Psyche Inspired
Cobalt Class

A Collection of Artworks

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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.

Foreword from Lindy

August 3, 2020
Paradise Valley, AZ

We are so happy to be able to present to you the creative works of this, the third, year of Psyche Inspired. When we developed the Psyche Inspired program, our goal was to create a national program with remote participation in order to make the opportunity widely available to creative students in all corners of the country. This past fall, while meeting weekly via videoconferencing with our 16 Psyche Inspired interns from 13 colleges and universities in 12 states, we had no inkling that building such a community virtually would come to serve a more urgent purpose.

In March, as campuses closed down and students moved out and lost access to studios, maker spaces, and places to work on their projects, members of this virtual community provided support to one another, shared suggestions for alternatives to projects that had to be suspended, and cheered each project and artist on to the finish line. Even with all the disruptions and personal hardships, Psyche Inspired ended the year with a full catalog of creative works and a completely online showcase that allowed anyone worldwide to experience the art in a 3D virtual gallery.

As I shared in my video introduction to the virtual showcase, I often consider the question why do we explore space? And while I think that we explore, first of all, because we can't help ourselves, that it is part of the human genetic makeup to want to go out and find and look at places we have never been, I now understand that engaging in exploration also prepares us to be open to the unknown and to be flexible to making adjustments in the face of what we discover.

The Psyche Inspired interns share this passion for exploration and, this spring in particular, used it to fuel their creativity and adaptability in the face of the pandemic. As you look through their beautiful, thoughtful, and thought-provoking work from this year, we hope you experience, as the Psyche mission team does, the many ways that art can make us feel connected not only to exploration but also to each other.

Linda T. Elkins-Tanton
Principal Investigator, NASA Psyche Mission

A Note from Kaxandra

July 13th, 2020
Youngtown, AZ

The NASA Psyche mission aims to include everyone in its unique journey to a metal world. Psyche Inspired accomplishes this through the creation of art pieces that inform and engage the public on the science, engineering, innovation, and teamwork behind Psyche. Not only does Psyche Inspired make difficult topics understandable and enjoyable to learn, but it creates visuals that encourage people to dream about the possibilities of exploration and that help remind Psyche team members about the inspiring aspects of their work on the mission.

This year's 2019-2020 interns, also known as the "Cobalt Class," became the third class of Psyche Inspired interns. Chosen from a national pool of applicants, the class represents thirteen different universities and includes a variety of majors that have come together to create and inspire.

In their time in the program, the talented individuals comprising the Cobalt Class interacted with Psyche mission staff, scientists, engineers, and artists, enriching their knowledge of the mission and providing them with inspiration for the creation of many of their art pieces.

Although the Cobalt Class faced unforeseen challenges in the latter half of their program due to COVID-19, they rose to the occasion and successfully created 62 pieces of art encompassing the science, innovation, and passion of the Psyche mission and its team. In this regard, the Cobalt Class proved to be an incredible and resilient group of individuals who were an honor to work with. The products of their hard work, which have served as inspiration for so many, are displayed within the pages of this book. We are grateful for their important contributions to sharing the excitement and adventure of the Psyche mission!

Kaxandra Nessi
Psyche Inspired Student Manager & Content/Writing Aide

Goddess

Early asteroids that were discovered, including Psyche, were named after gods and goddesses from ancient Greek mythology. After discovering the 16th asteroid in 1852, Italian astronomer Annibale de Gasparis named it Psyche, after the Greek goddess of the soul, who is often symbolized by a butterfly.

Because Psyche was the 16th asteroid to be discovered, it is sometimes referred to as (16) Psyche.

Psyche Has a Metal Soul

Levi Keatts

oil paint on aluminum composite panel

(16) Psyche is a metal asteroid that we believe may consist largely of nickel and iron. The team working on the Psyche mission hypothesizes that the asteroid may be the exposed core of an early protoplanet. When I was challenged to make artwork based on this mission, I immediately began to make connections between this information and the classical mythology and symbolism of Psyche, the goddess.

Psyche is the Greek goddess of the soul. It seemed very fitting to me that this asteroid that may allow us to learn about Earth's core is named after the personification of soul, a concept that is the 'core of humans' in many spiritual beliefs. Because of this I decided to feature Psyche in her classical depiction for the focal point of my first piece. Dimensions: 10.5" X 20"

Contemplation

Silvia Valladares

stop motion (clay, foam, fabric, wire, wool)

Click or Scan to view GIF

This stop motion piece was created by using a handmade puppet and a clay model of the Psyche asteroid. In the short animation, the Greek goddess Psyche is seen holding and contemplating the Psyche asteroid while it rotates to reveal its metallic surface.

Click or Scan to view video

Psyche’s Jewel

Janani Lakshmanan
Bharatanatyam (Indian classical dance)

Bharatanatyam is a 3000-year-old traditional art form from southern India. Initially, it was used to tell devotional stories from Sanskrit literature. This art originated in the dance halls of temples before spreading to courts of royalty and to stages all over the world. Bharatanatyam performers are trained in all of the following techniques: abhinaya (emotive), nritta (rhythmic), and nritya (a combination). The first of these has its roots in the operatic style of theatre, from which all classical Indian dance forms are said to originate. This piece represents a storytelling endeavor. I’ve been learning Bharatanatyam for the last sixteen years, and one of the lessons my teacher, Nita Mallya, has taught me is to never forget that all stories are based on several universal truths that connect us across continents and aeons. This inspired me to reach for a myth nearly as old as my own art form. For my first piece, I was inspired by the asteroid Psyche — the eponymous damsel-turned-deity, whose grief from being separated from her lover was enough to turn the minds of the gods.

I thought long and hard about how I wanted to present my first piece. I wanted to represent the story of 16 Psyche from various lenses across my projects this year, and I hoped to introduce a mode of expression that has rarely been used to tell stories to both artistic and scientific communities. As a result, I constructed my first

Psyche's Jewel (Continued)

piece with the most natural connection in mind: the storytelling techniques of ancient India wedded with a story that originated from ancient Roman literature ("Cupid and Psyche," from Apuleius' Metamorphoses. Drawing inspiration from the past is a process that is slowly becoming familiar to me, as I am a young woman growing up in the twenty-first century and studying a form of dance older than I can even hope to understand. As a result, it is imperative that I preserve the integrity of my dance form's grammar, even as I experiment with storytelling techniques through narrative, costume, and theme.

In this piece, Psyche is fleeing both the humiliation she suffered at having to run from her lover's own home and the curses the goddess Aphrodite placed on her in a fit of jealous rage at the mortal woman's breathtaking beauty. An abandoned Temple of Demeter offers her shelter for the night. In her natural conscientiousness, Psyche lights a lamp and cleans the altar for the goddess of grain. She is so taken by the sight of the goddess's idol that she adorns it with one of her own prized ornaments as an offering. It then strikes her that she is now bereft of her honor, her dignity, her character — her own jewel. In return for her service, she pleads for a reprieve from her torments, explaining that it was her own foolishness that led her to mutely obey her sisters' encouragements to peer at Cupid's sleeping visage despite having been forbidden to do so. Exhausted by her grief and her trials, she collapses at the altar's base.

With my attire, I hoped to offer a nod to the three traditions that inspired this piece. Long, white and gold robes gave a passing resemblance to a Greek chiton while the draped golden scarf served the function of both a himation and a pallu, which are parts of a traditional costume. The mixed metals were a nod to the Greek and Roman origins of the myth. The silver represented the former, and the gold represented the latter. The makeup choice of not applying eyeliner to the bottom lid (as is customary) echoed Greek theatre traditions. The proso-pon (or theatrical mask) was crafted to resemble a specific character's mood and emotions. Distinguishing the top lid and not the bottom lid of the eyes has the dramatic effect of exaggerating fear, guilt, or shyness. Psyche in this piece represents one of the Bharatanatyam heroine roles of Kalahantarita, the woman who regrets quarreling or disagreeing with her lover. Finally, the bindi— the dot worn on the center of the forehead in Hindu tradition— is distinctively and nontraditionally white. This is because the bindi symbolises the soul within each person. I felt like Psyche, who was identified as the goddess of the soul, ought to be special.

When addressing the theme, I knew this would be the best-forged link between my piece and the endeavor of the Psyche mission. At the core of all of these is a note of longing, the desire for connection. We journey to a likely metal world because we find it akin to something within ourselves, just as I seek to link my tradition to modernity, and as Psyche yearns for her Cupid.

Psyche's Psyche

Ral Vandenhoudt

digital

Click or Scan to view video

The goddess Psyche represents the soul. As such, I like to imagine asteroid Psyche's soul as the quintessential Greek goddess eagerly awaiting the spacecraft's visit. In a lighthearted inversion of this "soul within" idea, I present the goddess engulfing the asteroid. The soul protecting the asteroid seems a fitting allegory for the insights Psyche offers into Earth's own past. Psyche holds such scientific potential that it's almost as if Psyche the goddess mysteriously guards her asteroid, inviting us to gain understanding of our own planet's psyche.

Empathy

Christine Zhou

digital, Adobe Photoshop

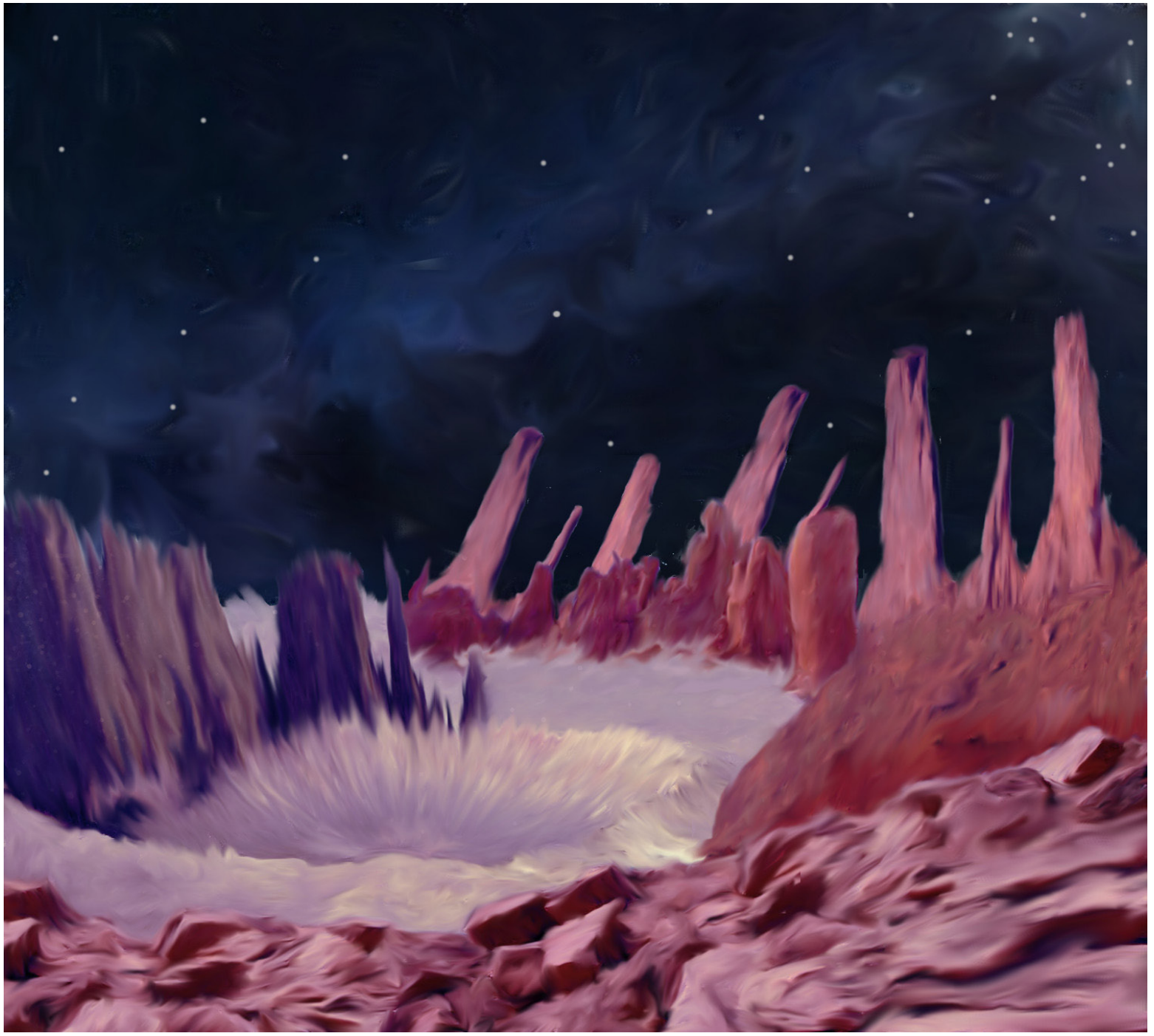
In the legends, the goddess Psyche was cursed by Aphrodite, who said Psyche would now fall in love with the most unworthy and disgusting mortal men. Meanwhile, (16) Psyche is thought to have undergone an extremely large collision that stripped it of many of its surface layers. Due to the tragedies the Psyches have experienced, I chose to depict Psyche the goddess caressing the asteroid, comforting it with her empathy.

Dimensions: 8.5” X 11”

Asteroid

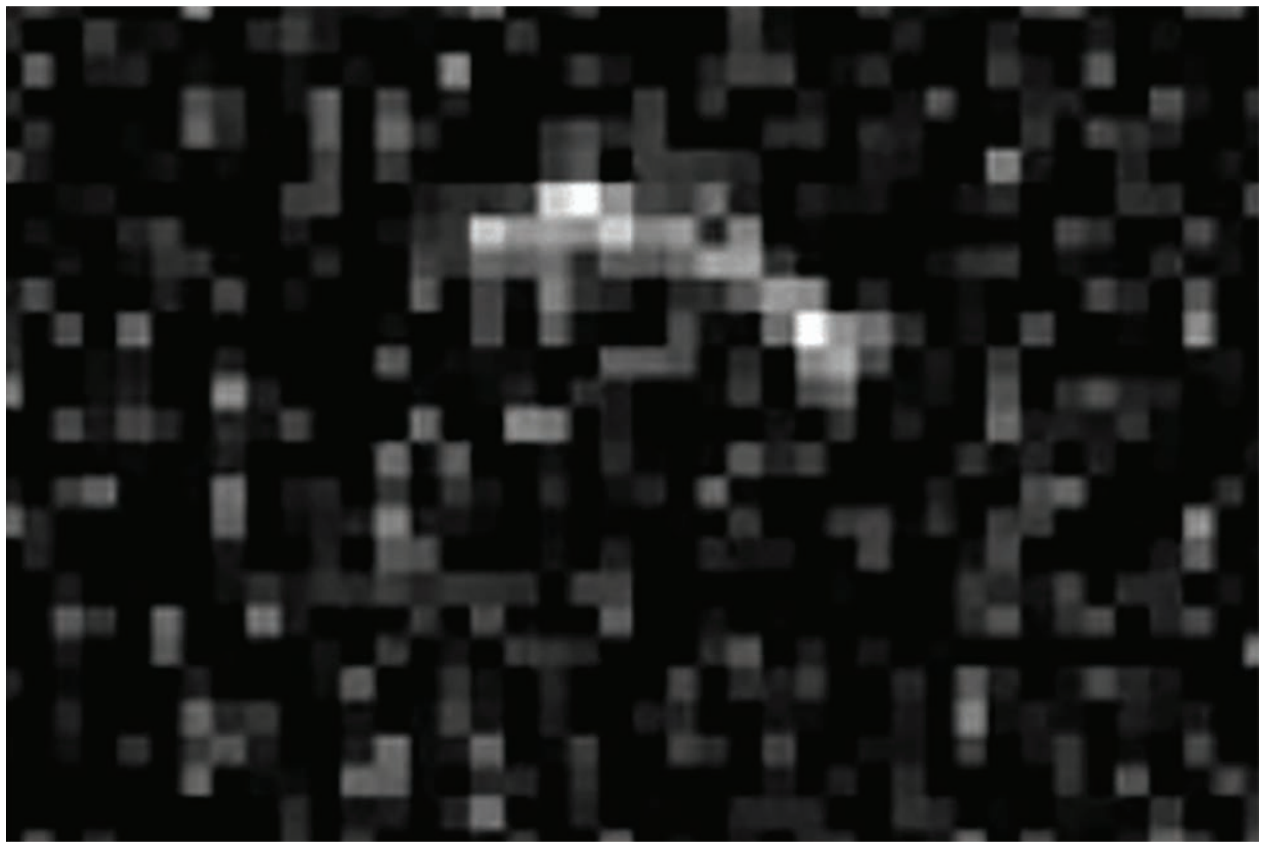
Asteroids are thought to be leftover material from the formation of the solar system. Therefore, asteroids can be composed of a variety of elements, and they provide scientists with unique opportunities to study our solar system's formation.

One unique asteroid in our solar system is (16) Psyche, which resides in the main asteroid belt between Mars and Jupiter, orbiting the Sun at an average distance of 3 astronomical units (AU) (about 280 million miles or 450 million kilometers). Large for an asteroid, Psyche is unique because scientists believe it may consist largely of metal, specifically iron and nickel, from the core of an early planet. If Psyche were a perfect sphere, it would have a diameter of 140 miles (226 km), or about the length of the state of Massachusetts (leaving out Cape Cod). It would have a surface area of about 64,000 square miles or approximately 165,800 square kilometers.



Pillars
Finn Witt
digital painting

(16) Psyche orbits around the Sun in the asteroid belt and, over its many billion years, has likely been hit by many smaller objects. With its potentially high metal content, the surface may be littered with craters, which may be rimmed by massive sheets and pillars of metal. I attempted an artistic interpretation of the surface, drawing some inspiration from the landscapes of southern Utah and Arizona.



Untitled

Silvia Valladares

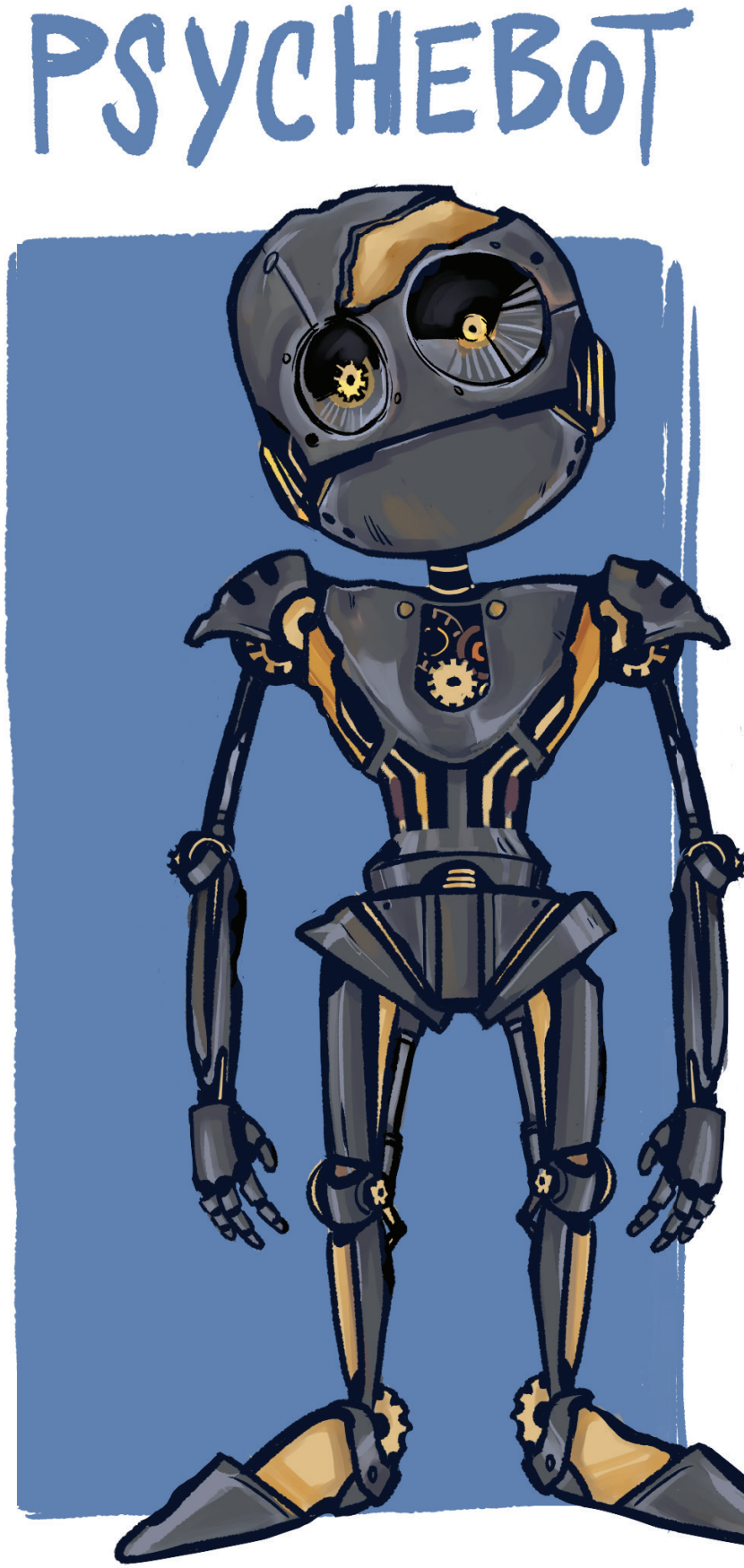
digital drawing

We don't know exactly what (16) Psyche looks like because we haven't been there yet, but thanks to technology and artistic creativity, we are able to have an artistic representation of what it might look like. This animation is a timelapse of my own reconstruction of the original photograph of Psyche.

