Gina Franzetta

MSc CAD

Designer

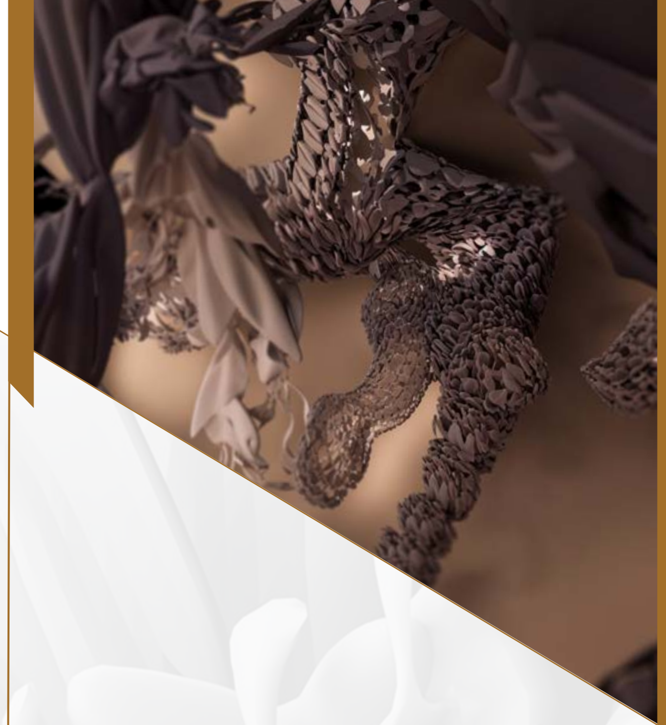
Portfolio

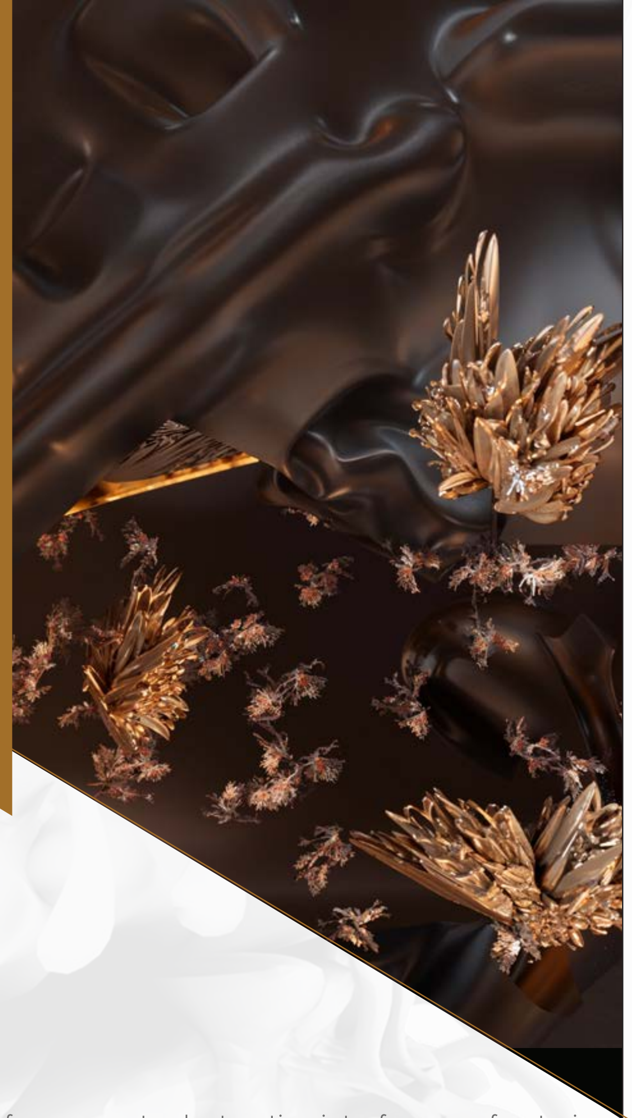
2 D Designer | 3D Designer | Illustrator

