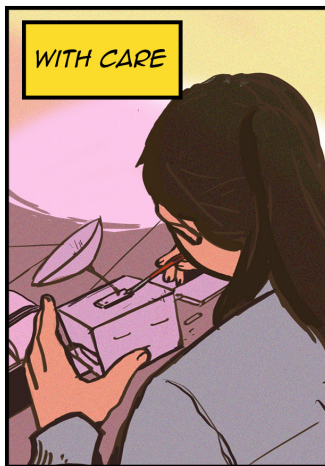
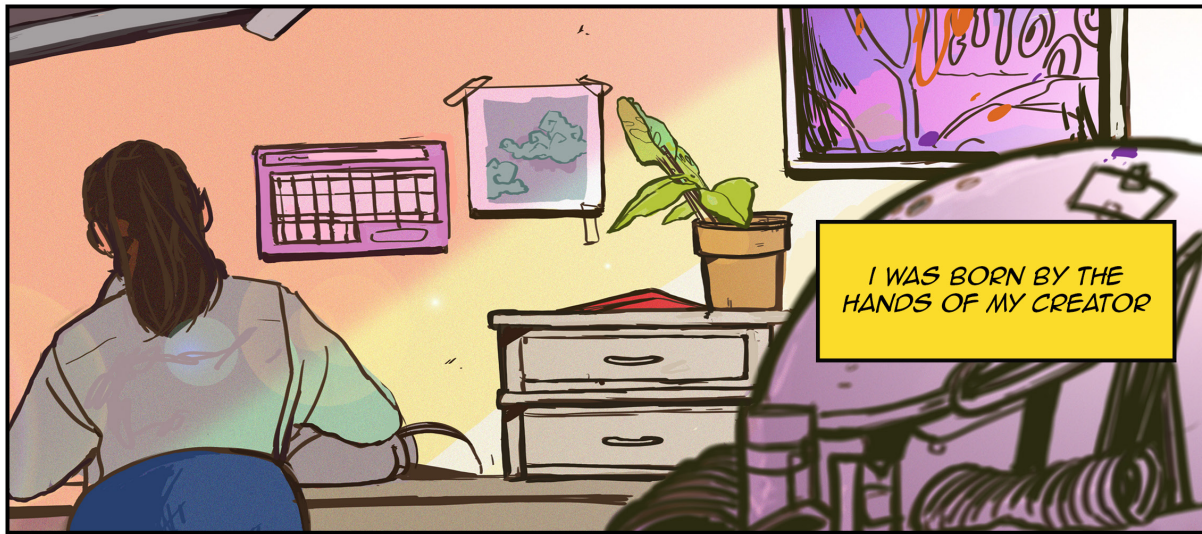


Atomic Asteroids

Jeremy Seidner

Digital illustration, card stock

This piece started out as a surrealistic concept and was later adapted to a cereal box interpretation based on one of the sketches. The Psyche character designed for our children's book, *Psyche's Journey to a Metal World*, was used to cross project platforms. The design displays multiple marketing strategies that the food industry uses to attract shoppers, but also has educational information about the Psyche Mission. Dimensions: 2" X 12" X 8"



Psyche Comic

Sofia Garcia

Digital illustration

This work is a fictional story of the development of Psyche: a friendship between a human and a spacecraft, discovering what is beyond the metal world. Dimensions: 8.5" X 11"



Scan code for full comic book.

Psyche Street Art

Brianna Orrill

Chalk on concrete

I created street art for ASU's Earth and Space Exploration Day on November 18th. This piece contained half of the Psyche satellite, with accurate dimensions to show the public the size. I filled in the entirety of the bus (body) of the spacecraft. For the solar panels, however, I invited kids (of all ages!) at the event to participate: Each person got a small cup of chalk and a square foot to draw any image of space that they wanted. Dimensions: 12" X 22"

"I make street art. They're really big, and they're very messy, but it's really fun because most of the pieces I make, I try and get the audience interacting with it. They're usually adding onto the piece and sometimes I'll look at their art and kind of get inspired to change my pieces so it's just a really fun interactive experience."