Click or Scan to view GIF

PsycheBot
Sarah Tennant
digital

I really love making character designs, but I have not often worked with robots before. Because of that and the asteroid's partly metal composition, I thought it would be fun to illustrate Psyche as a robotic character. I chose a humanoid and skeletal appearance due to Psyche's possible nature as a protoplanet's core, similar to the core found inside of Earth. Its color schemes and designs lean toward a steampunk aesthetic in reference to preexisting scientific images of Psyche and hypothesized colors of the asteroid, which are based off the metals and materials that may comprise it. I felt like Psyche's hypothesized color scheme, oldness and derelict, and connection to the goddess of inspiration would lend itself well to the steampunk aesthetic. This aesthetic partakes in a science fiction sub-genre where, in a fictional 19th century, people had a steam-powered revolution, and they were inspired to create brassy, steam powered technology. I also tried to capture the look of the asteroid in the robot's face: misshapen and seemingly possessing of a pair of lopsided eyes, large and full of wonder. A certain rusty, old, endearing charm. I hope you can see it too.



Psyche Bot Model-19

William Strunk

steampunk, robot statue, 3/4″ PVC pipe, EVA foam, & cardboard

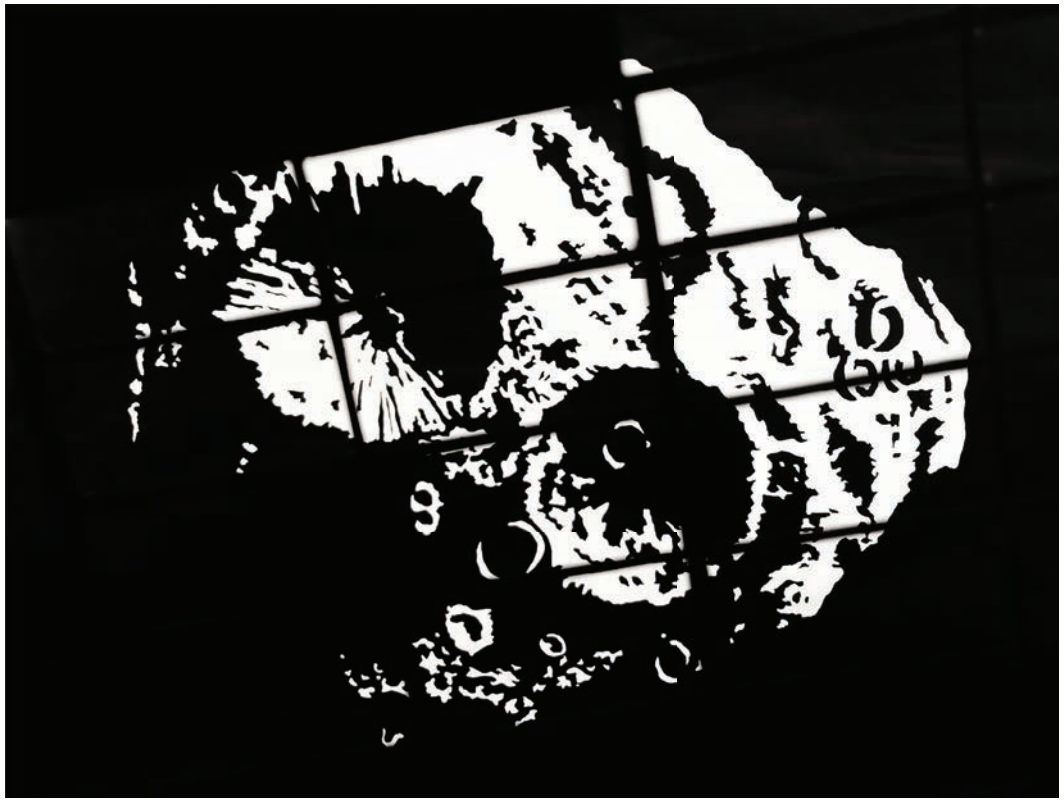
An asteroid comes in many shapes, forms, and sizes. What would the personification of one look like? This project was my vision for a robotic form of the asteroid Psyche. The robot's plating is designed to resemble the surface of an asteroid, which shows damage and erosion from time and collisions with other objects. Each indent or scratch has its own history. Even though the robot is damaged and rusting, it still stands strong at 6 feet tall. It is made from EVA foam and cardboard, and it is supported by PVC pipes. Dimensions: 3'0" X 1'6" X 6'3"

Spiraling Hope

Julia Greteman

contemporary sculpture:
PLA filament, lasercut wood, PaintP

Psyche: coming to a planet near you. I wanted to experiment with the way we represent Psyche now and the very distinct shape it has before we eventually see it face-to-face as it spirals towards the viewer. Taking inspiration from topography and contour maps, the 3D printed asteroid—dry brushed in blushes and metallics—features a rosy idea for what could be on this lonely asteroid object.
Dimensions: 1’ X 1’



Seeing Psyche

Binh-An Nguyen

mixed paper

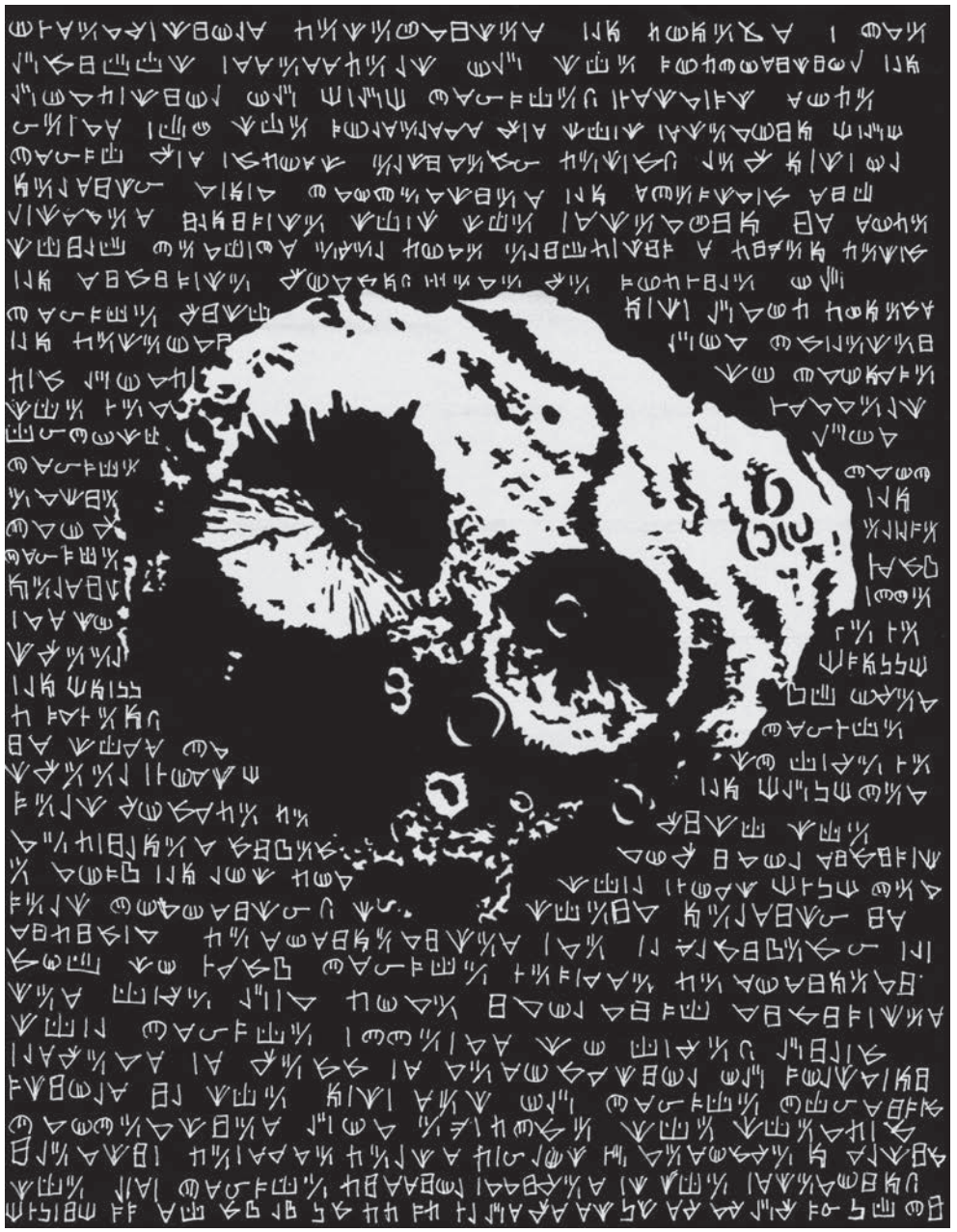
Click or Scan to view video

Currently, we can only view the Psyche asteroid through telescopes. At best, we can see it as a smudge of light. However, once the Psyche spacecraft starts orbiting the Psyche asteroid in 2026, we will finally get the first real look of what the Psyche asteroid looks like. For this interactive installation piece, the cutout of Psyche is translucent and allows for light to shine through it. This light symbolizes the possible new knowledge Psyche holds about the “dark” unknowns of Earth’s core, seeing as Psyche is hypothesized to be the exposed core of a protoplanet. This piece allows the viewer to walk around and view Psyche through two very different perspectives. The first perspective is the viewer looking at the asteroid through their own “telescope,” which is a piece of paper with a very small hole in it. They get to experience Psyche more personally, but the small hole in the “telescope” really limits how much they can see. As for the other perspective, the viewer gets to see all of Psyche in the same way the spacecraft will see it. Thus, every viewer gets a clearer view of Psyche, and everyone experiences seeing Psyche together. Dimensions: 4’ X 5’

Ad Asteroid

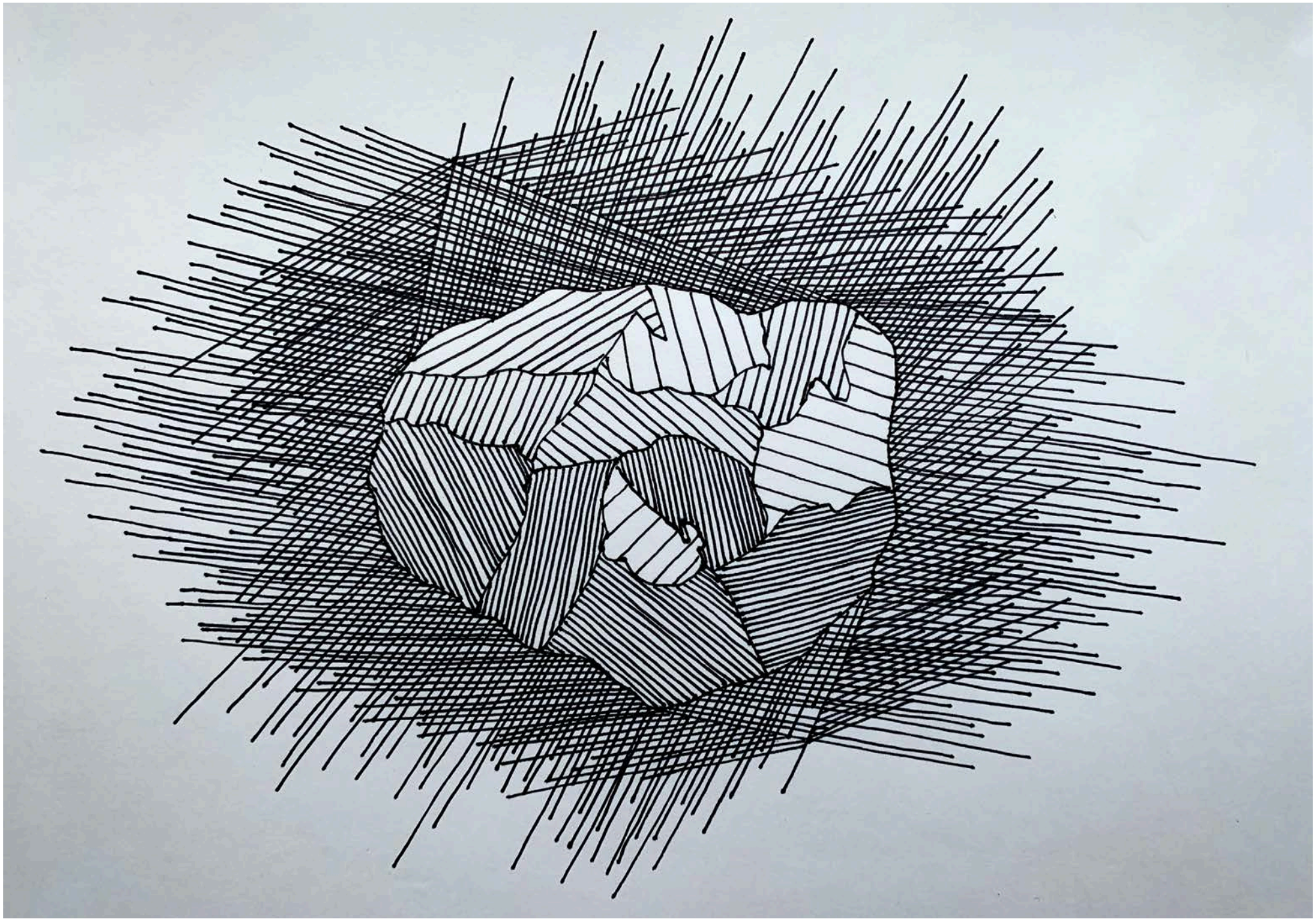
Janani Lakshmanan

Hasta Cipher, pen & ink, Pixelmator



Asamyutha hastas, the narrative alphabet of Bharatanatyam, are a form of sign language representing common words and symbols (flag, lion, bracelet) as well as dependent and independent clauses (“Once upon a time-,” “The flower blooms and withers,”) with a single hand gesture. Using them in dance has turned me into a person who speaks with my hands, but I have always admired the elegance and parsimony with which complex ideas can be conveyed without the use of intelligible speech at all. With this piece, I abstracted the shapes of the twenty-eight asamyutha hastas and devised an entirely novel alphabet — a substitution cipher that pleases the crypto-geek mathematician. I requested a collaboration with the incredible Binh-An Ngyuen. Her “Seeing Psyche” inspired me when she first presented it, for both its stark visual contrast and its interactive nature. She was gracious enough to allow me to use her cutout of Psyche the asteroid as the foundation for my piece. I had the enjoyable experience of reading a captivating paper by Dr. Elkins-Tanton and the rest of the Psyche mission’s team a few weeks ago, which was titled “Observations, Meteorites, and Models: A Preflight Assessment of the Composition and Formation of (16) Psyche.” I felt that the piece managed to convey (in crisp, efficient, scientific vocabulary, no less) a sense of wonderment and anticipation of the revision of previous hypotheses and even current ones, eagerly awaiting the launch and orbit of the spacecraft. I chose to encrypt the paper’s abstract in my alphabet and hand lettering a color-inverted version of Binh-An’s Psyche. Try decoding some of it yourself, or perhaps encrypting something entirely new! I scattered a few secret details in amongst the letters. When I reverted the colors, the asteroid appeared to stand proud atop a stellar background.

Click or Scan to view full project



Psyche 16
Chase Mortensen
pen and ink

This piece is a simple representation of (16) Psyche with an emphasis on rays of light surrounding the asteroid. The rays extending out from Psyche represent the many different angles from which the asteroid will be observed and analyzed. Dimensions: 12” X 9”

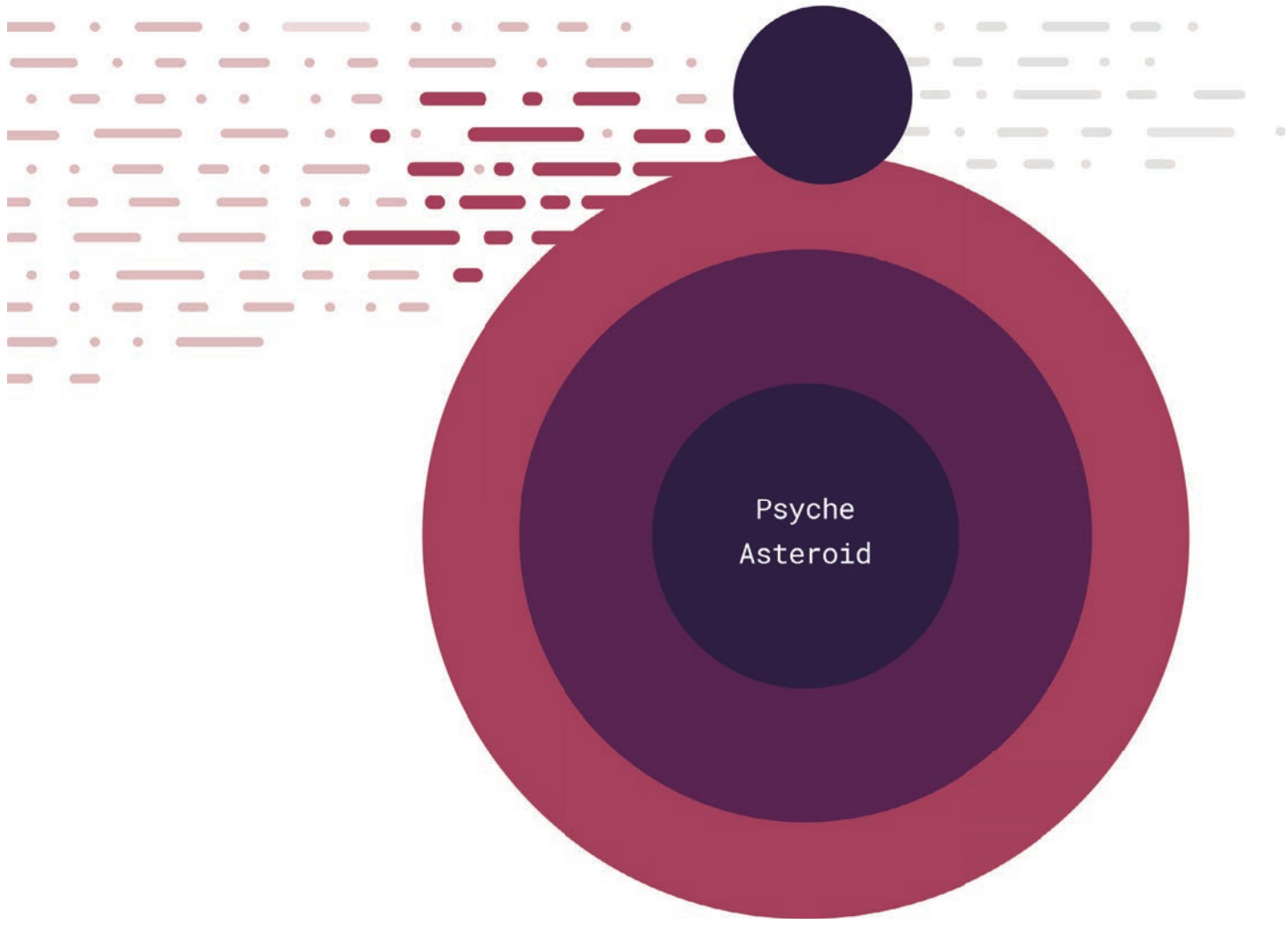
Psyche Sunrise

Noah Keime
ProCreate

Take a look at what it would be like to watch a beautiful “sunrise” on (16) Psyche as you catch a glimpse of a satellite flying above you. Watch as the sunlight reflects beautifully off the likely largely iron-nickel surface of the asteroid, casting beautiful shadows and luminous highlights across the surface. This piece was inspired by, and meant to be reminiscent of, a poster from the 1940s. It has a relatively limited color scheme and assertive wording to drive home its message. I wanted it to feel like this is something you could have seen on the window of a shop in the past. The viewer is supposed to feel as though they are sitting somewhere on Psyche, at a moment when the Psyche satellite is hurtling through space overhead. Because Psyche is an asteroid, and therefore has no atmosphere, I thought it would be particularly cool to see the view just as the Sun was peeking over the horizon. All of these aspects are meant to make viewers feel as thought they are a part of the Psyche satellite’s journey and are watching it complete its final orbits of the asteroid.

Formation

Scientists think Psyche may consist largely of metal from the core of an early planet, one of the building blocks of our solar system. How Psyche formed remains a mystery, but one scenario is that long ago, a protoplanet that had separated internally into a rocky mantle and iron core suffered violent impacts that stripped away its mantle, leaving behind core material.



Psyche is most likely a survivor of multiple violent hit-and-run collisions, common when the solar system was forming, and it may be able to show us how Earth's core and the cores of the other terrestrial planets came to be.