PORTFOLIO

Bioorganic Metropolis

3D Design: Master's Thesis



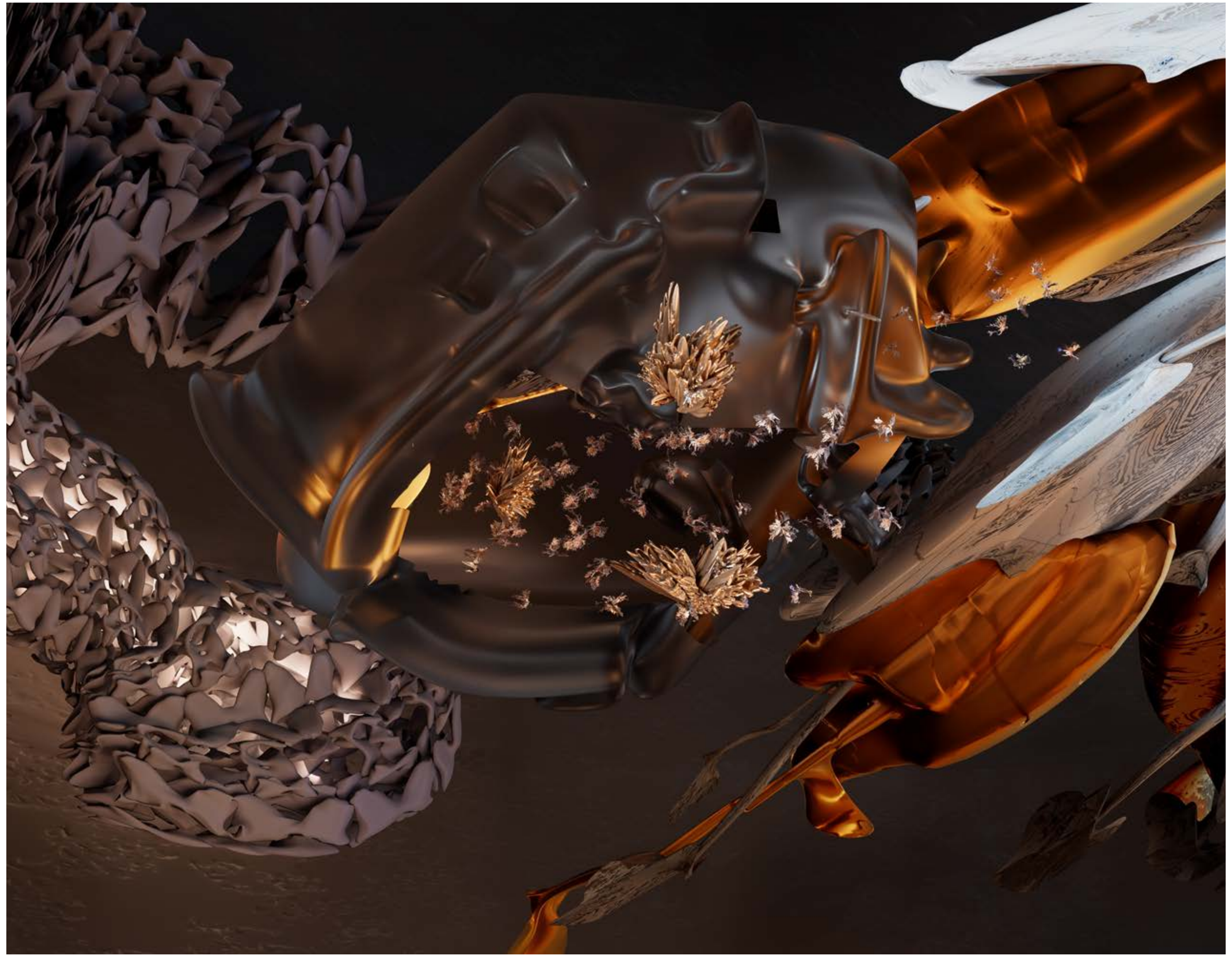


About the Project

Master's Challenge
This Master's Thesis project, developed in the DesignMorphine master's program, condensed two years of advanced computational design into eleven intensive months. Our team designed an alien species, cityscapes, transit systems, and planetary infrastructure using 3D modeling, parametric workflows, and procedural techniques. The project explored world-building as a multi-disciplinary design challenge, demonstrating the adaptability of architectural, game environment, and visualization principles.

Narrative Framework
Set on Luminalis, a bio-organic canyon city on a tree planet orbiting a trinary star system, this civilization thrived in harmony with nature until the discovery of quantum music, a force capable of reshaping reality. However, multiple musical forms create destructive interference, fracturing the species into tribes defined by their sonic identity, each battling for control of this power.

Metropolis Construction
The city's architecture reflects its species' sonic culture, shaped by the canyon's acoustic properties. Structures, crafted from gold and hardened tree sap, were built using triadic geometry and harmonic scales. Using Maya, ZBrush, Blender, Rhino, and Grasshopper, we modeled an environment where form and function integrate with sound to define cultural identity.



Bio-Organic Metropolis Public Space
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Maya, ZBrush, Blender, Rhino, Grasshopper, and Arnold

P O R T F O L I O

Bioorganic Metropolis

3D Design: Master's Thesis

About the Project