- Brianna Orrill





Hypercolor Psyche

Chris Vasquez

Illustration in Photoshop

This rendition of Psyche is based on the neon hypercolor, ultra-futuristic style of 80s movie posters and artwork. It depicts the portion of the mission in which the Psyche spacecraft will enter into orbit around the Psyche asteroid, gathering information while in an optimal zone to do so. Dimensions: 35.5" X 47"

"The idea of travelling to space or uncovering the mysteries of the universe, and seeing the massive undertaking by so many people, is inspiring."

- Chris Vasquez



Surreal Psyche

Sofia Garcia

Fountain pen, gouache, paper

This work is inspired by the colors of the Psyche mission badge and the overall journey of the Psyche mission. This reflects all the people who have put in the time to push for the future of this mission. Dimensions: 9" X12"



Psyche Spacecraft 3D Model

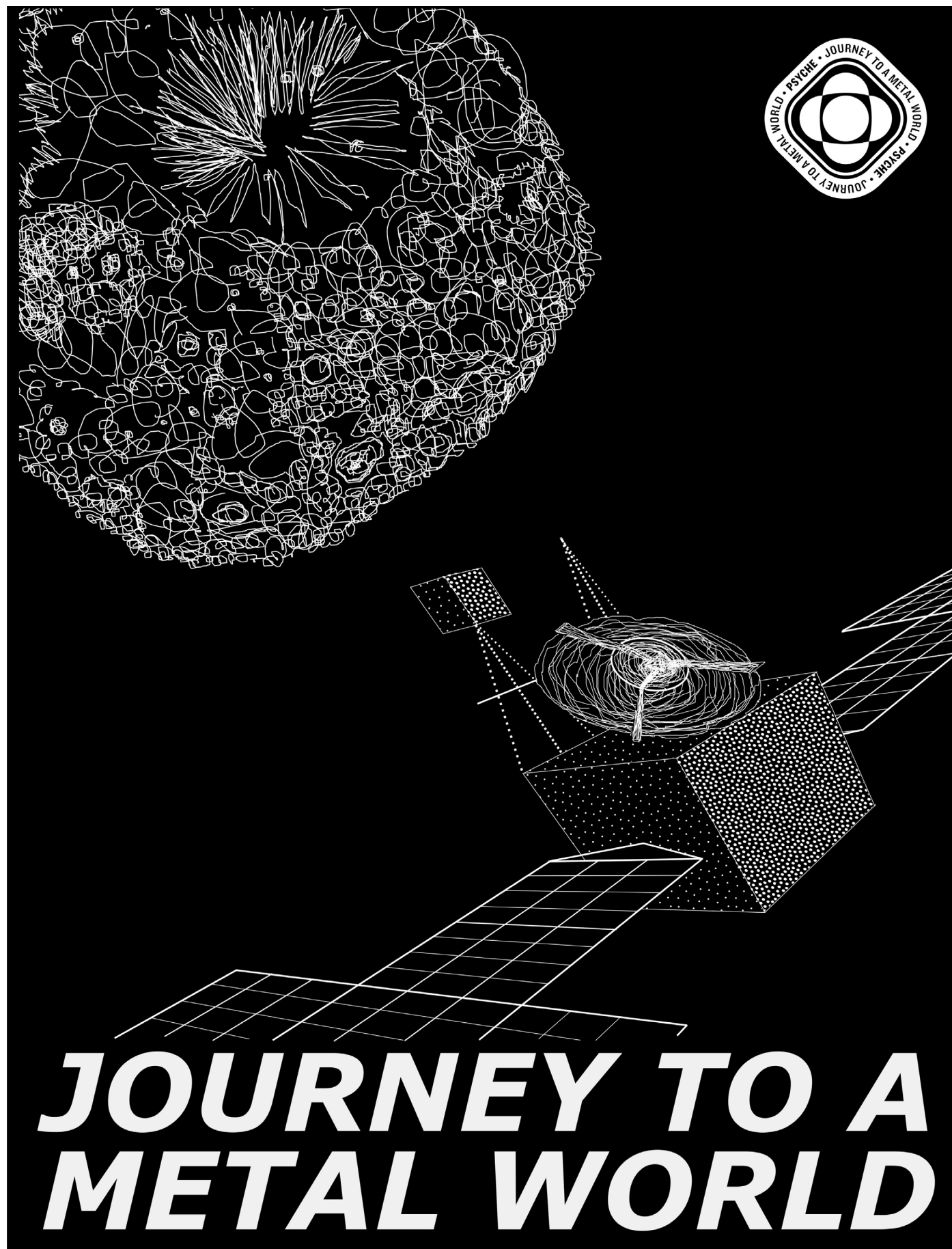
Anne Norenberg

3D design and printing

For my first Project, I created a 3D model and 3D-printed model of the Psyche spacecraft using AutoDesk Fusion 360. I constructed the model in three different parts so that it is a buildable model. I printed the Psyche spacecraft on a Makerbot 3rd Generation printer, and the material is PLA plastic. The model of the spacecraft is to scale and includes the body of the spacecraft and the two solar panels. Dimensions: 18" X 1.5" X 4.3"