Impacting the Future

Levi Keatts

acrylic paint, plexiglass, glass

One of the primary objectives of NASA's Psyche mission is to determine if (16) Psyche is an exposed core of an early protoplanet, or if it is comprised of unmelted materials. I was inspired to create a piece around this question. This is my artistic imagining of an early collision removing chondritic crust from the protoplanet and exposing Psyche's melted nickel-iron core. This painting was done using acrylic paint on the front and backs of plexiglass sheets (topped with a glass sheet). The final image is made from seven total sheets. My hope was that the physical thickness of the transparent materials I painted on would add a sense of additional depth to the work. Dimensions: 10" X 8"

Metal Clouds

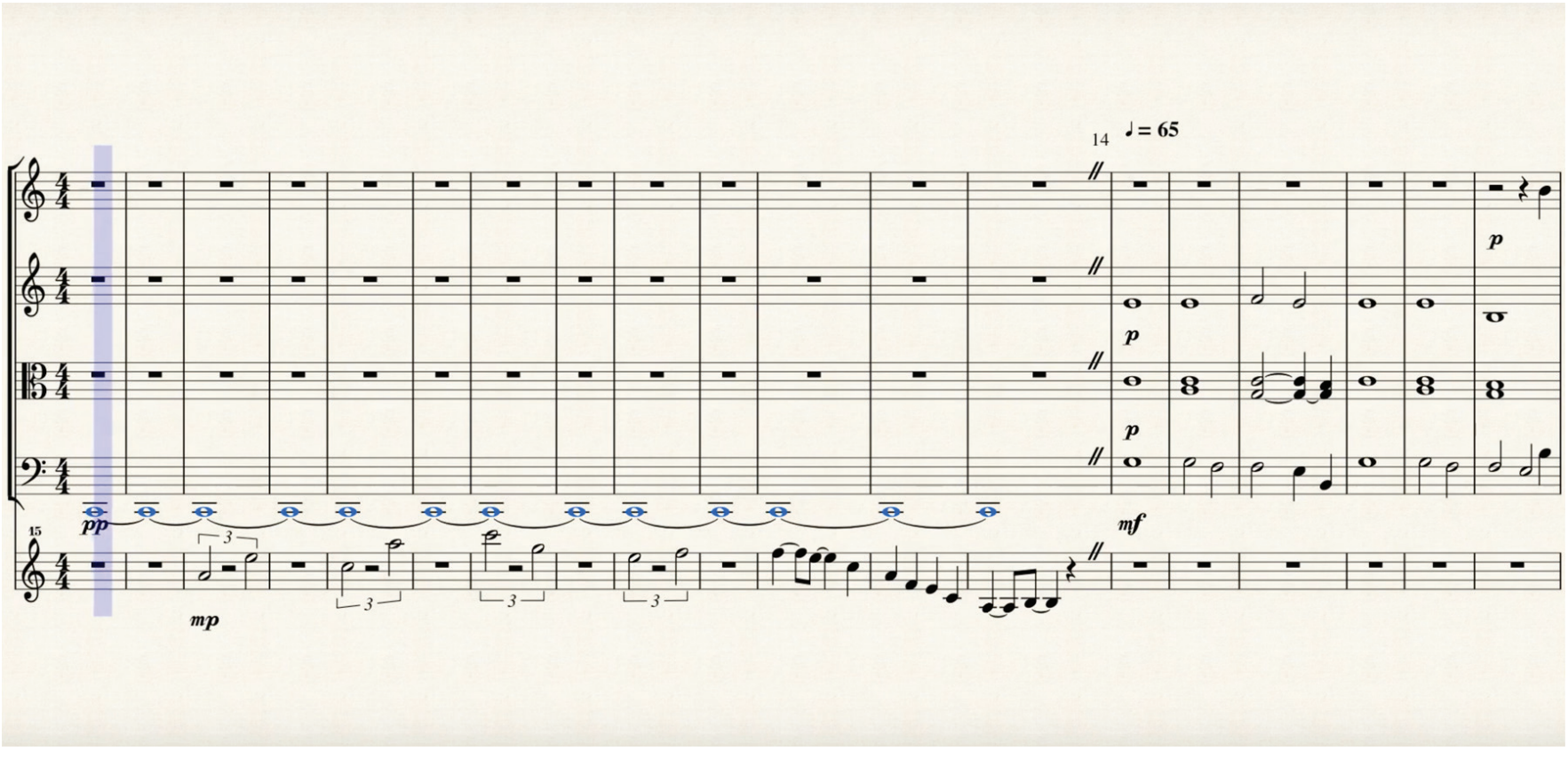
Finn Witt

chalk pastel on wood

It's thought that (16) Psyche is the exposed core of a protoplanet whose mantle was ripped away by repeated collisions. This would have resulted in clouds of metal and rock surrounding the asteroid. However, this is only one hypothesis describing its formation, and any debris has long since cleared from the asteroid's path. I attempted an Impressionist style in this work with a liberal use of bright saturated colors and punctuated strokes. This took just over an hour to complete. It depicts a common interpretation of (16) Psyche surrounded by its ejected mantle. The asteroid sinks into clouds of dust while a disk of debris is pulled into orbit, much like a protoplanetary disk. Dimensions: 4' X 2'

The Birth of Psyche
Joyce Tsui
digital

Psyche the asteroid is thought to be created from other asteroids violently colliding into it and destroying the outer layer of protoplanet, revealing a metallic core. In midst of the impacts, Psyche is born. The goddess is lying on top of the metallic core with smoke surrounding her. Crystallization emerges from several parts of her, showing the different materials thought to form Psyche. Although the birth of Psyche was violent and left the goddess vulnerable by destroying her outer layers, the different possibilities of the metallic materials and crystallization on the asteroid is even more exciting and beautiful than a regular planet.



Collision

Finn Witt

string quartet

Scan to hear piece

This piece for string quartet and glockenspiel tells the story of ancient (16) Psyche's last moments before a hypothesized collision, which tore away its rocky outer layers and revealed the metallic core within. It is composed for string quartet-2 violins, viola, and cello-with an accompanying glockenspiel. The recording is built from synthesized instruments, which unfortunately do not fully express the instruments they represent. This is especially apparent in the second half of the recording with the choppy strings bouncing back and forth rather than flowing. It would sound much nicer with a recording of actual instruments, but finding a string quartet to perform your piece is more than difficult.

The work opens with a long, low cello note, representing the darkness of space. Quick notes from the glockenspiel ring out above, not unlike the twinkling of stars. After a brief pause follows a melancholy soundscape and low melody as a theme for our asteroid (16) Psyche. Following this is a rising movement, building stress as it gets louder and faster. This represents the approach of another astronomical body hypothesized to have collided with an ancient (16) Psyche, leaving behind the metallic core we hope to study.

Layers

Monica Moreno

mixed media sculpture

There are multiple layers to people, rosebuds, and things much larger in size, like the planet that we live on. This mixed media sculpture speaks of the importance and purpose of studying the Psyche asteroid– for humans to perhaps discover what is at the center of Earth, past its crust and mantle.

My sculpture showcases my own artistic interpretation of what a planet that has collided with another object might look like. It is made of recycled materials, including plastic, wood, paper, and pewter that I carved, melted, and sculpted. The planet is held by a painted clay hand. The Psyche Mission itself is intriguing to me, but I feel like I have to take as many opportunities as possible during my Psyche Inspired internship to tie a human aspect to the Psyche asteroid and the creation and launch of the Psyche spacecraft. To me, the people working on the mission are just as intriguing as the mission itself. Dimensions: 11” X 5” X 3”

Fragmentation

Christine Zhou

laser cut masonite

Psyche is an asteroid thought to be the remnants of a planetary metal core subjected to extremely strong collisions. In this piece, Psyche is depicted in the throes of its impact, fragmenting throughout space. The background, showing space between Mars and Jupiter, is mostly dark, but Psyche is illuminated. The obscured sphere in the lower middle area of this piece is the colliding object. I created the outline and design for my piece on Adobe Illustrator and then laser cut the image onto masonite.
Dimensions: 5” X 7” X 1/8”

Impact

Binh-An Nguyen

oil pastel

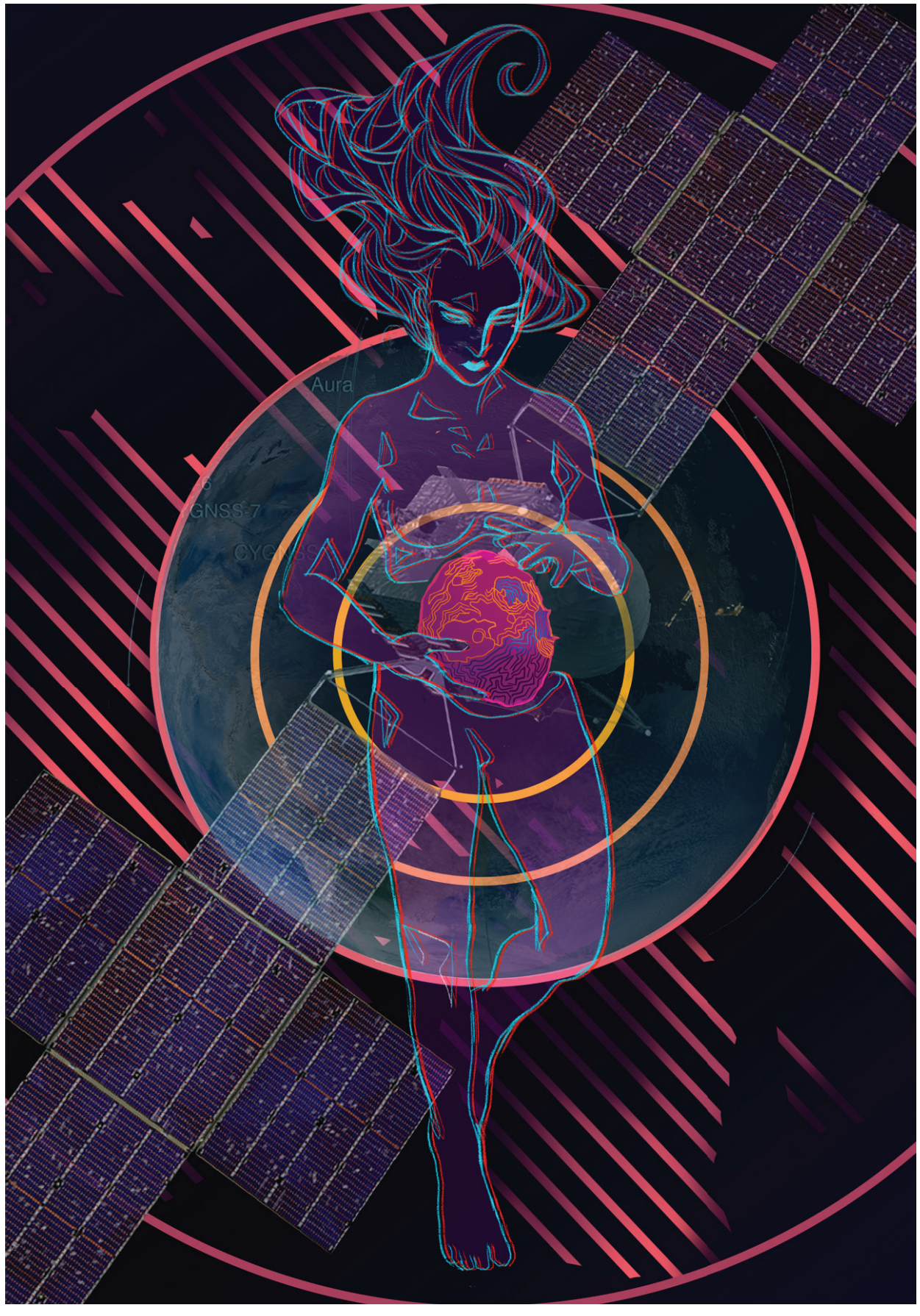
Color plays an important role in this piece, as the colors used are based on the Psyche mission logo. I wanted to represent that what we know about the surface of Psyche now is all based on the research being done by the Psyche team. Eventually, their work will lead to us being able to finally see all the textures that grace Psyche's surface. Currently, it is believed that because Psyche may be largely metal, the craters from impacts will have "peaks" around their edges, which may be unique to Psyche alone. Therefore, this is my interpretation of what Psyche's surface may possibly look like. Dimensions: 24" X 18"

Psyche's Core

Sarah Tennant

digital collage

After learning about the Psyche mission team's desire to make their work's collaborative nature more publicly known, I knew that would be the basis for my next project. I made and sent a questionnaire to the Psyche mission team and my fellow interns, where they gave me their reasons as to why they think the Psyche mission is important. By using the responses of others involved with Psyche to inform my art, I was able to introduce a collaborative element to my artwork, which would reflect the collaboration that occurs among scientists and the Psyche mission team. Their responses largely involved a yearning for discovery and exploration and how Psyche's similarities to Earth's core could help further our understanding of our own planet. I hoped to capture these sentiments in my art through the use of color and symbolism.



What Could Have Been

Christine Zhou

acrylic and collage on paper

Psyche, possibly the exposed metal core of an early planet, is the manifestation of what could have been. Perhaps what is now an asteroid could have developed into an Earth-like body. Instead it is devoid of life. My piece represents what Psyche could have been — a habitat housing billions of organisms and their joys, celebrations, sorrows: the collection of their emotions. This piece incorporates collage elements: cut-outs from a variety of magazines that capture human lives. The flowing acrylic brush strokes represent the dynamism of our constantly moving and growing lives. Dimensions: 24” X 18”

Psyche Team

In its infancy, the Psyche team was composed of five individuals, which grew to be about 140 by the time of the site visit from NASA in 2017. As the mission continues to progress, more team members are added as needed. As of now, the Psyche team is comprised of seventeen different partners, each with multiple individuals from a variety of specialties, including science, engineering, management, business, and education.

Each member of the Psyche team plays an important role in the mission, ensuring that the mission proceeds on schedule and that Psyche remains committed to its mission goals and objectives.

Behind Psyche
Noah Keime
ProCreate on the iPad

Upon being asked what they would like to see more of in Psyche Inspired art, Psyche team members often answered, “The number and variety of people it takes to get a mission like this going.” I found this particularly inspiring, and I decided that I wanted to try and do it some justice with my piece. Though this work only shows a small number of those responsible for Psyche, it shows the range in occupation of people working on Psyche. There are far more individuals who have contributed significantly to Psyche, and unfortunately due to the style of this drawing, only a handful of the team was shown. It takes an army to do a mission like this, and hopefully “Behind Psyche” gives the viewer an idea of this reality.

The background of this piece is an amorphous collection of colors that are reminiscent of those in the Psyche logo: purple, pink, and yellow.

Depicted from left to right:
Diane Brown – Psyche Program Executive HQ
Henry Stone – Project Manager JPL
Carol Tolbert – GRC Psyche Program Manager
Lindy Elkins-Tanton – Principal Investigator ASU
Jim Bell – Deputy PI ASU
Sarah Noble – Psyche Program Scientist HQ
David Oh – Project System Engineer, JPL

Psyche Sweater

Binh-An Nguyen

acrylic, nylon, knitted

“Psyche Sweater” promotes the Psyche mission and informs others on how the spacecraft will utilize X-band radio telecommunication technology to measure Psyche’s gravity field.The back is modeled after a sports jersey-like appearance, as everyone wants to support their favorite team: The Psyche Mission Team! The number 16 was chosen as Psyche was the 16th asteroid to be discovered. The front has an image of the spacecraft sending out radio waves. On the collar and cuffs, the colors of the Psyche mission logo are represented in a space dye yarn. The overall pattern is that of a raglan sweater. Yarns of acrylic and acrylic nylon blend were used. Dimensions: 23” X 24”

Vision
Monica Moreno
bronze, glass, photography

Vision (Continued)

Since the start of my NASA Psyche Inspired internship, I have been fascinated by the people working on the NASA Psyche Mission. They are a group of individuals who have devoted countless hours, days, and years of their lives to one mission. Their drive and dedication are apparent, but to me, their sheer sense of wonder and curiosity are inspiration enough. This piece pays homage to those special human traits.

Everyone working on this mission has a vision, represented here as a human eye. I sculpted this eye in clay by hand, hoping not to make it look female or male and giving it no particular age or ethnicity, so that it may represent all. Through a process of mold making and wax casting, I finally cast this heavy 3”x 2” piece in bronze.

Looking at its pupil, you will notice that it is made of a different material. I spent about two years on and off researching how to make a traditional magnification lens out of glass and how to mount a shrunken version of my original artwork onto the glass. If you look from behind the bronze eye and against the light, holding the piece about four inches away from you, you will see the image of Psyche in human form looking up at the spacecraft that is traveling toward her.

On the back of the piece, I engraved: “Here’s to the ones who dream. Foolish as they may seem.” This quote from the film La La Land was subject of a social media post that Lead Systems Engineer David Oh wrote on January 2, 2017. Dr. Lindy Elkins-Tanton adds Mr. Oh’s words to her blog post in the NASA Psyche Mission blog. You can read it here: https://psyche.asu.edu/2017/08/15/waiting/.

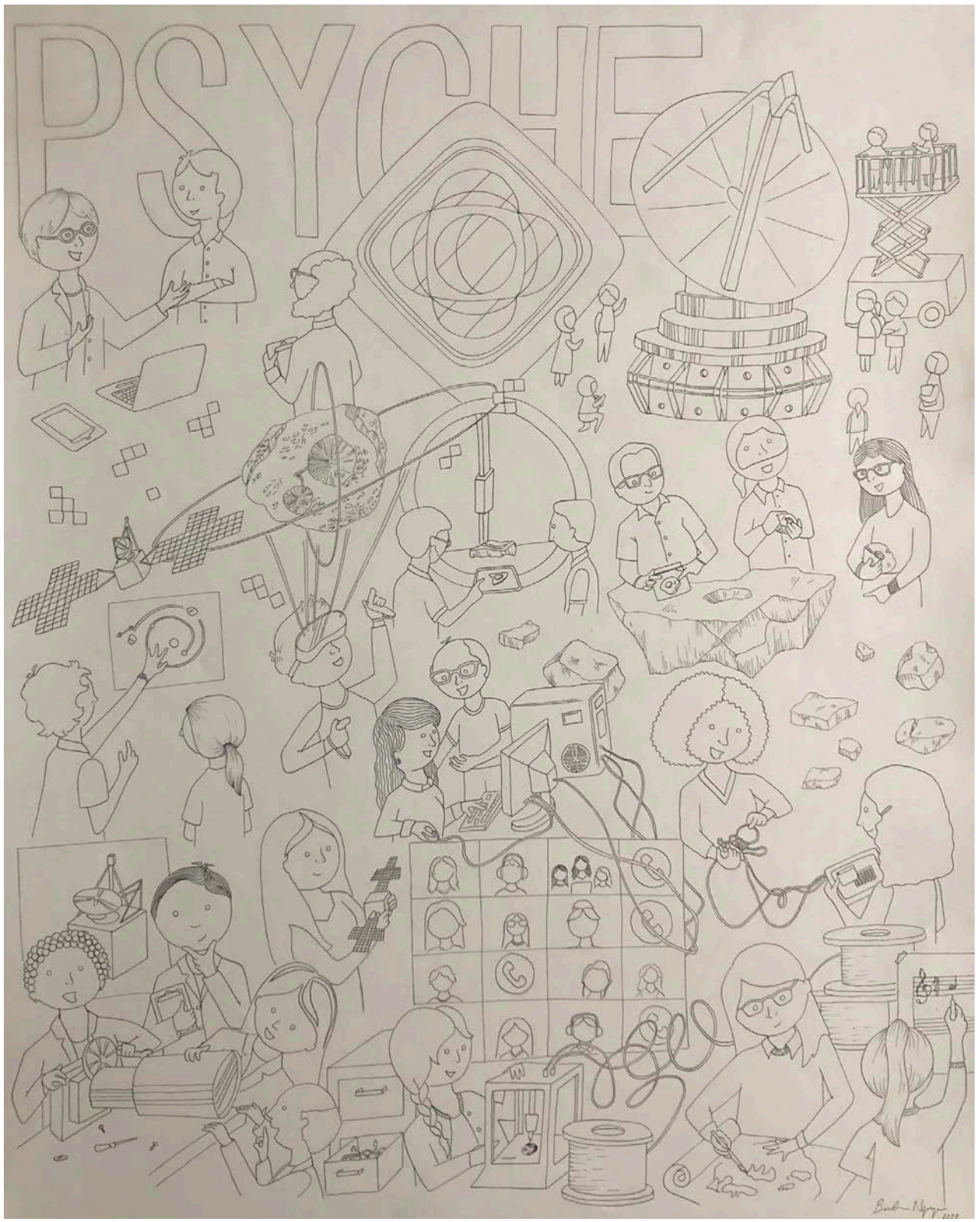
I’ve been enjoying reading the blog posts for this mission, especially the ones from the early days when the team was dreaming big, keeping their fingers crossed, waiting for good news from NASA, and hoping for their vision to become a real-life NASA mission. Dimensions: 2.5” x 2”

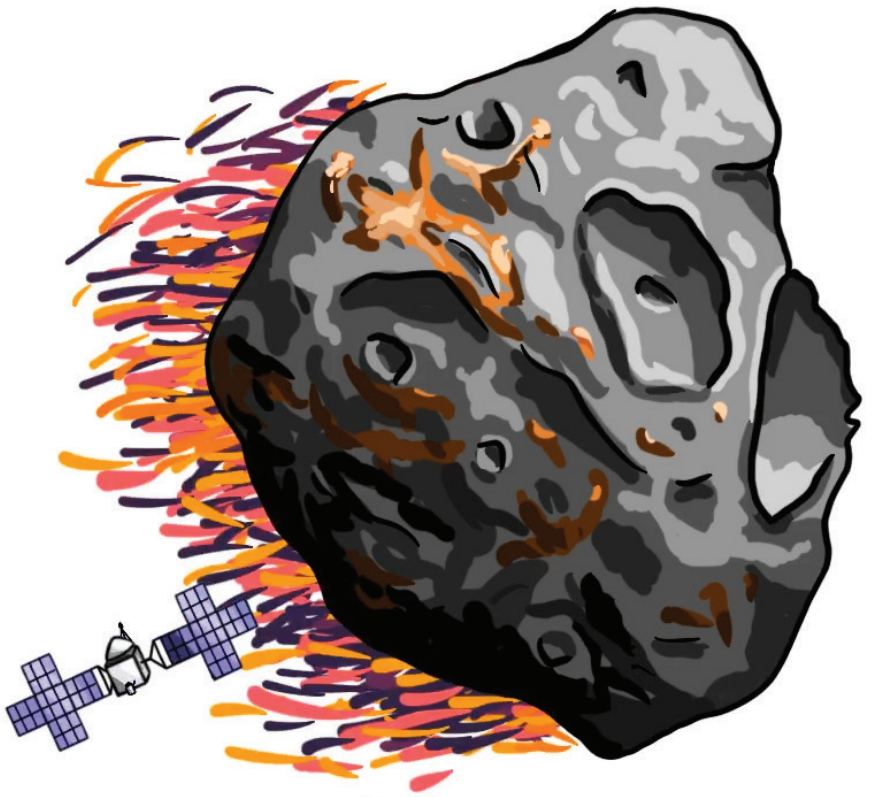
The Many Aspects of Psyche

Binh-An Nguyen

pen and ink

The entire Psyche mission could not be possible without all the people who make up the Psyche team. Many most likely think that the only people who make up the team are experienced engineers and scientist, but that couldn't be further from the truth. There are geologists, artists, and students from across the country that are working on projects that relate to Psyche. Together, we all work toward a common goal: to visit Psyche, a mostly metal world. In order to spread the message of teamwork and diversity in disciplines in the Psyche mission, I decided to make a poster that emphasizes this. Fine lines of ink make up the illustration of various people working on the mission. I decided to leave it uncolored because I wanted to let those who wish to have the poster get some creative liberty of what their poster will look like. They can decide to leave it uncolored or add their own details. Hopefully, more people can see that anyone can be a part of a mission like Psyche, and that NASA missions are not just limited to scientists or engineers. The Psyche mission would not be possible without the many collaborators in this project. Dimensions: 18" X 24"





Psyche in Motion

Noah Keime

ProCreate on the iPad

Click or Scan to view video

This piece is an animation created using Procreate, and it was inspired by the Psyche spacecraft orbiting 16 Psyche. Rather than simply depicting the movement of the satellite around the asteroid, I thought it would be interesting to transform the latter into the Psyche mission logo. In order to do this, I rendered out an undulating mass of colors, which follow the satellite on its orbit of Psyche. The colors used in the form are those used in Psyche's logo. As the satellite and colors move, the logo is slowly revealed. Then, as the orbit is completed, the logo is finally revealed in its entirety. In order to transition back to the asteroid, so that the animation could loop continuously, the logo implodes upon itself. I used this style of movement because I found it very visually pleasing, and I thought it nicely mirrored the colored mass that followed the spacecraft. As the logo is pulled towards the center of the canvas, the asteroid is slowly revealed, and the animation begins again.