Highlighted Metropolitan Features

The city's primary geometric components include its canyon environment, residential spaces, public spaces, and urban towers. My contributions encompassed all geometry except for the urban towers.

Canyon City Environment Process

The metropolis foundation was modeled in ZBrush, fusing canyon formations, tree structures, and French horn-inspired geometry to enhance acoustic properties and define the city's organic framework.

Residential Geometry Process

Initially modeled in Maya, the residential structures followed a 3:4 rhythmic pattern, layering wasp-like units along the canyon walls. Due to high polycount constraints, the base unit was reconstructed in Rhino and processed through Grasshopper, utilizing Twisted Box Two SubDs and Graph Mapper to generate a warped array of modular housing. Attractor points introduced structural adaptability and aesthetic variation, allowing units to dynamically adhere to or extend from the canyon walls. This method ensured organic spatial complexity and functional fluidity.

Public Space Geometry Process

Modeled in Blender, the Public Space design mirrored the rise and fall of musical scales. A base unit was arranged in rhythmic sequences of six, rotating and scaling incrementally to create dynamic visual movement.

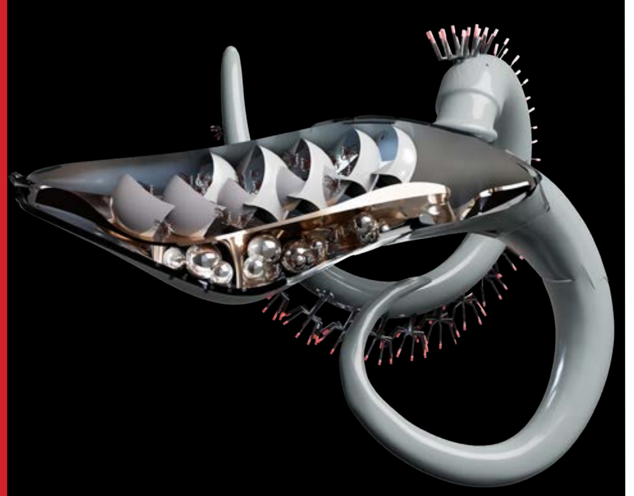
A total of eleven ascending and descending rows were procedurally manipulated, with additional scaling and random elongation applied to introduce subtle irregularities and enhance compositional depth. The final arrangement adhered to triadic geometric principles, integrating isosceles triangle formations within the space.