Scan here for instructions on how to print this 3-D model.

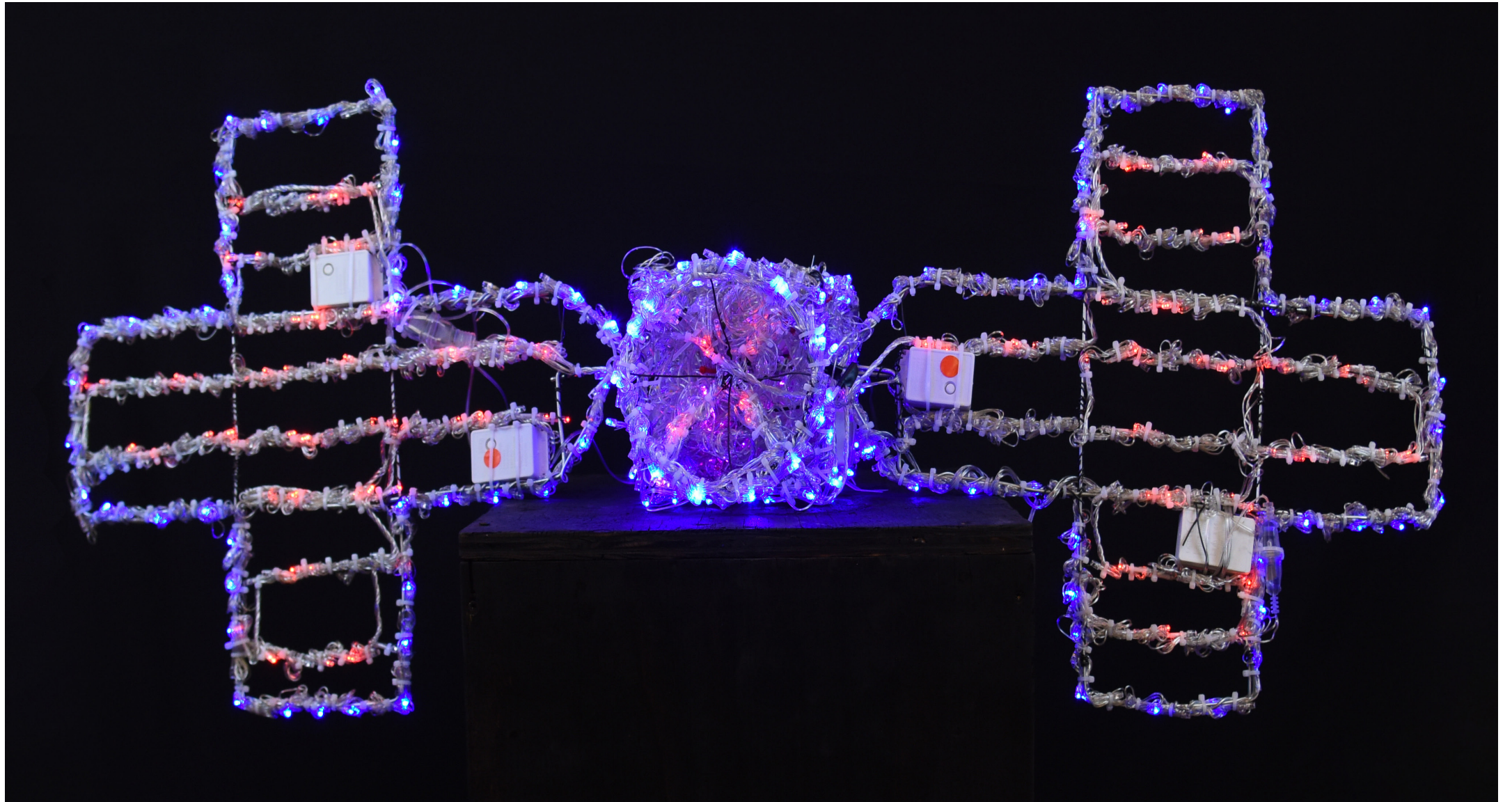


Psyche Out of the Dark

Morgan Baerwaldt

Vector drawing

This is a work reflecting the many minds that make the Psyche mission. It all began somewhere: the inspiration and motivation to live out what is beyond human comprehension. Dimensions: 19" X 25"