Psyche Patch Design
Fiona Schneider
digital illustration and hand-stitched patch

Since the Psyche mission is made possible through the efforts of team members from various disciplines, I wanted to create something that could hypothetically serve as a unifying identifier for the team. Patches can be easily added to apparel, bags, or otherwise, allowing the team to use them as they wish. Dimensions: 3” X 3”

Psyche Science

A mission to the asteroid Psyche offers unique scientific value. By studying the asteroid up close, we will learn more about the history of the solar system. We may even gain new insight into the interior of our own planet.

Studying the asteroid up close will come through the use of the Psyche spacecraft's instruments, which include the multispectral imager, gamma ray and neutron spectrometer, magnetometer, a radio science experiment, and a demonstration of the Deep Space Optical Communication system (DSOC).

With the aid of these instruments and investigations, the mission hopes to determine whether Psyche is a core or unmelted material, determine the ages of regions on Psyche's surface, determine if metal bodies incorporate the same light elements as are expected in the Earth's high-pressure core, determine whether Psyche was formed under conditions more oxidizing or more reducing than Earth's core, and characterize Psyche's topography.

Why Explore (16) Psyche?

Joyce Tsui

digital

Click or Scan to view comic

Several people working on the Psyche mission expressed their desire for a way to educate the public about what the mission is about and why it is important. Thus, this informational comic explains the relevance of the Psyche mission in a light-hearted manner. While the colorful illustrations paired with the text makes it more intriguing for the viewer, the jokes and colloquial language are intended to be informal and less like a lecture. Ultimately, I illustrated the exciting objectives of exploring a metal world and the possibility of learning more about planetary cores.

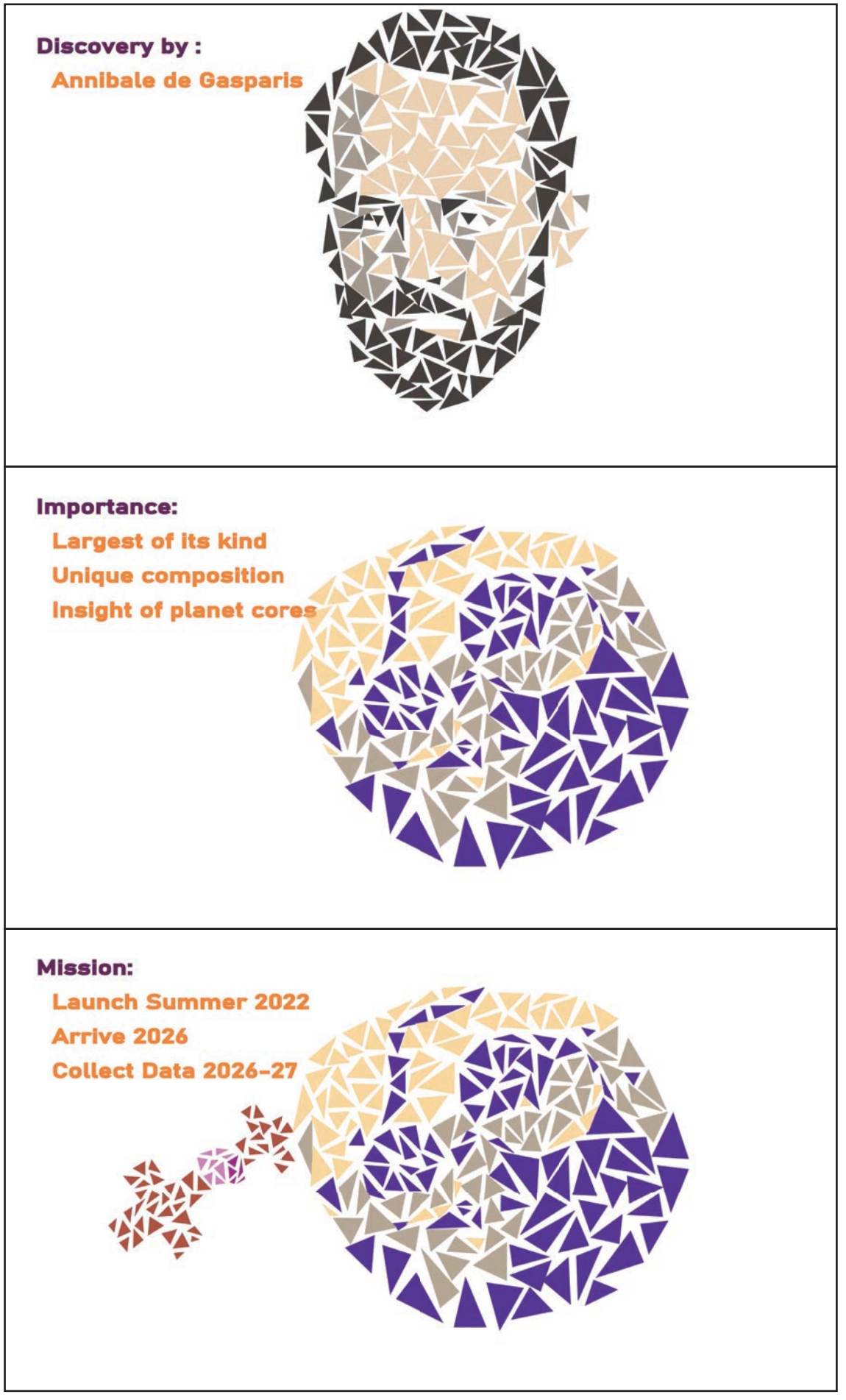
Psyche 16 Facts

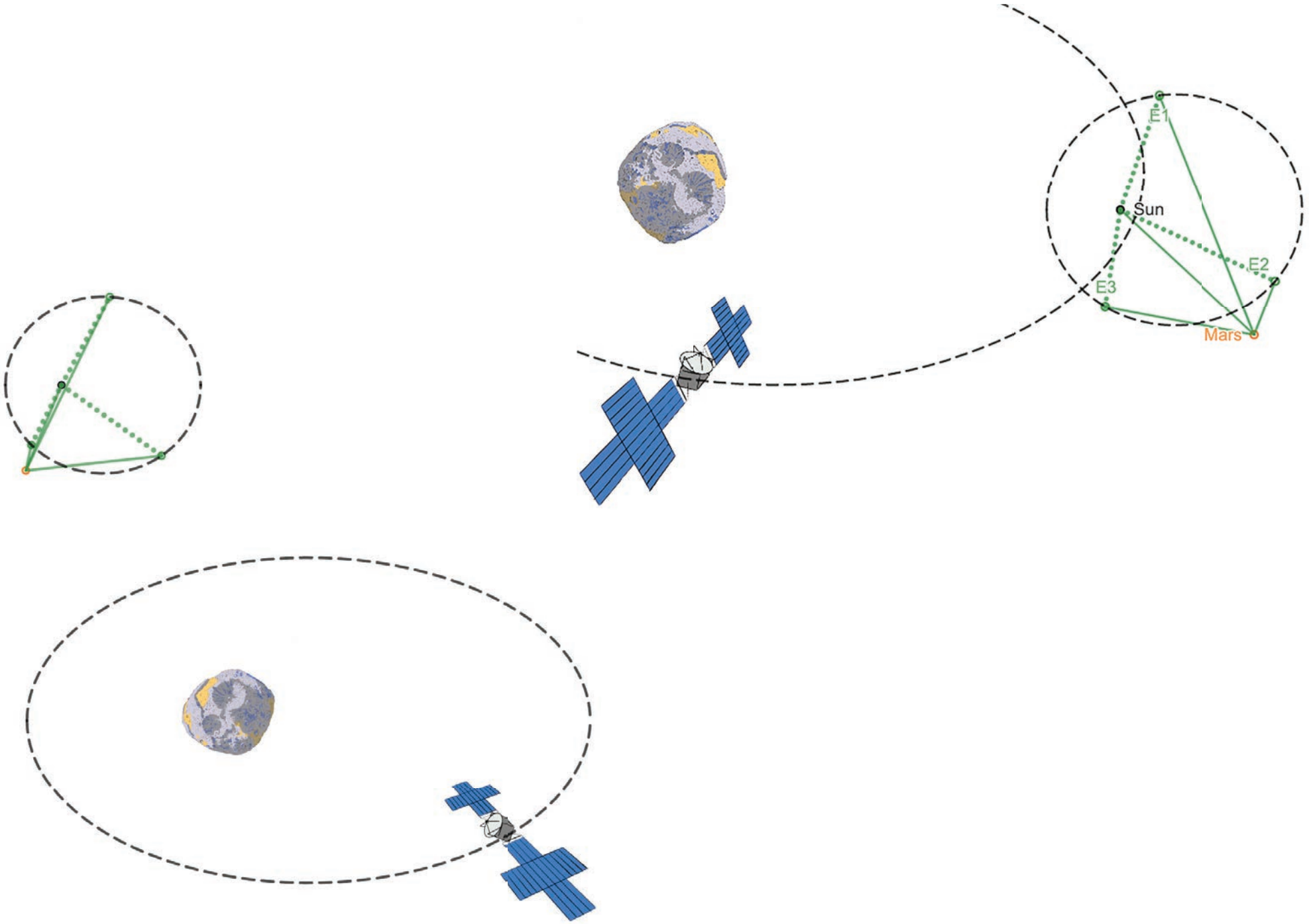
Silvia Valladares

digital animation

This animation features a few animated facts about the Psyche asteroid, along with some details about the Psyche mission. I used an estimate of 870 individual triangles to make this animation. I wanted to make something that was visually simple, yet informative and fun to watch.

Click or Scan to view video





Modeling Psyche

Ral Vandenhoudt

graphing calculator

This dynamic piece is meant to be interacted with on an online graphing calculator.

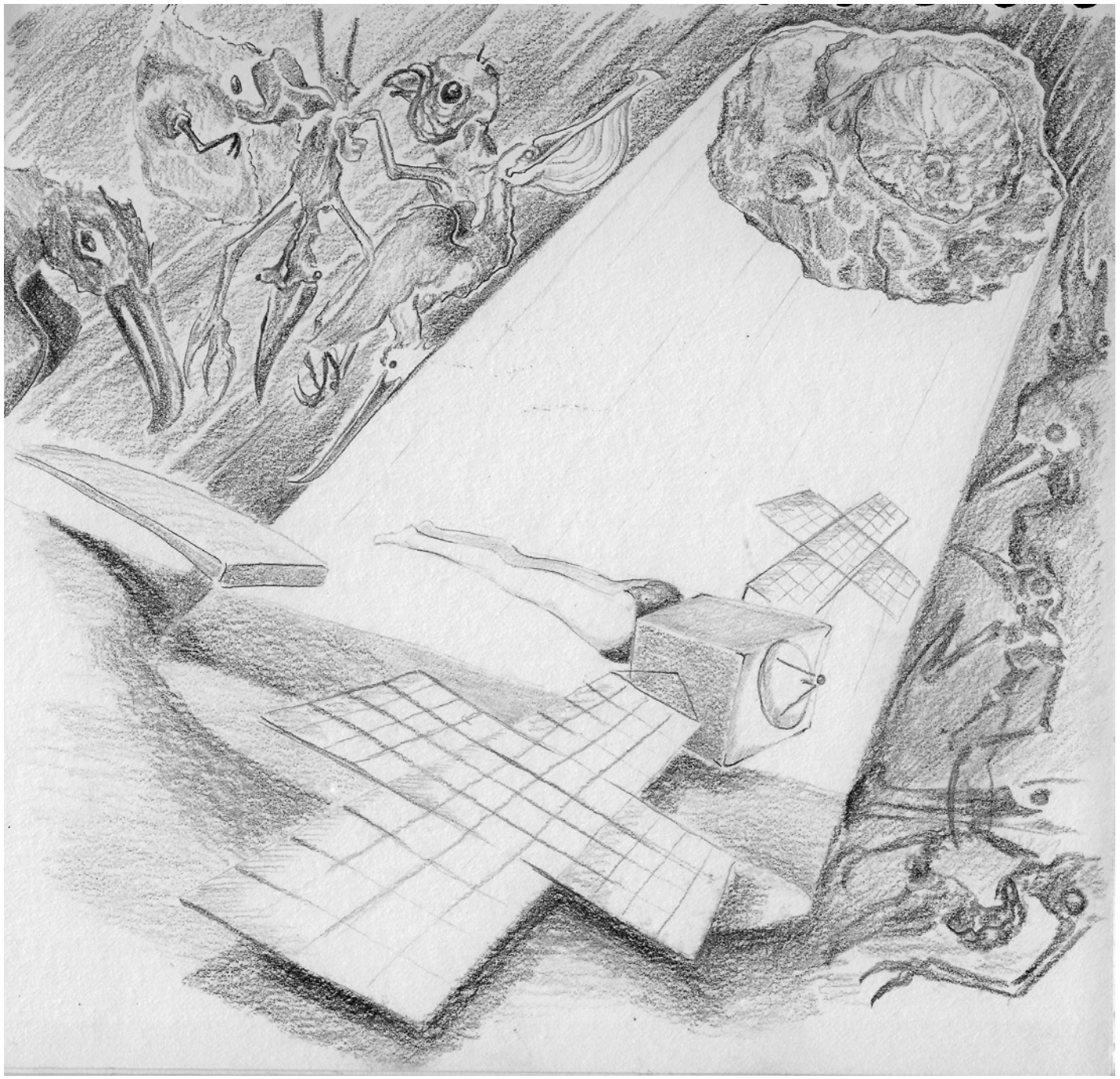
Click or Scan to view full project

Somewhere Between Mars and Jupiter

Levi Keatts

oil on canvas and jasper beads

This piece is a homage to the advancement of art and exploration. Debatably, one of the earliest known pieces of art was the Makapansgat pebble. This is a small red jasperite rock that looks like it has a face on it, which was caused by natural weathering. Some early human found this pebble and decided to carry it back to their cave roughly 20 miles away. This makes me think about how far we have come as humans–from being enamored with a pebble to sending a robotic spacecraft to an asteroid far away from Earth and making art about it. (Because Psyche and Earth orbit at different speeds, the distance from Earth to Psyche varies over a large range, from < 2 astronomical units, or AU, to > 4 AU!) I hoped to display this with a three-panel painting. The first panel shows a human surrounded by jasper beads, representing the Makapansgat pebble. The second panel depicts the moon, representing one of the most noteworthy feats of human exploration. And finally, the last panel depicts the asteroid (16) Psyche, representing our current field of exploration. Dimensions: 43” X 43” X 5”



Psyche Taking a Dip
Ral Vandenhoudt
graphite on paper

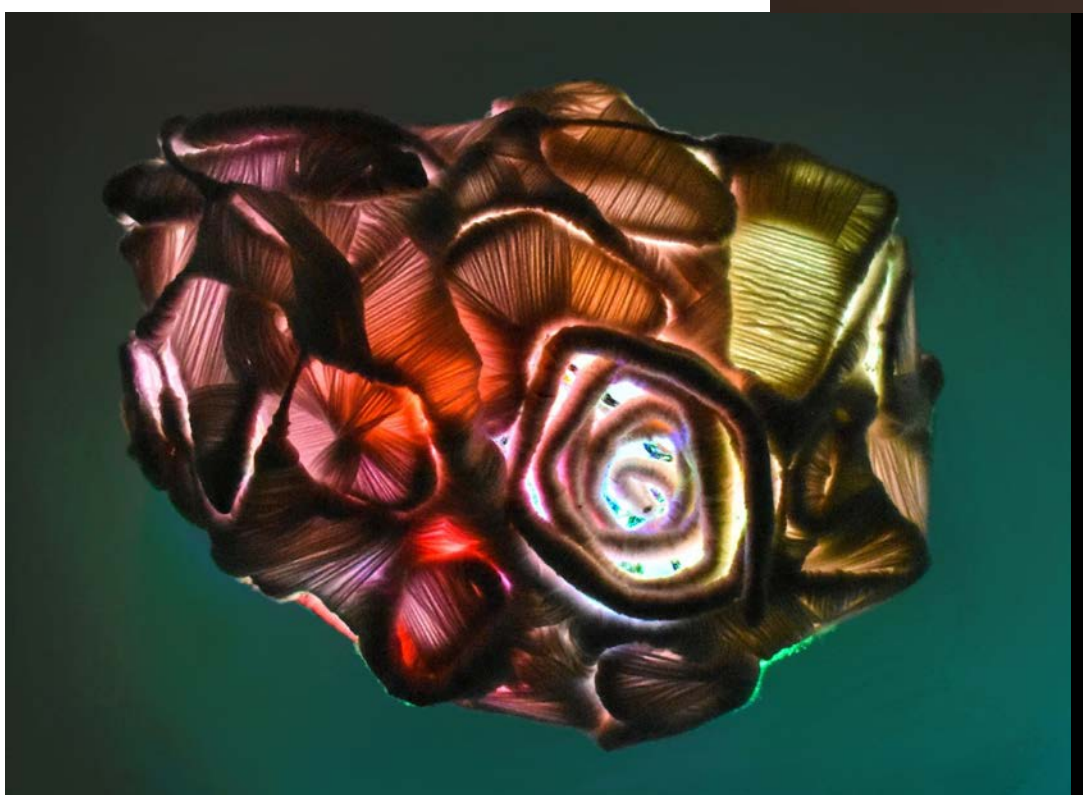
This piece depicts the Psyche spacecraft diving into the light of science, escaping the nebulous mystery of the unknown. The insights we stand to gain from investigating the asteroid can illuminate us as to the origins of our own planet. Dimensions: 8.5” X 11”

Light Curves

Levi Keatts

wire and yarn

My fourth project for Psyche Inspired is a yarn sculpture of the asteroid (16) Psyche. It was inspired by a paper called “Radar Observations and Shape Model of Asteroid (16) Psyche.” In this paper, scientists spoke about how they used the “inversion of light-curves” to develop a topographical map of (16) Psyche. The sculpture is meant to be an artistic interpretation of this. Dimensions: 23” X 14” X 21”



Magnetic Field
Monica Moreno
engraving

Magnetic Field (Continued)

The Psyche spacecraft is to be sent off with a set of scientific instruments meant to collect information about the Psyche asteroid. One of those instruments is a magnetometer, which will be measuring Psyche's remanent magnetic field. I aim to show the connection between the Psyche spacecraft, the asteroid, and its magnetic field in this art piece.