Alien Public Space, Environment, and Residential Units
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Maya, ZBrush, Blender, Rhino, and Grasshopper

PORTFOLIO

Public Vehicle

3D Design: Master's Thesis



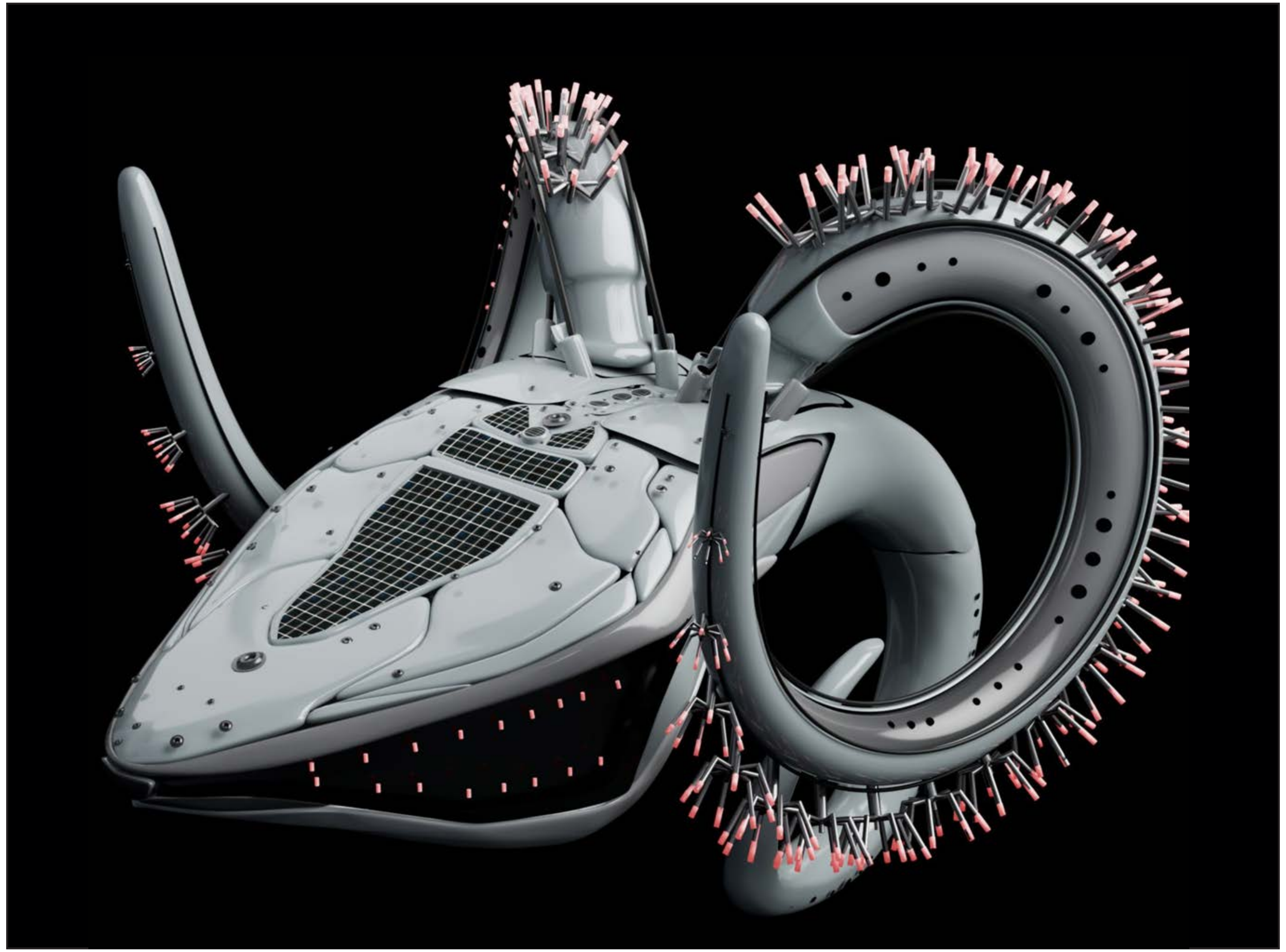
About the Project

Concept

Designed for deep-space exploration and quantum combat, this 30-passenger alien transport integrates bio-organic aesthetics, quantum physics principles, and defensive functionality. Its form draws inspiration from Parasitic Protozoa, algae toxins, and mycelial combat structures, while its Möbius strip-based geometry references quantum physics and infinite spatial looping. The vehicle's organic-mechanical hybrid design reflects its species' musical and combative nature, reinforcing the civilization's thematic identity.

Technical Process