Heavy Metal Light Show

Chris Vasquez

Wire and LED string lights

With Psyche, you never have to take down your holiday lights! Inspired by festive holiday light sculptures, I wanted to create something reminiscent of those while keeping true to the design of Psyche. Dimensions: 45.5" X 28"



Psyche Perspective

Brianna Orrill

Watercolor

This is a painting of the asteroid inspired by the artist rendition in most of Psyche's videos. The piece is from the perspective of the spacecraft as it is coming over one side of the asteroid. I used watercolor, with a special focus on some metallic watercolors to create the metallic feel for the asteroid. Dimensions: 9" X 6"

"Exploration of the unknown often leads to internal and external discoveries, answering questions we never knew needed answering."

- Brianna Orrill

“As a double major in Materials Science & Engineering and Ceramic Fine Arts, I was especially interested in this project and was honored to be chosen as part of the inaugural group. Psyche Inspired pushed me to explore concepts in my work that I otherwise would not have.”

- John Domenico

Psyche In Orbit

John Domenico

Stoneware, iron thermite glaze



I am especially interested in the underlying composition of things. Given that Psyche (the asteroid) is believed to be primarily iron and nickel, I felt that I had a unique opportunity to explore a glaze that utilizes the thermite reaction to create a surface that is primarily raw iron. The texture on this platter is a product of the thermite reaction and is an interpretation of an iron body in space. On the black, space-like rim, the colors of the Psyche mission stand out to allude to the Psyche (spacecraft) in orbit. This is all contained on a large piece of fired clay—which, in a way, “brings it back to Earth.” As a fun fact, the viewer will notice an orange/red blushing on the platter. This is because, unlike in space, on Earth metals oxidize rather quickly. Thus, the orange/red tint is the raw iron on the surface of the platter oxidizing. Over time there will be more of the color as the iron continues to oxidize. Dimensions: 25” X 25” X 3.5”