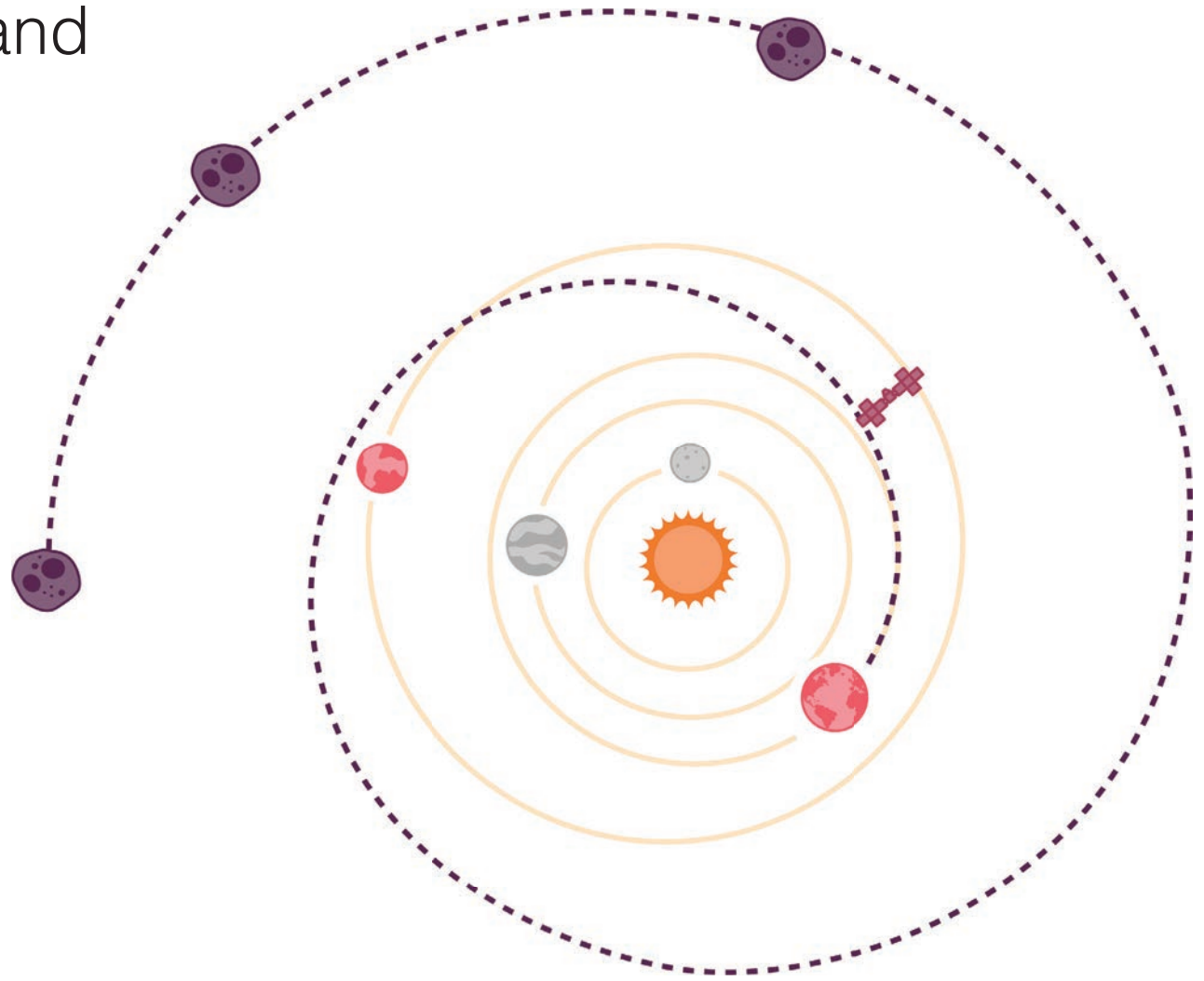
Also, with this piece, I am excited to showcase one of the newest skills that I have the pleasure to be learning – hand engraving. Hand engraving is an age-old art form created by pushing sharpened steel knives of various shapes through metal. Through a series of cuts and other techniques, the engraver creates images. I used a handful of traditional hand engraving techniques on this steel plate to texturize and outline the asteroid, spacecraft, and the rings representing the asteroid's magnetic field. It is fascinating to learn about the objects that scientists and engineers have to plan for in order to make sure they are able to collect as much valuable information from their efforts as possible. The magnetometer is only one of many that will be included in the Psyche spacecraft.

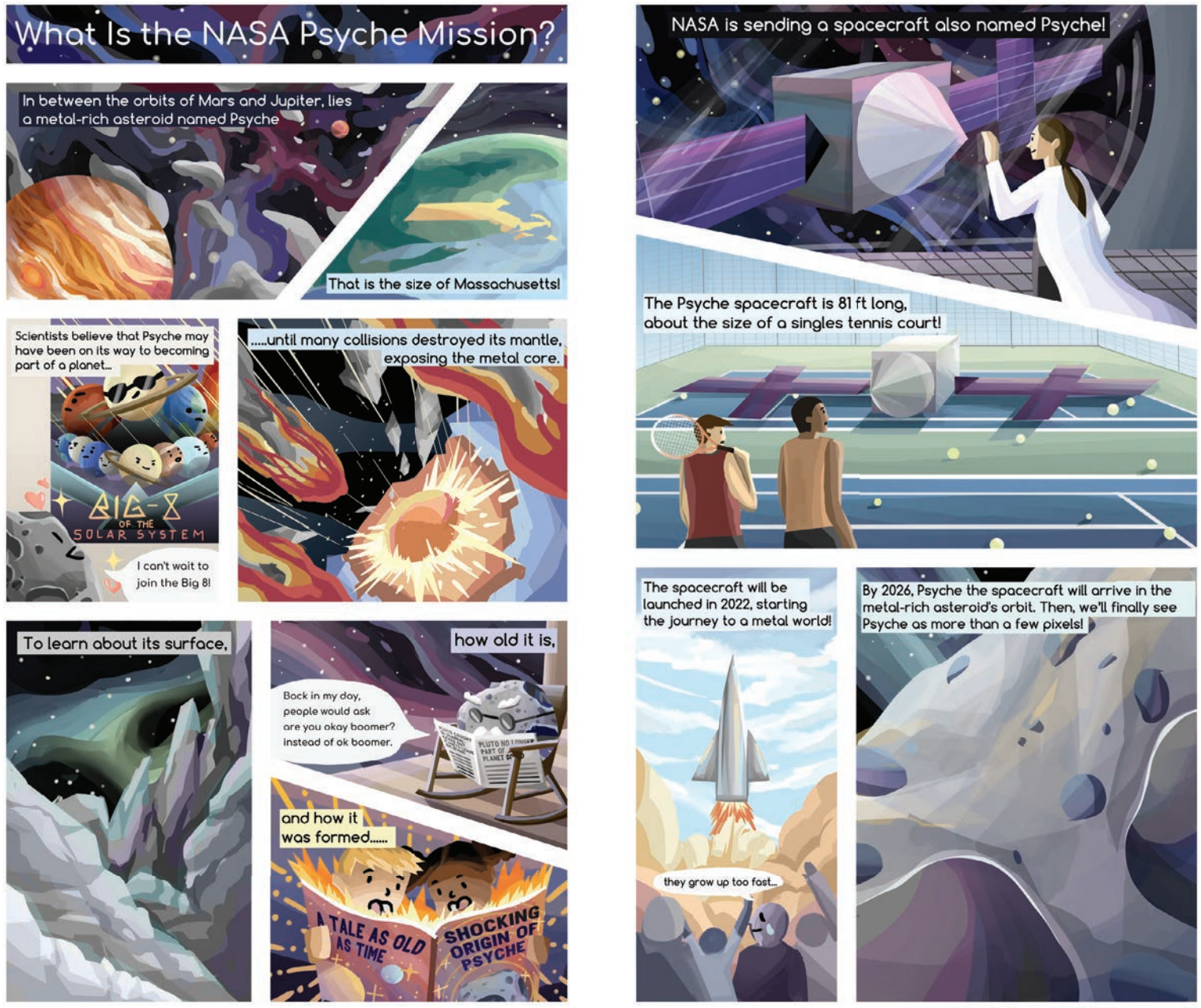
For the gift of learning how to engrave, I'd like to take this opportunity to acknowledge my engraving teacher, mentor, and friend, Master Engraver John K. Barraclough. I will forever be thankful to him for passing his years of knowledge to me with generosity, kindness, and patience. With this opportunity, I also must thank the Psyche team. It has been a real learning experience and a wonderful opportunity to have participated in the Psyche Inspired program. Thank you for making it possible, for your kindness, and for your support.
Dimensions: 2.25" X 2"

Journey

The Psyche spacecraft is targeted to launch in the summer of 2022. After separating from its launch vehicle, the spacecraft will undergo a 90-day operations checkout before traveling to the asteroid using solar-electric (low-thrust) propulsion. On its journey, the spacecraft will be heavily monitored, communicate with Earth, undergo operational readiness tests, have its instruments calibrated, and undergo navigation and trajectory calibration as needed.

The spacecraft is projected to complete a Mars flyby and gravity-assist in 2023 prior to arriving at the asteroid in 2026.





What is the NASA Psyche Mission?

Joyce Tsui

digital art

Click or Scan to view comic

Several people working on the Psyche mission expressed their desire for a way to educate the public about what the mission is about and why it is important. Thus, this informational comic explains what the NASA Psyche Mission is in a light-hearted manner. While the colorful illustrations paired with the text makes it more intriguing for the viewer, the jokes and colloquial language are intended to be informal. Ultimately, I illustrated the context and the key elements of exploring a metal-rich world.

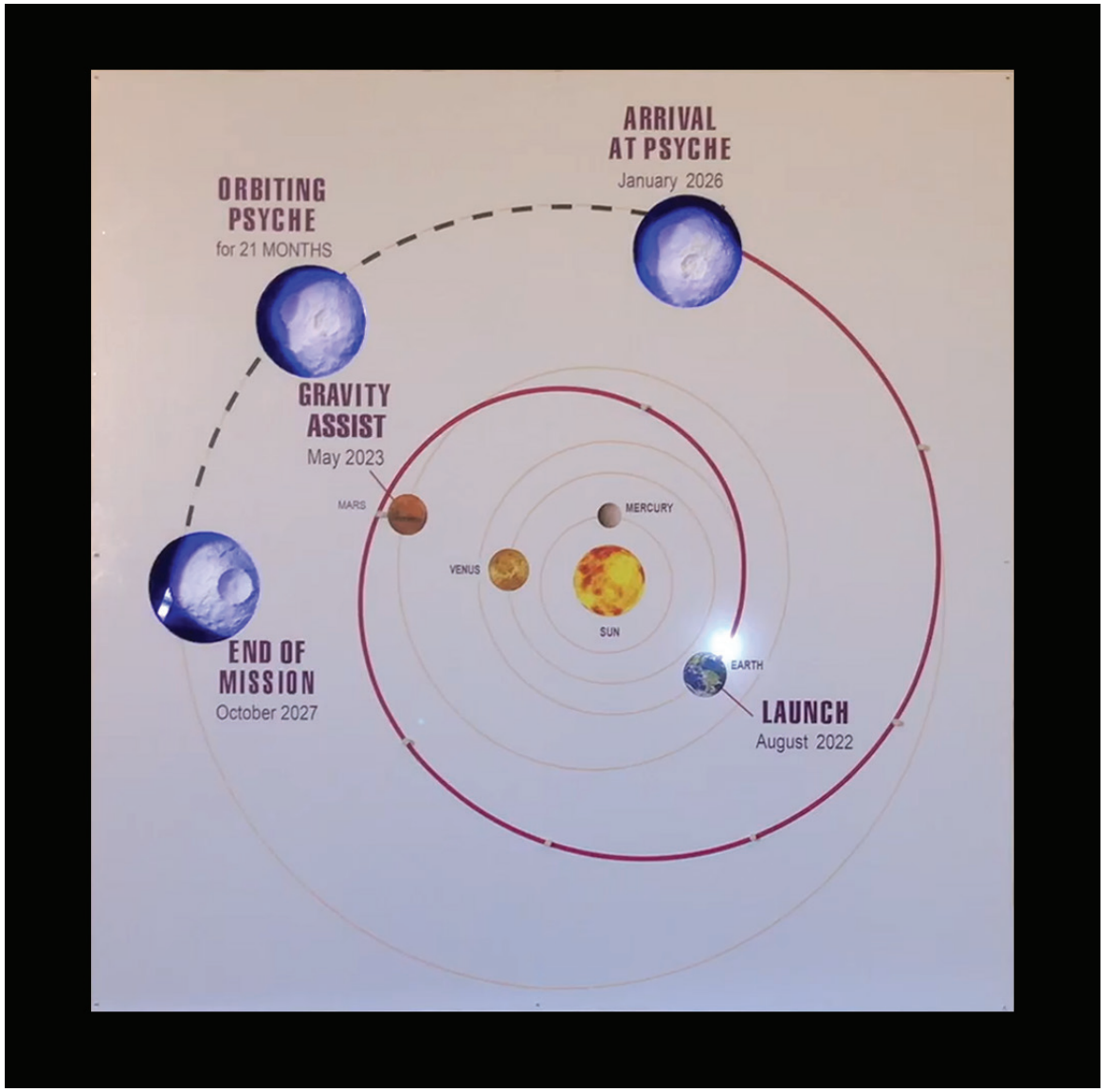
Psyche Misson Timeline

Fiona Schneider

digital illustration

A concise breakdown of the Psyche mission objectives to help people quickly understand what the mission aims to accomplish and the mission's various milestones over the course of its life.

Click or Scan to view full project



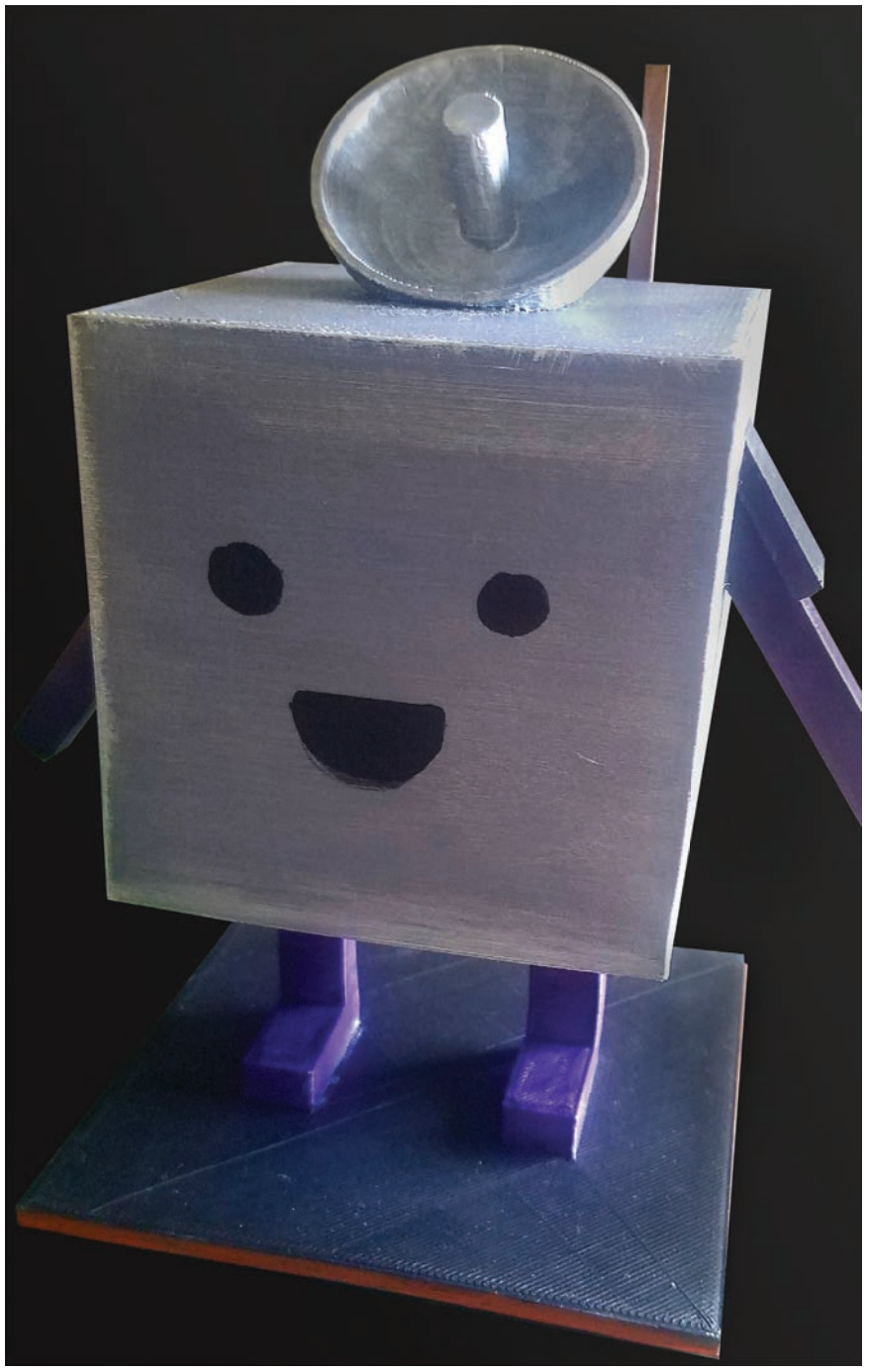
Voyage

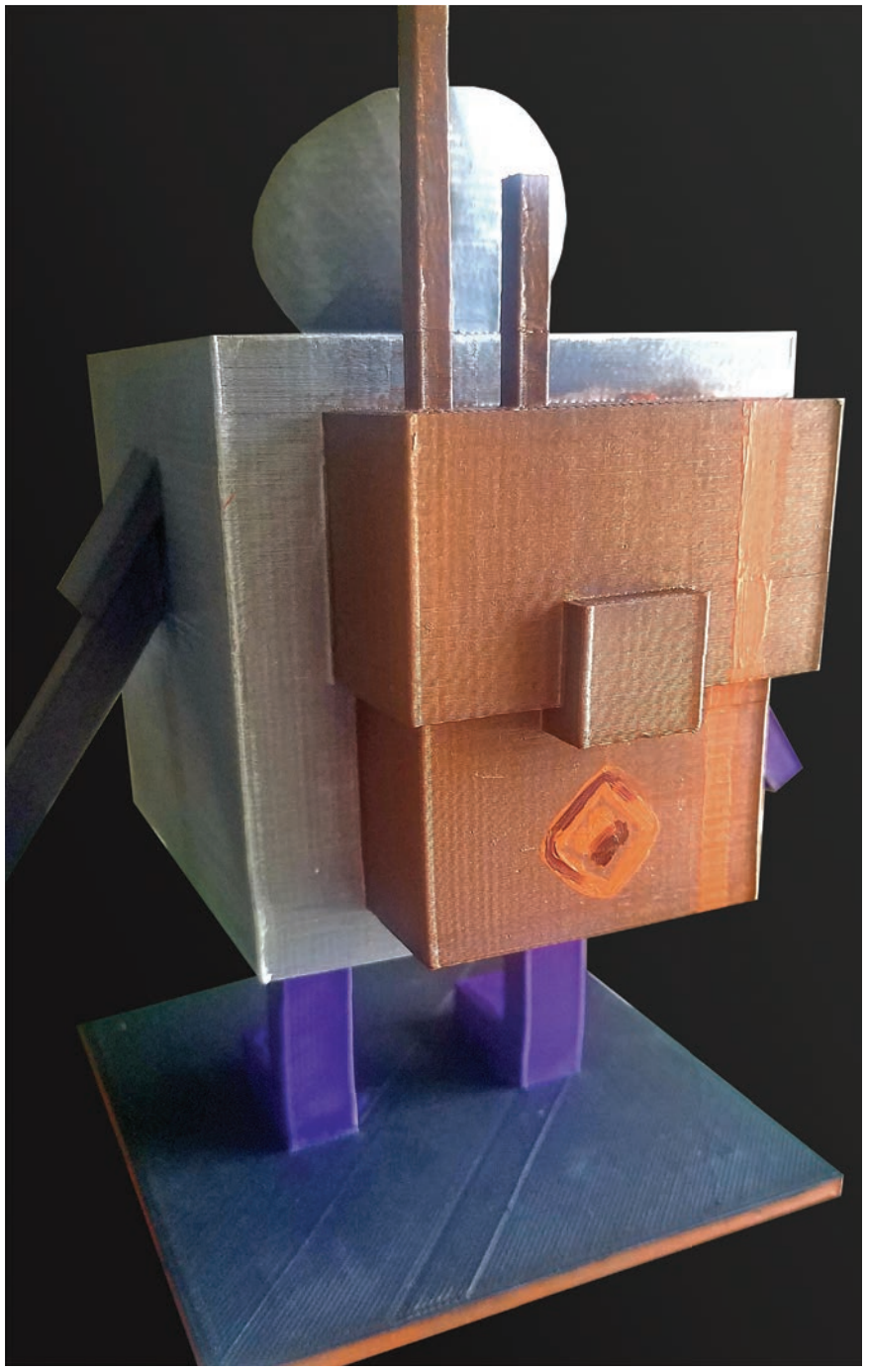
Shannon Hack

mixed media: wood, vinyl, LED, 3D print, electrical components

Click or Scan to view video

Voyage is a kinetic sculpture designed to translate the mission and the journey the orbiter will take to collect information from the Psyche asteroid. This piece is a 30” X 30” X 6” wood housing and is overlaid with a vinyl image of the mission’s trajectory. LED lights each mark an average of 6 months of the orbiter’s time until reaching Psyche. The housing holds three 3D printed Psyche models, which are highlighted with black lights and viewed through holes in their perspective space along the trajectory. When on, the LEDs light up and all the asteroids revolve in sequence and then turn off in a reverse sequence. The initial sequence is meant to convey the orbiter’s journey to Psyche, and the reverse sequence symbolizes the information the orbiter is transmitting back to Earth. Dimensions: 30” X 30” X 6”





The Curious Explorer
William Strunk
3D printing, PLA plastic, paint

A curious robot satellite equips their backpack and is ready for the long but exciting journey to a metal-rich world. I was inspired to bring a personality to the satellite as it readied itself for space travel. This figure is a 3D model design that was printed using PLA plastic and painted with silver, bronze, orange, and purple. Dimensions: 6.5” X 8” X 10”

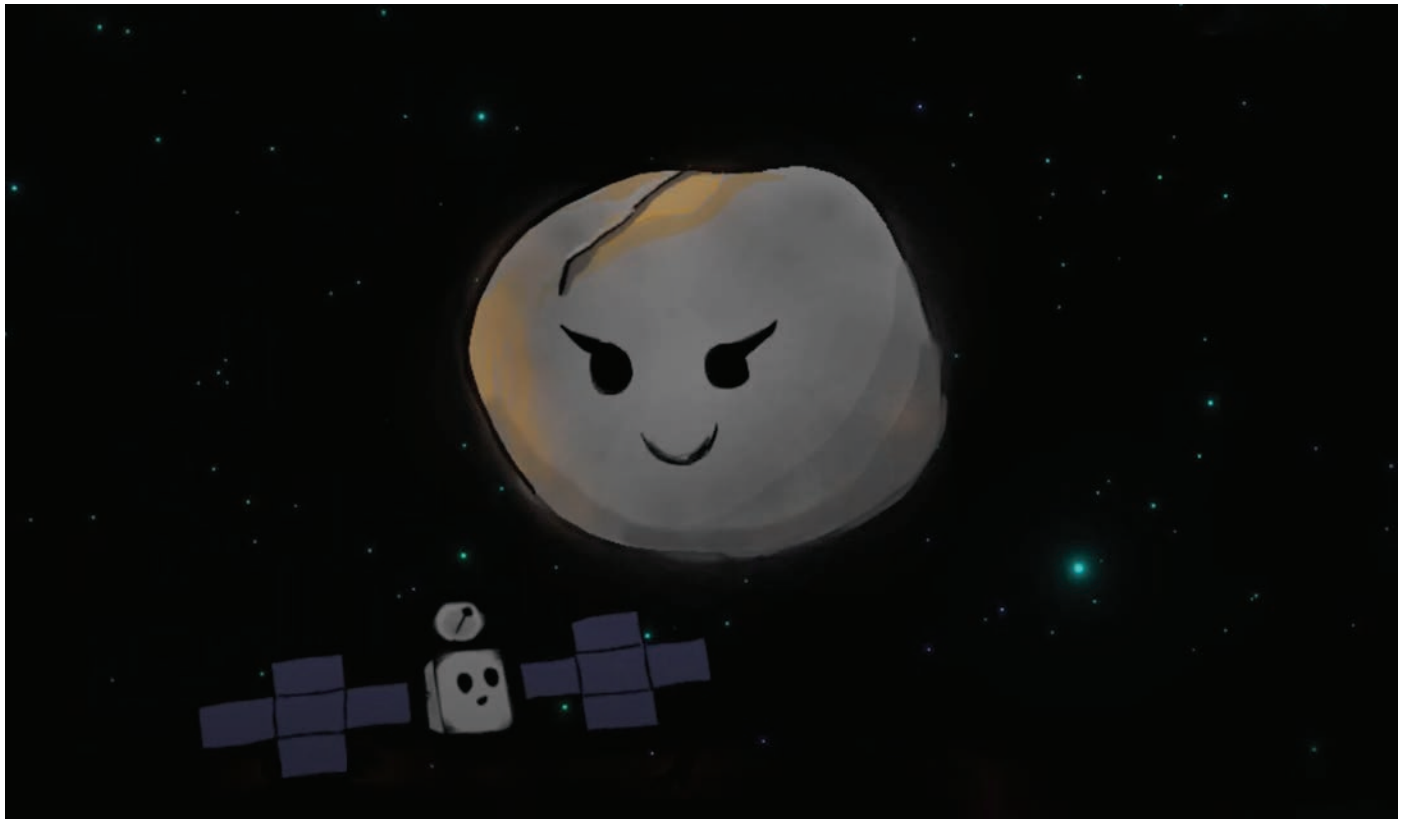
Whimsical Journey

William Strunk

digital art and animation

The Whimsical Journey shows the spacecraft's adventure through space. The satellite will be able to see many new things on its way to the asteroid. Each new sight and discovery has been brought to life with a fun twist in this 2-D animation.

Click or Scan to view video



Falling

Finn Witt

chalk pastel on wood

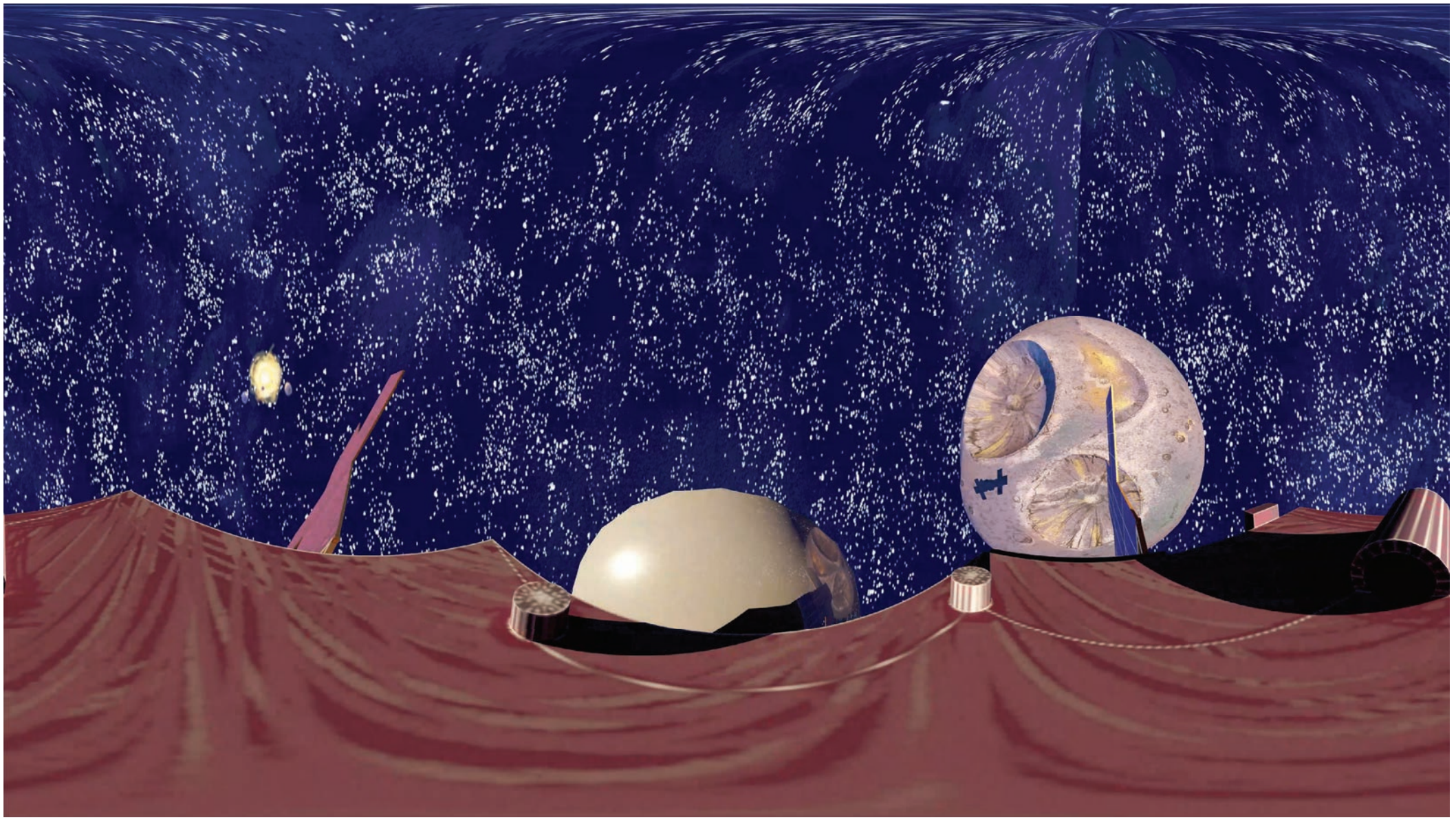
“Falling” is composed of soft pastel on a black sheet of wood. It is 6ft tall and 2ft wide. Most of the painting remains black with immense planets found in the far ends. Through the immense black, a small spacecraft falls away from Earth and down toward an equally minuscule target: (16) Psyche. The asteroid floats above and between Jupiter and Mars, indicating its actual position. It is incredible that we can send something so small into the vast universe and hope to hit anything at all. The massive scale of the painting glimpses the great feat of trying to pilot such a small spacecraft through the solar system. Dimensions: 2.5’ X 6’

A Magical Expedition

Shannon Hack

lexan, caulking, and paint

This piece features five Lexan panels painted to mimic stained glass with the depiction of the Psyche asteroid and her orbiter with Mars and Jupiter framing them on either end. This piece is designed to help viewers understand the location of Psyche and can be installed to give the observers multiple experiences. From one side, the panels are smooth providing a purely visual viewing. When observing from the other side, the panels consist of 3D lines and textured surfaces the viewer can touch. The idea is that one side signifies the preconceived notions about the Psyche Mission while the other epitomizes the varied, new information the Psyche mission is designed to gather. The reflection each panel casts onto the wall or floor when light passes through them is that of their hazy image, which is a reminder that although we may feel we see things clearly, there is always more knowledge to be gained. The multiple functions this piece can perform symbolizes the many possibilities we are about to learn with the Psyche mission. Dimensions: 75” X 30”



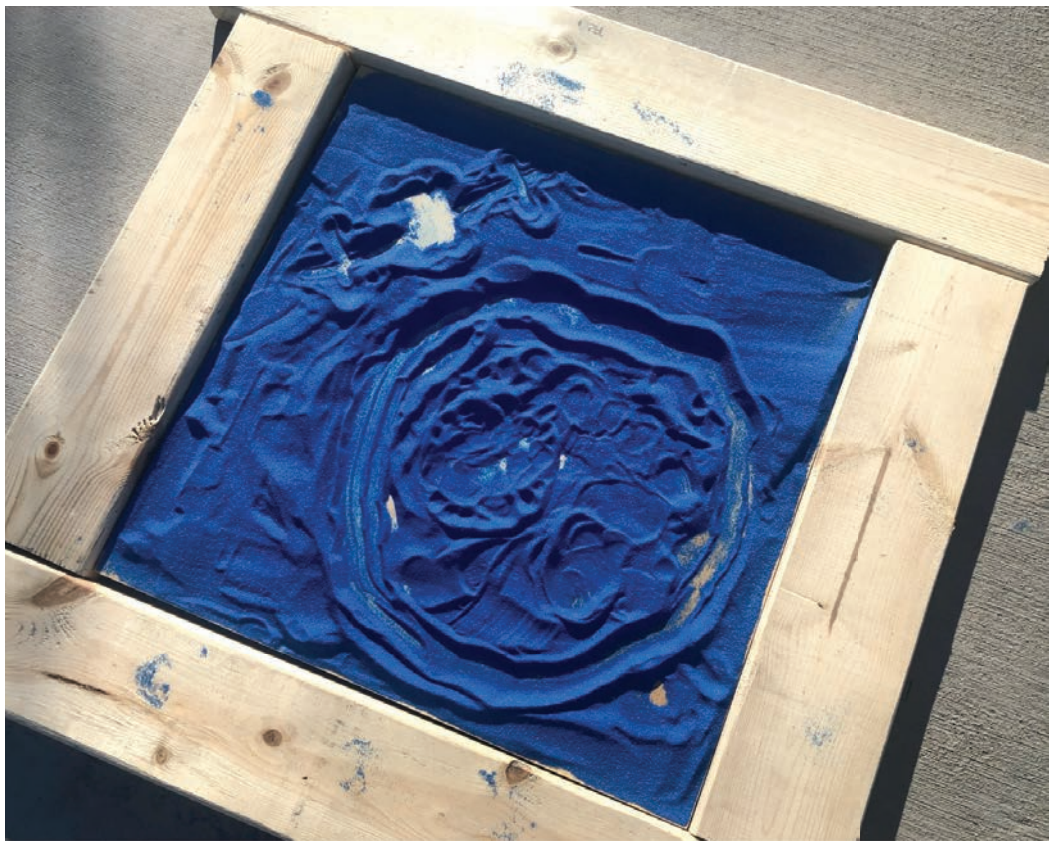
Psyche Journey

Silvia Valladares

3D VR animation

Click or Scan to view video

“Psyche Journey” follows the Psyche satellite around the Psyche asteroid. This piece is a 3D animation in 360 degrees. This unique style is meant to immerse the viewer into the created environment. The viewer experiences different lights and shadows, as well as different views of the environment as they circle around the asteroid.



Power of Suggestion

Janani Lakshmanan

digital art and Chitranatyam (dance art)

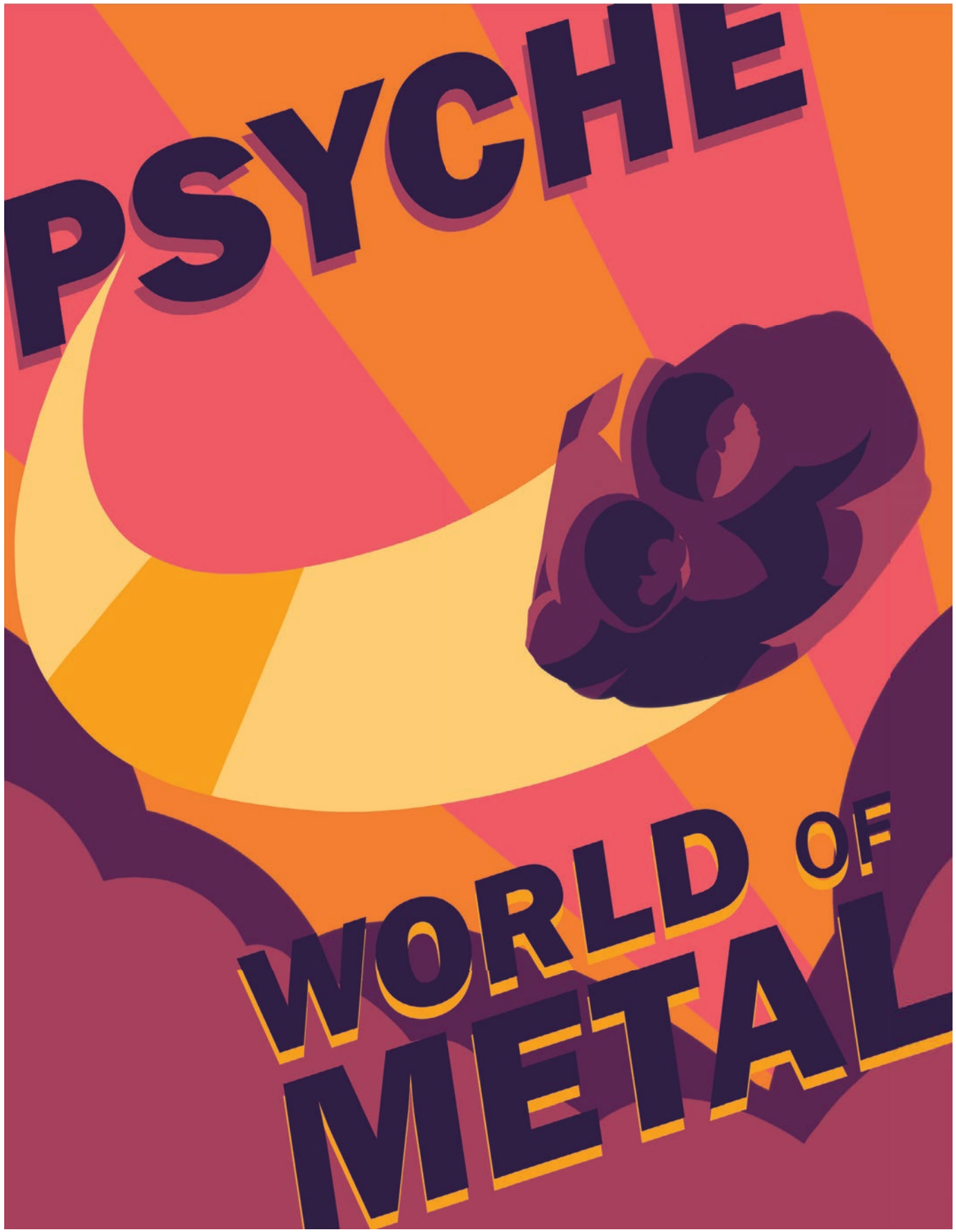
Click or Scan to view full project

As someone who has judiciously stayed away from the visual arts for much of my life, I have been in awe of all the project submissions of the other Psyche Inspired interns over the last semester. As my tribute to the Psyche Mission and to the other Psyche Inspired interns, I was very glad to collaborate with Ral Vandenhoudt for this Chitranatyam: a dance-drawing. He provided digital line-art of the spacecraft Psyche orbiting (16) Psyche, and it was my pleasure attempting to model it using my feet. I constructed my own platform for this piece, in accordance with the structures imposed by Chitranatyam, by reusing pieces of wood used previously for cultural festivals.

I decided to keep to the traditional route and utilize sand rather than paint to produce my piece, which interacted marvelously with the desert environment I chose to perform in. Indeed, the winds of Arizona have had just as much artistic input in this piece as myself! One deliberate artistic choice I made was to search for the vivid color of the material, as this piece is in honor of my amazing fellow interns, and cobalt blue sand is best suited to represent the Cobalt Class.

World of Metal
Christine Zhou
digital, Adobe Photoshop

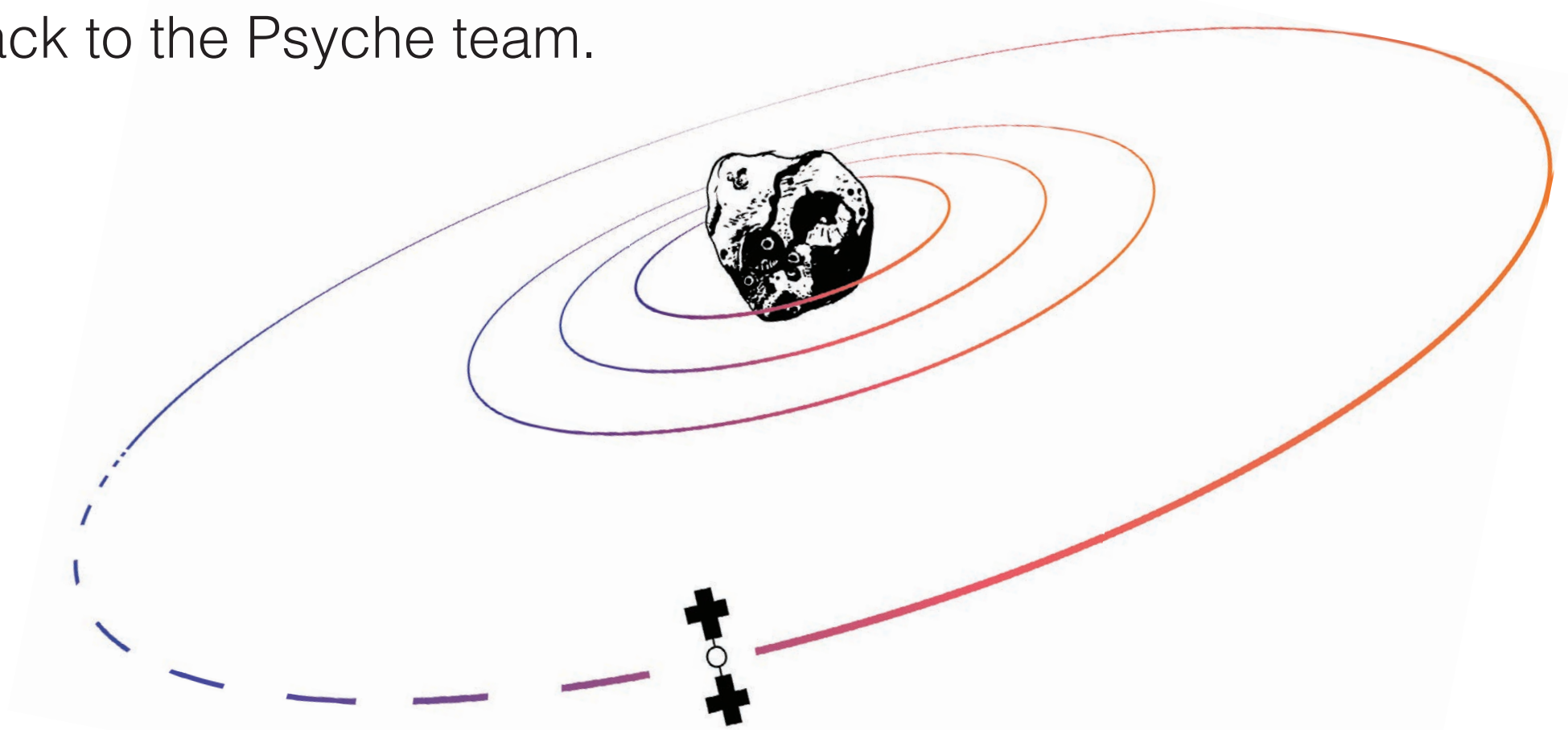
(16) Psyche is a unique asteroid that is mostly metal, opening up many possibilities as to what it may be. My graphic poster presents Psyche as a phenomenon–something to be marveled. My poster attempts to grab the viewer's eye with one simple message: Psyche, World of Metal. I used Adobe Photoshop to create the poster, incorporating the oranges, pinks, and purples from the Psyche Mission logo. Dimensions: 8.5" X 11"



Arrival

The Psyche spacecraft will arrive at the Psyche asteroid in early 2026 following its almost four year journey after launch. Upon arrival, the Psyche team will be able to see the Psyche asteroid for the first time and study the asteroid up close.