Launch Day

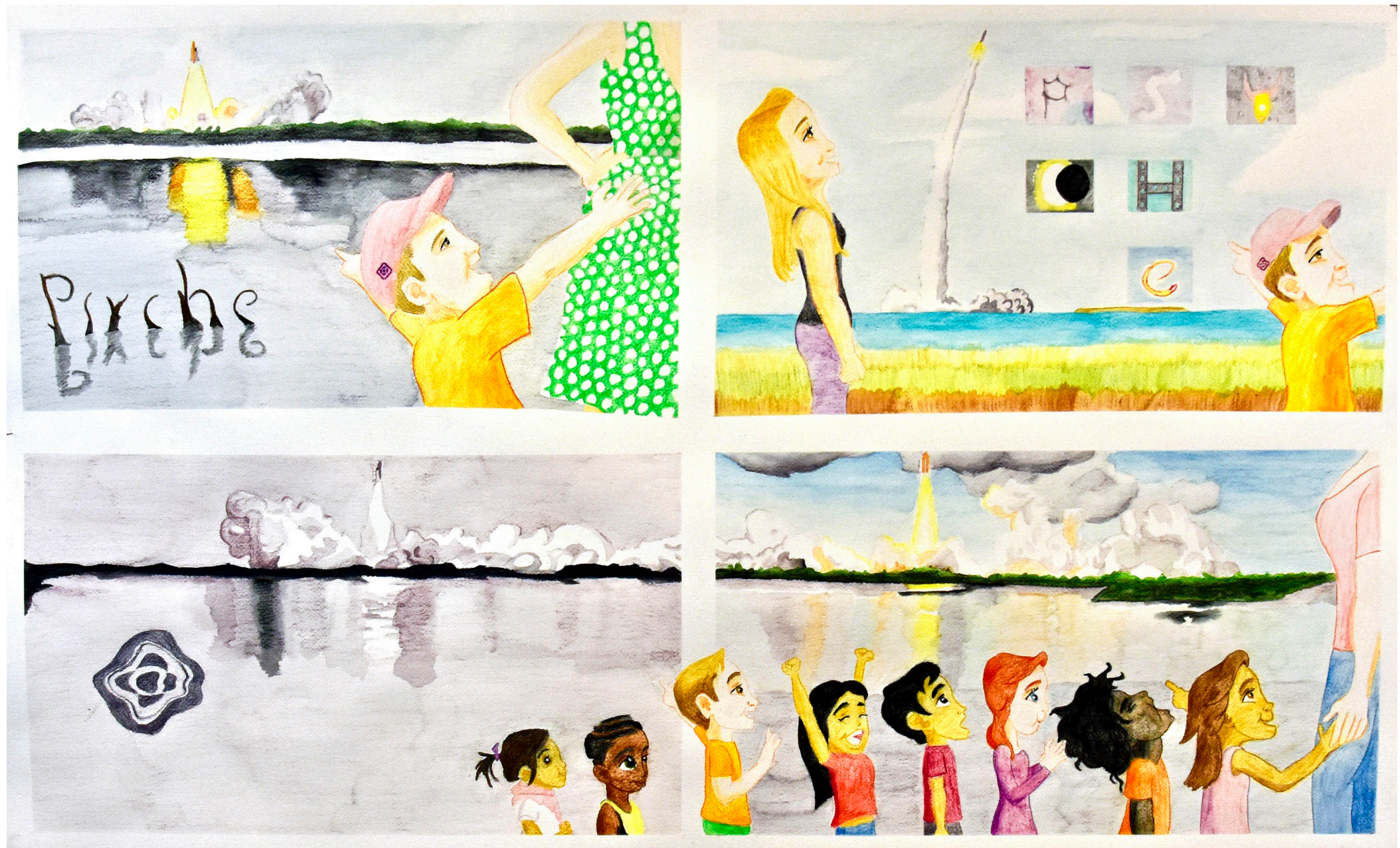
Jeremy Seidner

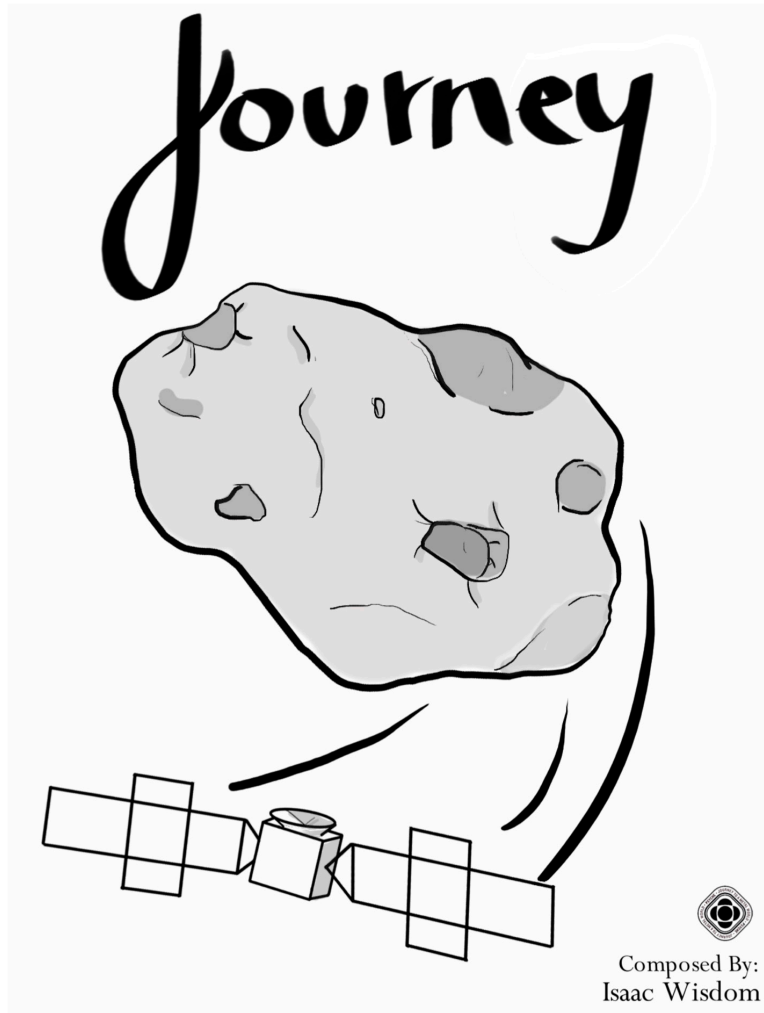
Watercolor pencils on cold-pressed watercolor paper

This piece aims to convey the excitement of the Psyche Mission to the public, like the excitement we feel as children. While brainstorming layout ideas, I couldn't decide on one, so I decided to incorporate all four of them into one large piece. This not only added more creativity, but also provided different perspectives of what it may look like on launch day. I chose to use a watercolor technique and cartoon-looking children for the piece because I felt the two styles relate with the child in each of us. Dimensions: 26" X 40.5"

"Mother Earth inspires me. I find such beautiful things in nature, from gardening to ecosystems to astronomy. And art walks: seeing how other people think and what inspires them creates a synergistic effect within me."

- Jeremy Seidner





Journey

Isaac Wisdom
Composition

“Journey” is a piece I wrote to capture the feelings of the Psyche spacecraft’s journey to its namesake, the asteroid Psyche. My inspiration came from the balance between the solemn yet dignified solitude the spacecraft will experience and the knowledge that, ultimately, it is coming from a place of great knowledge and going somewhere to accomplish something greater. I had assistance from Dr. Rockmaker of ASU’s School of Music, who guided me through the specifics of classically oriented composition. The form of my piece was inspired by the exposition of a typical sonata, featuring a first theme in Db major, a second theme in Ab major, and ending with a recapitulation back in Db. The cover art was created by fellow intern, Brianna Orrill.

Journey

Isaac Wisdom

Grazioso e misterioso, ♩ = 60

simile. to mm. 9

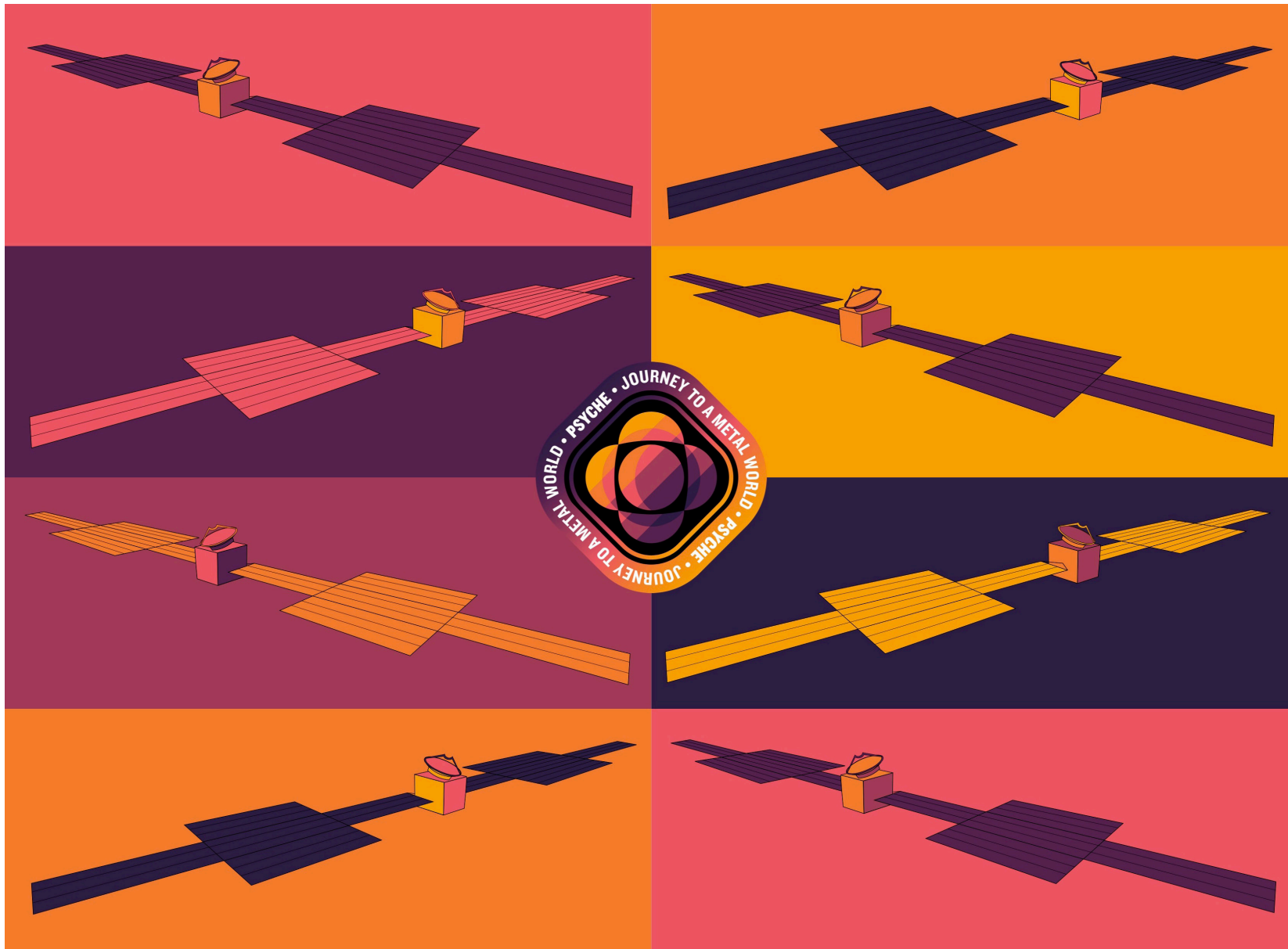
Composed as a part of NASA's Psyche Inspired program in 2018
For usage guidelines, please visit nasa.gov/multimedia/guidelines/index.html