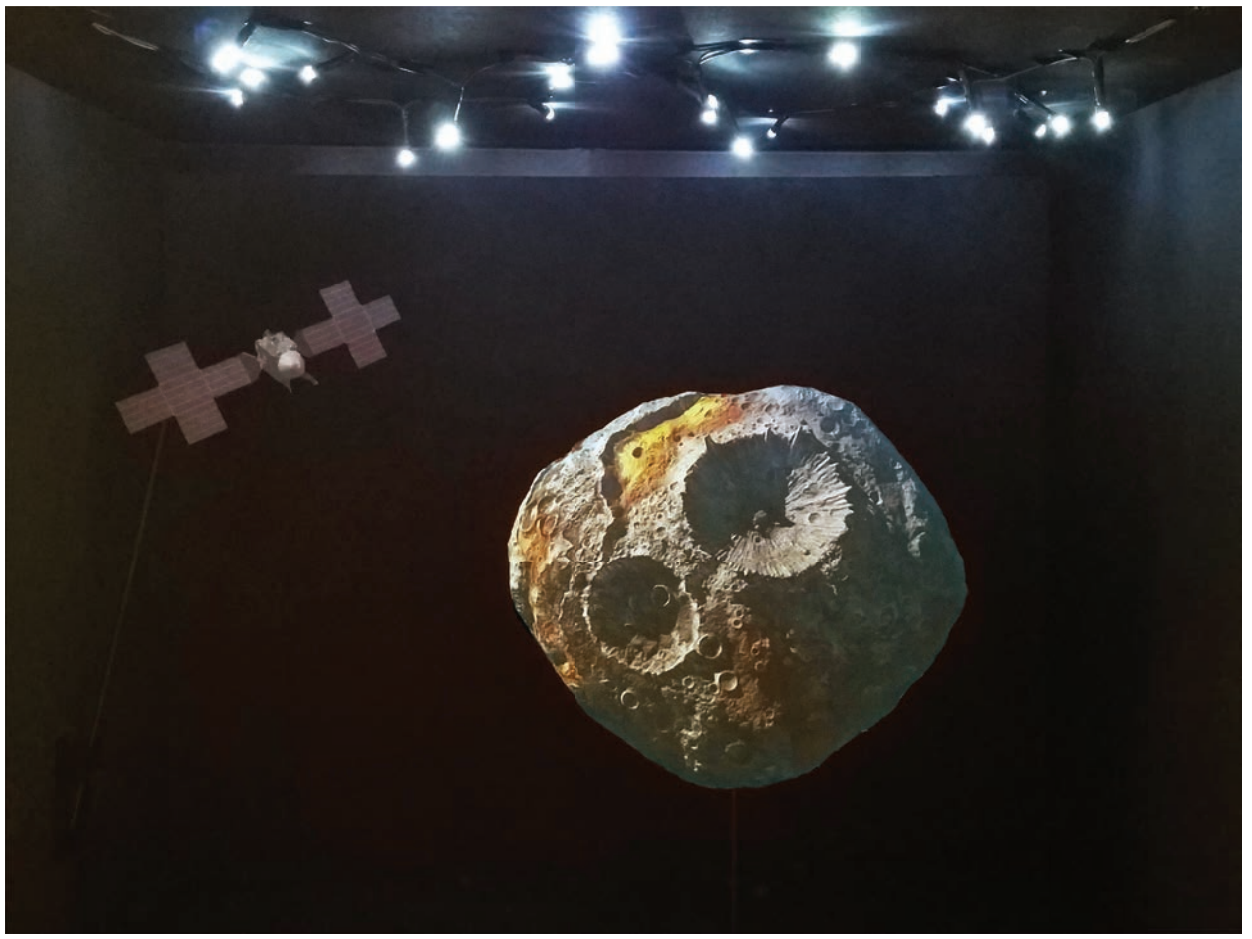
After arriving, the mission plan calls for 21 months spent at the asteroid, mapping it and studying its properties. The spacecraft will utilize its instruments to send data about the Psyche asteroid back to the Psyche team.



Hello, Psyche

Chase Mortensen
graphite pencils

This piece was inspired by a reflection on the human aspect of the Psyche mission. The image depicts the possible final moments of the Psyche mission in a symbolic gesture of gratitude and familiarity from the spacecraft and humankind toward the Psyche asteroid. Dimensions: 9” X 12”



Psyche Twinkles

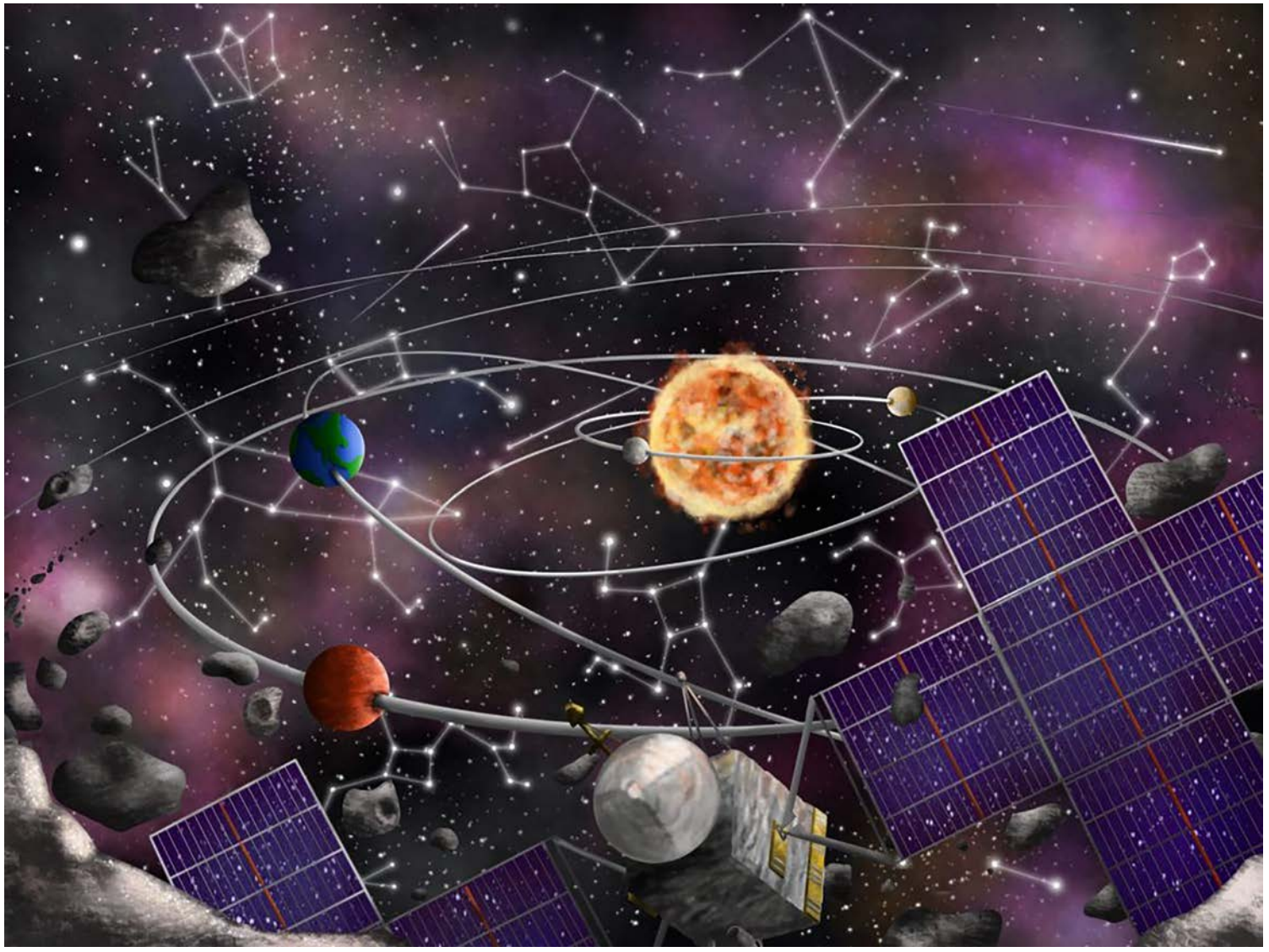
Shannon Hack

wood, paint, LEDs, Arduino coding, copper wires

Click or Scan to view video

Psyche Twinkles is an interactive sculpture where the user is in charge of how many stars light up to surround the Psyche 16 asteroid and its orbiter via temperature. When the sensor is introduced to icy temperatures, the stars are all off. As the sensor heats up, the stars slowly come back to life. The normal hand temperature will be able to activate the first two strands of stars. To activate the third strand, one must add heat via flame. When all strands are activated, all the stars will burn brightly and twinkle at different speeds.

I was inspired to make a piece that would not only inspire the viewer to learn more about the Psyche mission, but to develop something the viewer had control over, allowing them to feel as if they were somehow part of it. Containing it in a wood box was inspired by the Ames room, though that's as far as that concept is used. The idea behind it was to immerse the viewer in the space of the piece and watch how they control the stars. The way I chose to depict Psyche was so that the most detail of what the asteroid is believed to look like is communicated to the viewer. The image shows Psyche's famous two craters, and it also shows the color change of the asteroid's elemental makeup, along with other possible surface characteristics.
Dimensions: 24" X 18" X 24"



Solidarity with Psyche

Noah Keime

ProCreate on the iPad

This work was made using Procreate on iPad. This piece was inspired largely by the gravity assist Psyche will receive as it flies by Mars. I was amazed that people could figure out precisely when to launch the spacecraft in order to catch Mars's gravity in such a way that it is whipped around in the exact orientation that it needs to be to reach the Psyche asteroid and enter Psyche's orbit. The viewer looks out directly onto the Psyche spacecraft and is flanked by two asteroids in the corners of the pieces. These asteroids are intended to make one feel as though they are traveling with the satellite. The orbits of the planet in the mid-ground of the piece are shown on an axis to further indicate the difficulty of the Psyche spacecraft's journey. The nebulae in the background are colored in hues reminiscent of the Psyche mission logo.

Psyche Necklace

Fiona Schneider

Illustrator, laser cutter

Since most of my design work for the program has been digital, I wanted to try transferring a design into a 3D medium. Inspired by one of the other interns, who often creates jewelry, I decided to make a necklace. Chunky, abstract shaped jewelry has always a favorite of mine, so I began by creating an abstract rendition of the Psyche spacecraft and asteroid. I then decided on the colors and materials of my piece. I went for a lightweight acrylic in orange and red to match our program's colors. I then used a laser cutter to cut my abstract shapes out of acrylic sheets and added them onto a chain to create my necklace. Dimensions: 2" X 4"

Meeting Psyche
Chase Mortensen
acrylic

This piece shows the Psyche spacecraft approaching the Psyche asteroid. The rough, unknown surface of Psyche is represented in the painting by coarse brush strokes and gaps on the surface, suggesting gaps in knowledge. Colors unlikely to appear on the actual asteroid are used, which emphasizes Psyche's foreign nature. A face is faintly revealed on the surface of the asteroid. Psyche seems surprised to have a visitor. Dimensions: 40" X 30"

In 2026

Joyce Tsui

modeling paste and acrylics on wood panel

During 2026, the spacecraft will finally be within Psyche's orbit and be able to capture detailed images of it. In the future, I imagine we'll be learning and seeing the asteroid in planetariums. Therefore, I illustrated a person filled with amazement and awe looking through the planetarium's telescope at the Psyche asteroid. Psyche is surrounding by other asteroids in an abstracted galaxy. While Mars is in the distance, Jupiter is up close next to the metal asteroid.

Using modeling paste gives the asteroid dimensions outside the panel and mimics the proposed surface texture of the Psyche asteroid. Dimensions: 48" X 30"

Psyche Comic Page

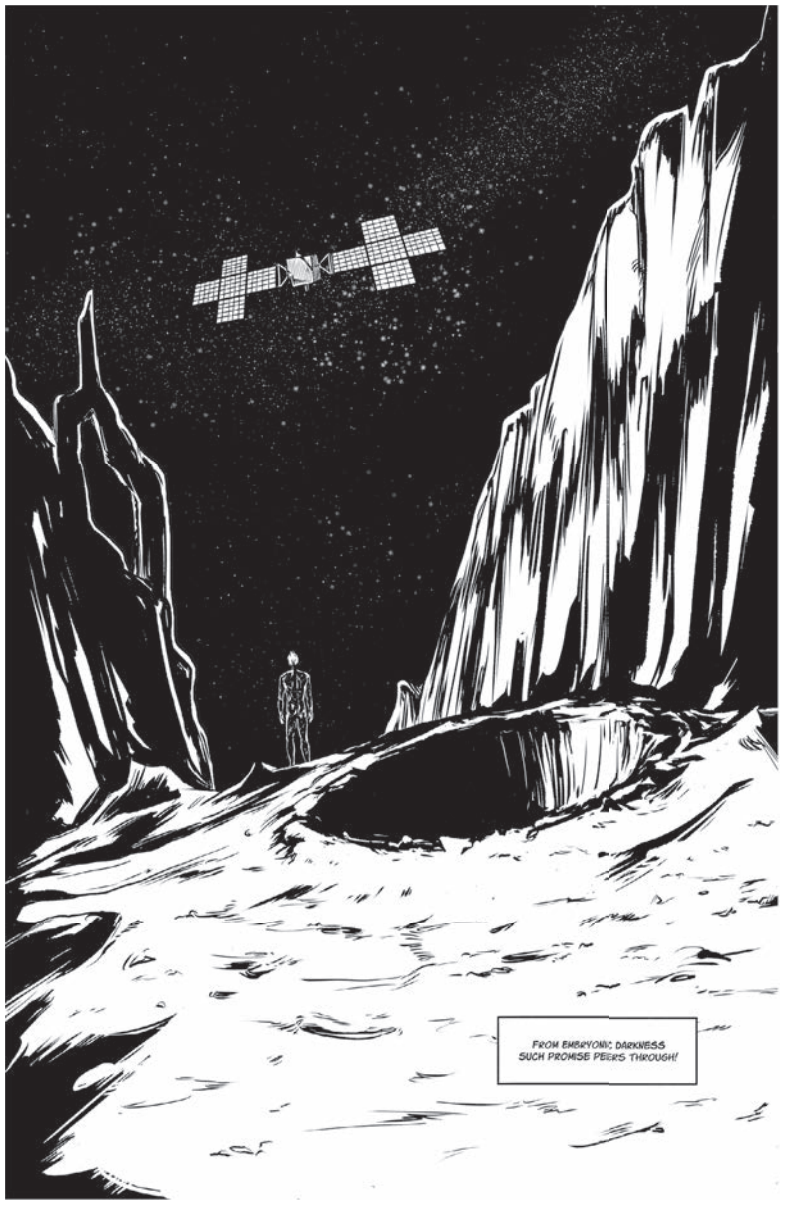
Sarah Tennant

digital

This piece was a way for me to illustrate Psyche in a form that inspires me and to return to the roots that led me to this internship. I love narrative illustration, and comics are an area of art I want to pursue as a career. The first comic I made seriously involved this ethereal, superhuman space voyager. That character sparked my interest in NASA, space programs, and space art. I would later make a piece about him descending on a foreign planet, which I submitted in my application for this internship. Now, years later, I have the pleasure of illustrating him descending onto Psyche in this very comic, in the hope that what originally inspired me can inspire others about Psyche. I was also interested in exploring Psyche's history and its terrain, so I wanted the comic to focus on those elements. I wanted to generate the same feeling of awe I felt when hearing Psyche's story of being an asteroid that may be the core of a planet, decimated by the impact of a foreign space object billions of years ago.

Psyche Comic
Sarah Tennant
digital art

Click or Scan to view comic



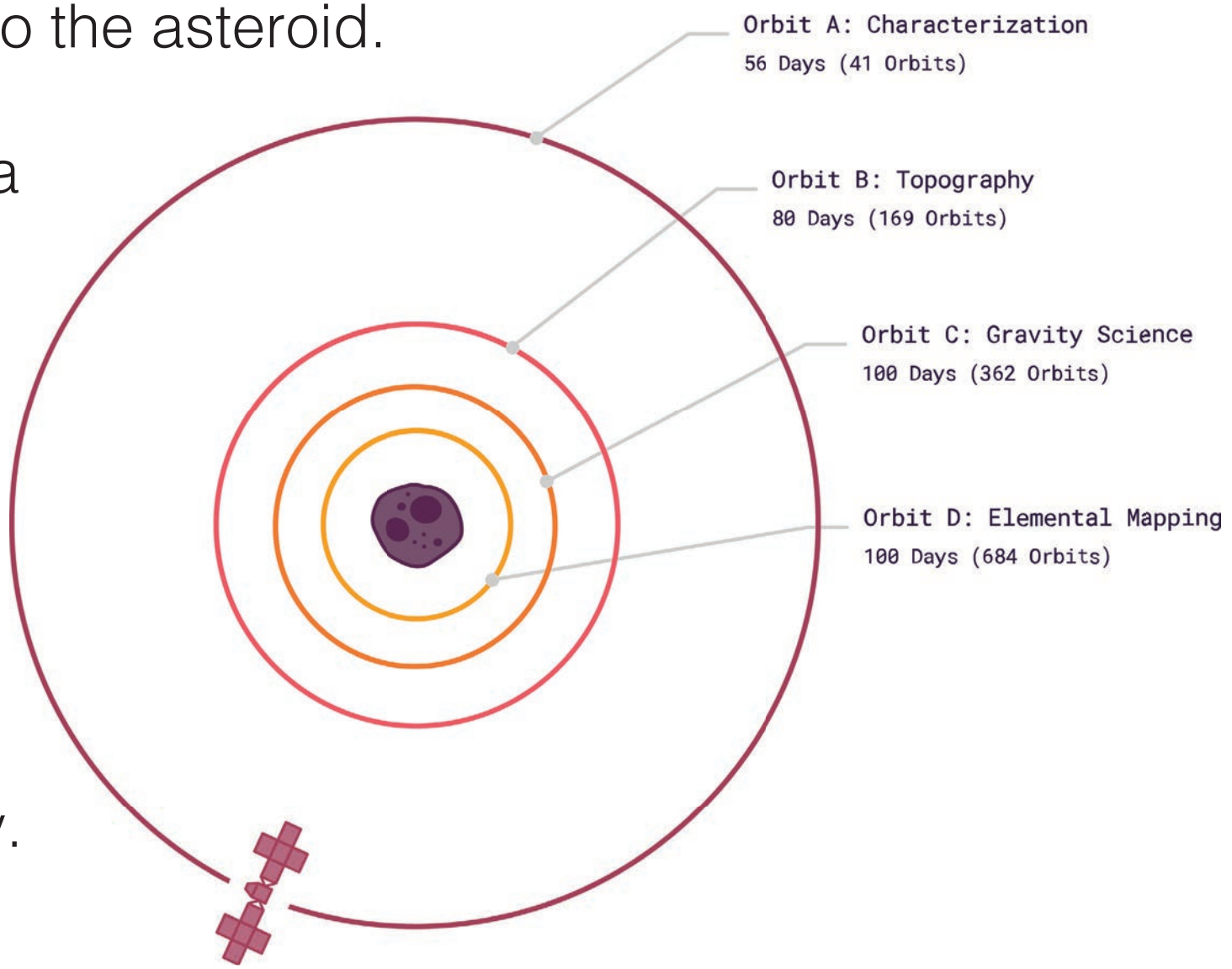
Psyche Comic (Continued)

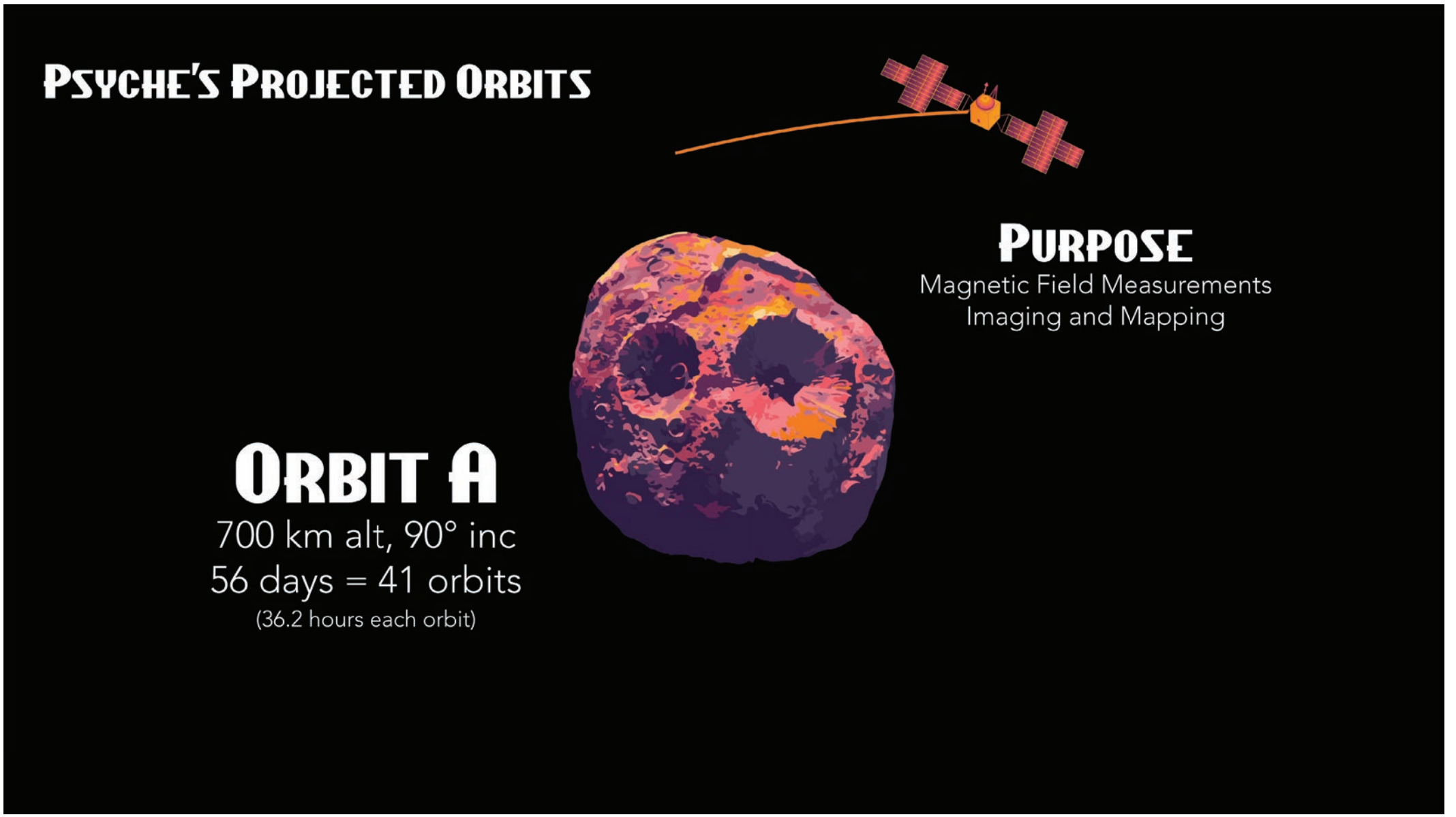
This was easily the most labor intensive project I did for my internship, but it was worth the work, as I am satisfied with the end result and learned so much about comic making and digital painting! This piece is a continuation of the work I made for Project 2, where I made a comic page based on a short poem I wrote about Psyche. I had a lot of fun making that comic page and decided I wanted to expand upon it and create a fully resolved mini-comic. However, I redrew the first page, since I felt that I had grown too much as an artist to use it in conjunction with new pages. I still maintained the narrative established in Project 2, though, where my ethereal protagonist explores Psyche's supposed terrain. The comic's text is comprised of the remainder of my poem, and I aimed to create a kind of reflective dialogue by pairing it with my illustrations. I think that when we examine Psyche, we cannot only learn more about our Earth, but learn more about ourselves: our motivations for exploring the asteroid and the way we think about its physicality can provide insight into humanity's own psyche.