“I was trying to capture the somber feelings that the probe is going to have. It’s by itself. It’s alone and sometimes that’s scary, but it’s coming from a great place and it’s going to go accomplish great things and I think I can relate to that in some ways.”

- Isaac Wisdom



Scan to listen or
download the score.



Psyche Pop

Morgan Baerwaldt

Digital drawing

I created an 8-panel Warhol/pop art-inspired drawing of Psyche in orbit. The image features a repeated image of the spacecraft drawn with a bright, limited color palette. I used Inkscape to draw a very basic vector outline of the Psyche spacecraft and played around with using the Psyche color palette. Dimensions: 16" X 12"

Meet the Interns



Nikka Bacalzo
Graphic Design



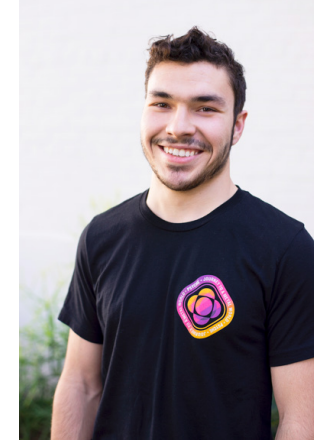
Morgan Baerwaldt
Electrical Engineering



Megan Bromley
Biogeoscience and English



Caralie Cedarleaf
Sculpture



John Domenico
Ceramic/Materials Science



Sofia Garcia
Painting



Anne Norenberg
Digital Culture (Design)



Brianna Orrill
Astrobiology/Biological
Sciences (Microbiology)



Brooke Owen
Neurobiology, Physiology,
and Behavior



Kari Sanford
Engineering Management



Jeremy Seidner
Computer Science



Chris Vasquez
Drawing



Abigail Weibel
Geological Sciences



Isaac Wisdom
Music (Music and Culture)
Electrical Engineering

Index

Nikka Bacalzo:	9, 17, 26, 37, 39, 44
Morgan Baerwaldt:	11, 51, 58, 64
Megan Bromley:	21, 42
Caralie Cedarleaf:	18, 34, 38, 41
John Domenico	10, 16, 22, 38, 61
Sofia Garcia:	20, 36, 53, 56
Anne Norenberg:	14, 25, 30, 37, 57
Brianna Orrill:	13, 23, 29, 45, 54, 60
Kari Sanford:	24, 31, 35, 40, 43, 46
Jeremy Seidner:	8, 27, 38, 52, 62
Chris Vasquez:	15, 24, 38, 49, 55, 59
Abigail Weibel:	12, 19, 32, 47
Isaac Wisdom:	33, 50, 63