Orbit

In its 21 months studying the asteroid, the spacecraft will perform science operations, which will be accomplished in four planned orbits. Each planned orbit will collect different types of data from the Psyche asteroid and will bring the Psyche spacecraft successively closer to the asteroid.

The collection of data on the asteroid from each orbit will yield information that will help accomplish the mission's science goals and help unlock the mysteries of Psyche's formation and history.





Psyche's Projected Orbits

Fiona Schneider
motion graphic, Adobe After Effects

Click or Scan to view video

Recently, the orbit pattern for the Psyche mission was released on social media. I thought animating these orbit patterns would be a successful way to show how the craft would move around and interact with the asteroid. Motion graphics often help the public visualize scientific concepts that cannot be easily seen otherwise, such as the inner workings of a cell. Since the Psyche mission is an orbiting mission and will not physically land on the asteroid, I feel like it's important to have this distinction made using visual guides like my animation. To make my animation, I developed an illustration of both the craft and asteroid using the Psyche brand colors in Adobe Illustrator before taking them into Adobe After Effects and animating them.

Orbit Kinetic Ring

Monica Moreno

metalwork (sterling silver, bronze, brass, cubic zirconia)

Created using bronze, sterling silver, brass, and cubic zirconia, this piece was inspired by the main objective of the Psyche mission: to explore. We are sending a small spacecraft into outer space to explore something much bigger. The fact that we can do something like this is still amazing to me, and the possibilities of what we may discover about the Psyche asteroid are beyond exciting. This wearable sculpture pays homage to the traveling spacecraft and to the asteroid that we want to learn more about. It was difficult to scale down the dimensions of something like an asteroid or spacecraft to fit a tiny ring, but I hope that the main idea behind this tiny sculpture is apparent.

To create this piece, I began by carving wax into the shape of the ring shank and embedding tiny clear and black cubic zirconia into the wax. The asteroid was then modeled using a softer wax. Both the ring shank with the cubic zirconia in it and the asteroid were transformed into metal using the lost-wax casting method. The ring shank was cast in sterling silver, and the asteroid was cast in bronze. I later cast a carving in a charcoal block and sawed sterling silver sheet metal to create the tiny spacecraft. All these individual pieces were then soldered together and assembled. On the ring shank, I added a brass rod to hold the asteroid and to fit the tube at the end of the spacecraft's arm, allowing the spacecraft to orbit. Dimensions: 1" X 1.5" X .5"

Orbit

Chase Mortensen

acoustic guitar with digital effects

Click or Scan to listen

Orbit is an interpretation of the Psyche spacecraft arriving at and orbiting the asteroid. The computer-generated sounds are representative of the spacecraft and the guitar is representative of the asteroid. Both the guitar and the electronic sounds pan between left and right to give the impression of movement. The guitar, which represents the metallic nature of the asteroid, has a vibrato-type effect applied to it and slight detuning to indicate the irregularities on the surface of (16) Psyche. The electronic noises include distorted speech and more electronic sounding beeps, which represent the communication that will occur between Earth and the spacecraft. The song follows the path of the Psyche spacecraft. Initially, the asteroid is not present, and the song ends with the spacecraft going offline.

Sixteen
Janani Lakshmanan
Bharatanatyam (Indian Classical Dance)

Click or Scan to view video

Sixteen (Continued)

Sixteen is a meaningful number to students of the Indian classical arts, as this number of beats are counterpart to common time in Western music. We know the 4/4 time signature as “Adi Talam,” meaning “First Meter,” because it is the most innate counting pattern to humans for reasons that evade detection. Given that (16) Psyche has an inborn connection to my art form, I decided to stretch my metric muscles and write what is known as a Trikala jathi.

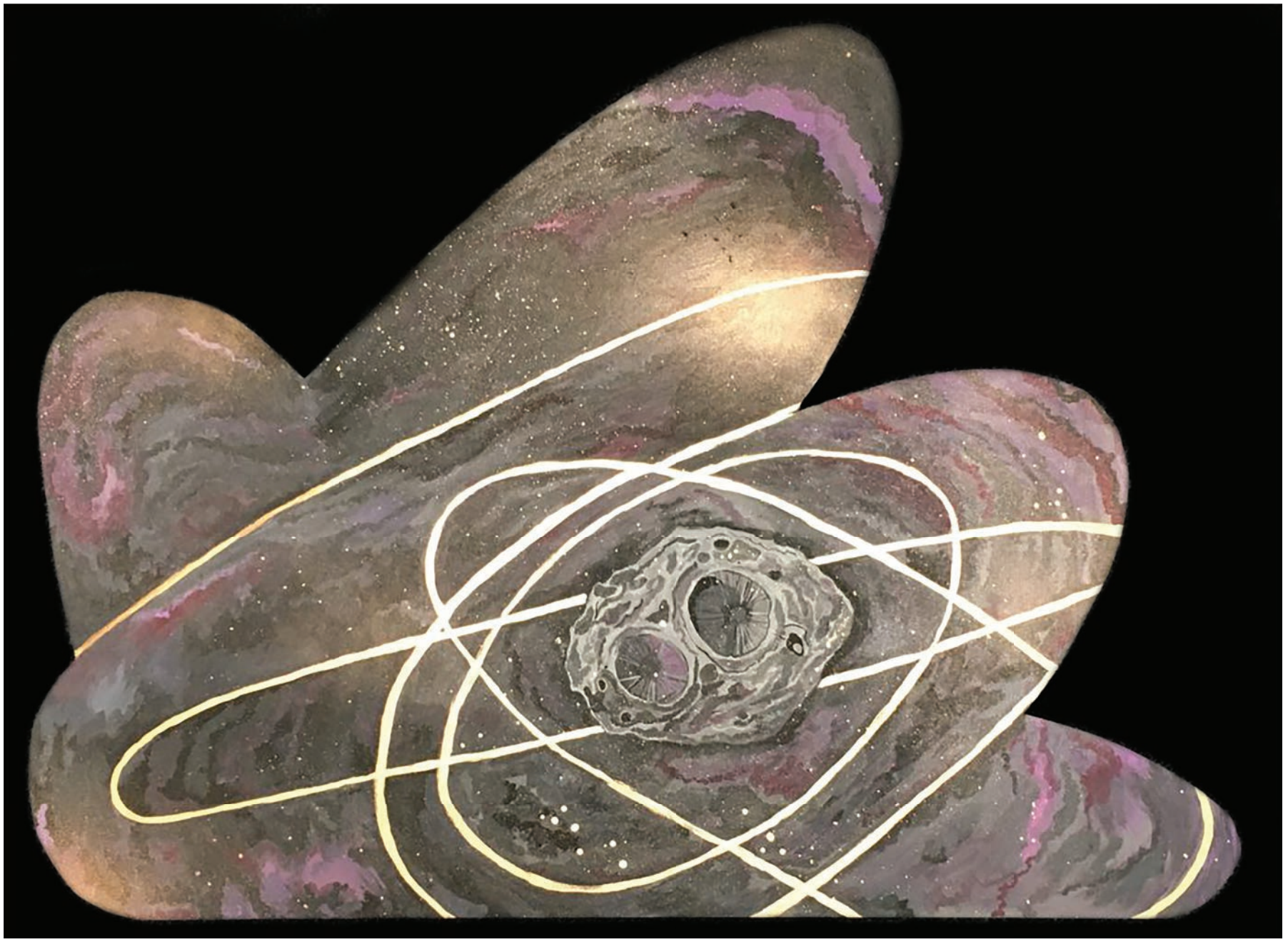
A jathi is the name given to a sequence of meaningless rhythmic syllables. For dance, it is pure aesthetic movement. At the same time, the dancer is still hoping to communicate something to the audience. Because jathis are purely percussive in nature, I didn’t realize how much of a role they played in conveying the emotion that the dancer can utilize when performing them. This piece was an exercise in meter primarily and a choreography secondarily. When I wrote the jathi, I was surprised at how easily choreography came to me, and the construction of the jathi itself has a gentle lilting rhythm that made me think of circular orbits, which inspired many aspects of my choreography and costume. I used the alapadma hasta a lot in this piece. This can be used to denote celestial objects. In this case, (16) Psyche was my muse.

The video of this piece is overlaid with snippets of mere recitation of the rhythmic syllables. This manifests the connection I made between this piece and Dr. Rona Oran’s explanation of the scientists’ role in building Psyche’s magnetometer. They are on hand to consult before the spacecraft is launched, so that the engineers may have reliable projections of performance specifications, but they only get to do their science after the spacecraft has orbited. This makes their work now that much more clearsighted. I had an artistic vision of performing this piece outdoors when I was conceiving this presentation, which proved to be unpleasant for my bare feet, but the pedestrian motion in the backdrop was joyously reminiscent of the number of people working behind the scenes to make this mission a success.

Beaded Orbits
Shannon Hack
mixed media fabric and seed beads

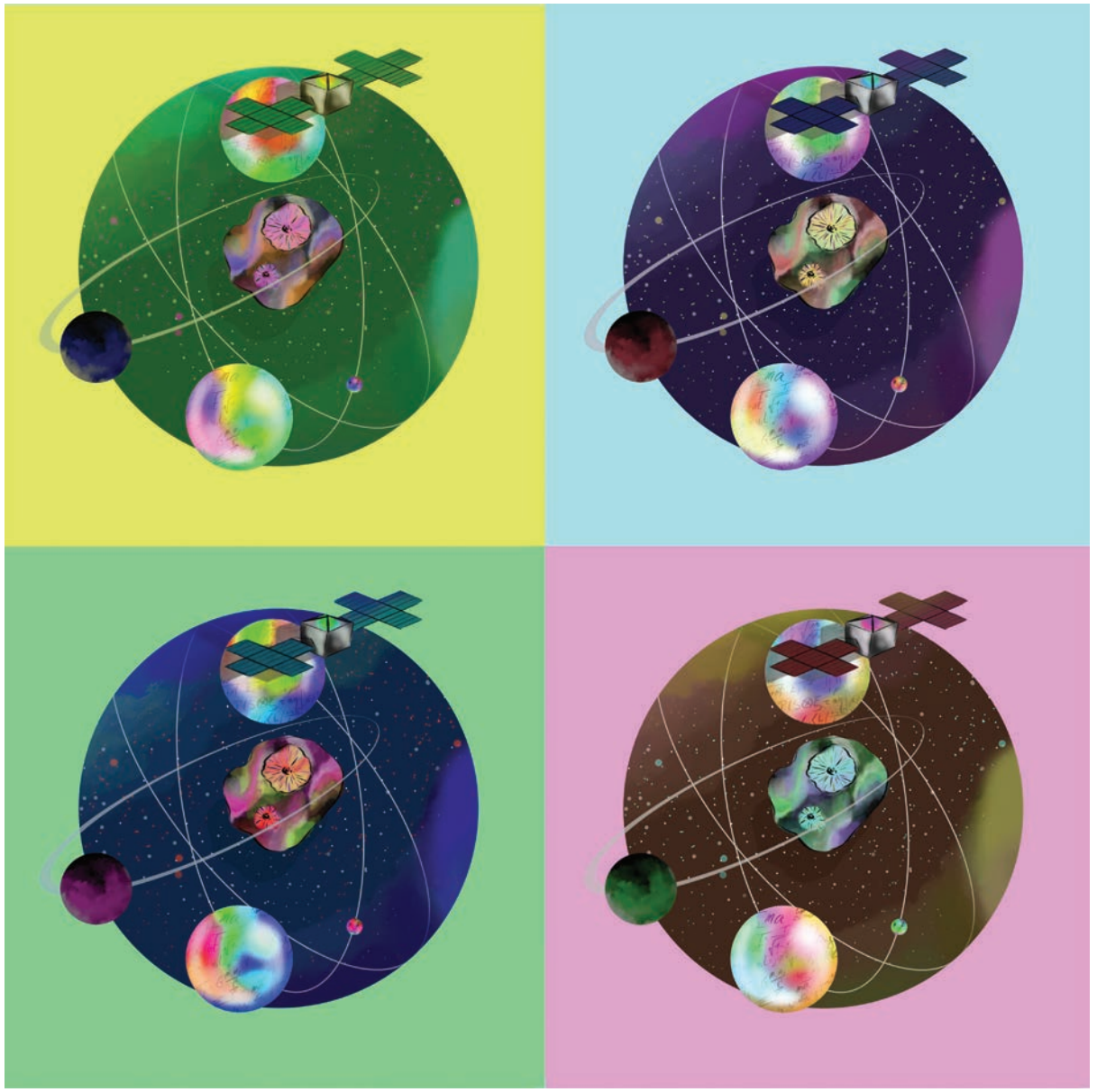
Beaded Orbits (Continued)

Beaded Orbits is a mixed media piece inspired by the information gathered during each phase of orbit by the Psyche orbiter. In each corner is one of four medallions representing the four phases of orbits with Psyche in the center of the piece. Each of these symbols and Psyche were hand beaded using seed beads and then attached to a quilt style backing. I chose to design the backing like a small quilt as representation of the dreams that exploring the universe encourage when we are open to all possibilities. All the beaded pieces are about 300 hours worth of combined work that for me, is a nod to all the many hours, days, and years that go into a single mission. Dimensions: 2’ X 2’



Trajectory: Ready, Set, Go.
Julia Greteman
MDF board, acrylic, spray paint

A shaped canvas highlights the trajectory lines framing Psyche. For this project, I wanted to highlight the asteroid itself and show the Psyche orbiter dancing with the space object itself. Black, purple and pink hazed clouds were painted with rosy golds laid over areas to create visual interest.



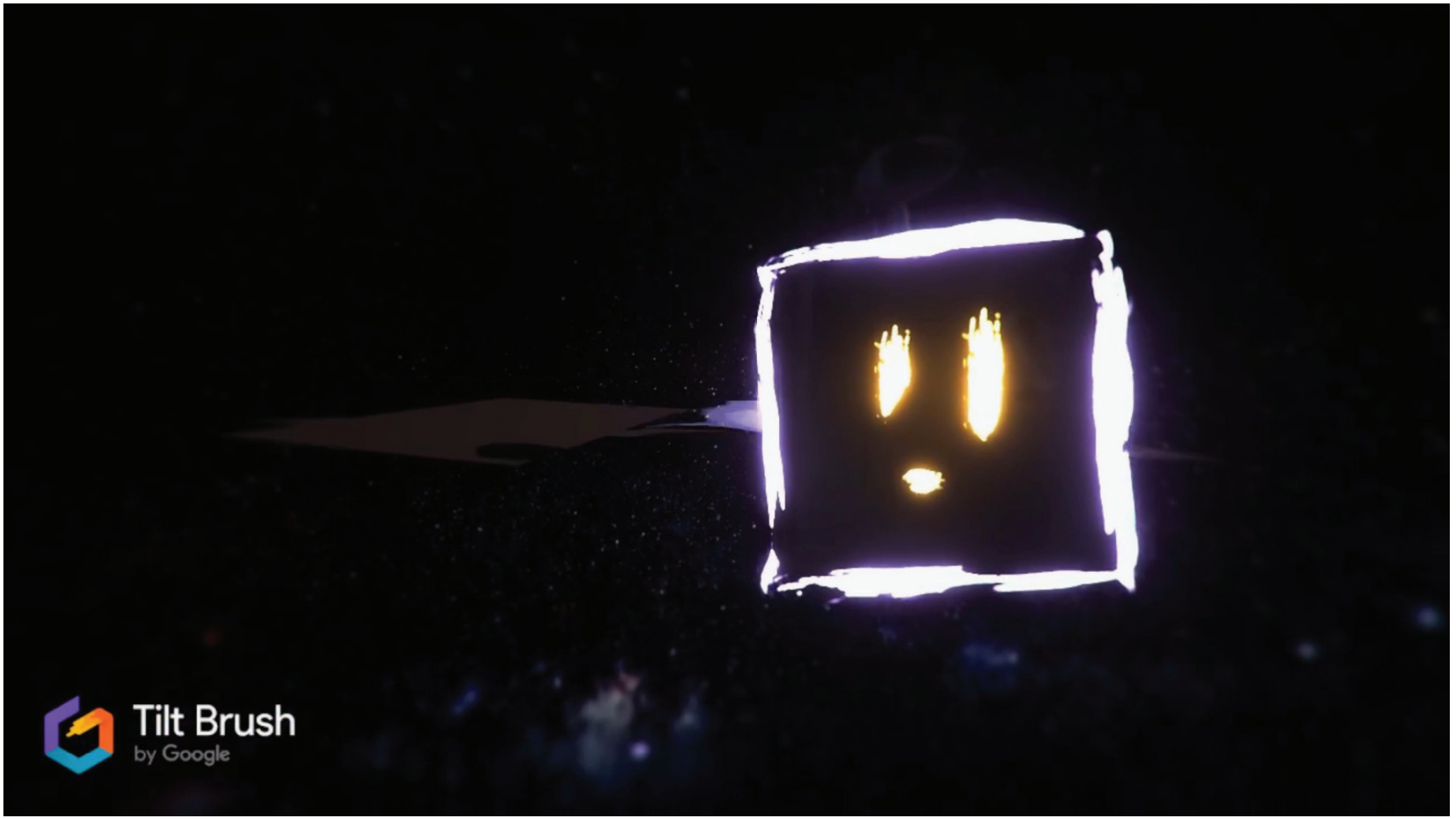
Psyche Through the Multispectral Imager

Ral Vandenhoudt

digital

Click or Scan to view video

My piece sees Psyche through the multicolored lens of time. Around Psyche, there are orbital spheres with formulas. Newton and Kepler's original formulas zoom alongside Einstein's and Hawking's postulations. This piece highlights the scientific progress upon which Psyche is built and which the mission will help advance. The color palette reflects the upbeat and optimistic tone that the mission's potential has. By studying Psyche, we can learn more about our own origins and Earth's development. This is echoed by the scientific development pictured within the orbs.



Orbiting the Unknown in VR

William Strunk

digital art, virtual reality, Tilt Brush

Click or Scan to view video

Through virtual reality, one can experience something as if you were actually there. The virtual world brings about new wonders, one of which is the possibilty to see Psyche up close. In the VR space, an asteroid can be seen in the distance. Nearby, a curious satellite views the beauty of it all. The video captures the stop motion generation of the digital version of the asteroid and portrays a sense of wonder toward the possibilities ahead of us. The “Free to share and use” music in the video is called “Touch Tone”.

Meet the Interns

Click or Scan to view Shannon's page

Shannon Hack
Arizona State University
Art studies

Levi Keatts
Virginia Commonwealth University
Art Foundation (intended Painting/ Mathematics double major)

Click or Scan to view Levi's page

Click or Scan to view Noah's page

Noah Keime
Creighton University
Biology and Studio Art (double major)

Janani Lakshmanan
Arizona State University
Mathematics (Astronomy minor)

Click or Scan to view Janani's page

View all the interns' pages: https://psyche.asu.edu/get-involved/psyche-inspired-cobalt-class

Meet the Interns

Click or Scan to view
Monica's page

Monica Moreno
Pasadena City College
Jewelry/Metalworking

Chase Mortensen
Utah State University
Computer Science

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Chase's page

Click or Scan to view
Binh-An's page

Binh-An Nguyen
Temple University
Chemistry (Art Minor)

Fiona Schneider
University of Florida
Graphic Design

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Fiona's page

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Meet the Interns

Click or Scan to view William's page

William Strunk
The Citadel
Civil Engineering

Sarah Tennant
Kansas City Art Institute
Illustration and Creative Writing (double major)

Click or Scan to view Sarah's page

Click or Scan to view Joyce's page

Joyce Tsui
University of California, Santa Barbara
Art (with Painting Emphasis)

Silvia Valladares
Virginia Commonwealth University
Kinetic Imaging

Click or Scan to view Silvia's page

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Meet the Interns

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Ral's page

Ral Vandenhoudt
Emory University
Biology and Economics
(double major)

Finn Witt
Lawrence University
Biochemistry and Mechanical
Engineering (double major)

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Finn's page

Click or Scan to view
Christine's page

Christine Zhou
Brown University
Mechanical Engineering and
Visual Art (double major)

Julia Greteman (Fall 2019 Only)
Arizona State University
Materials Science and Engineering

Click or Scan to view
Julia's page

View all the interns' pages: https://psyche.asu.edu/get-involved/psyche-inspired-cobalt-class

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