The base model was initially developed in Rhino before being imported into Houdini for structural refinement and advanced detailing. The vehicle's legs were deconstructed and redesigned, incorporating a secondary set with virus-like spikes that scale proportionally to the tapering arm circumference. Using Houdini's procedural toolset, features such as concave sculpting, procedural paneling, and dynamic topology adjustments were achieved through node-based operations including blasting, subdivision, and fusion. Final geometric refinements were completed in Maya, ensuring a high-detail, optimized model suitable for cinematic visualization or real-time rendering.

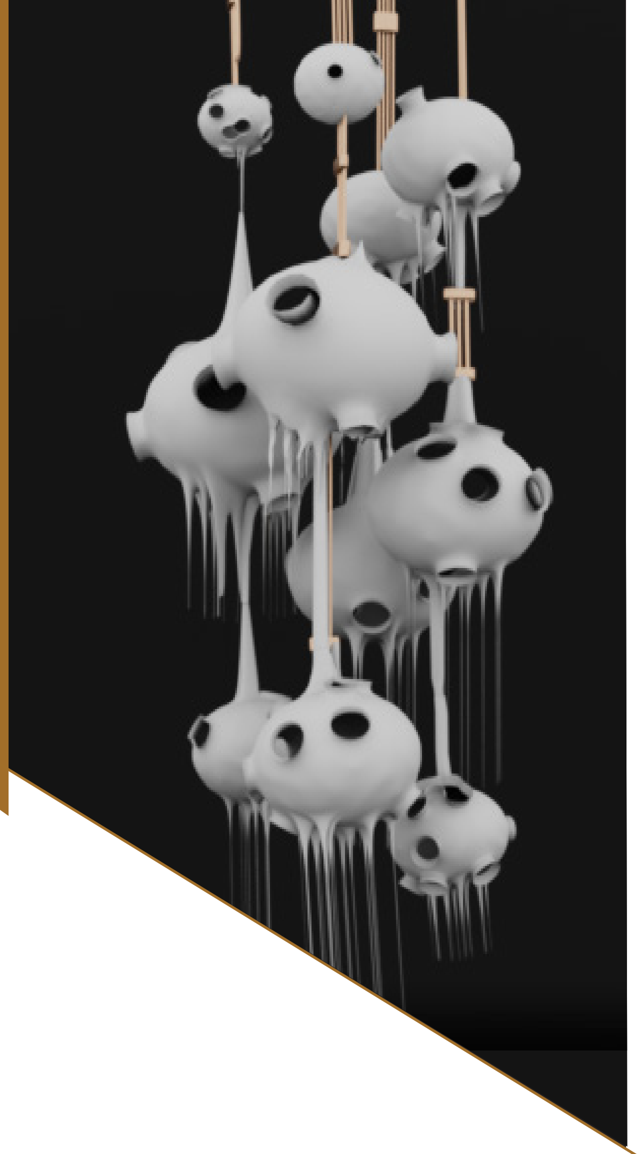


Alien Public Vehicle
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Houdini, Rhino, Maya and Arnold

PORTFOLIO

Underground Parking

3D Design: Master's Thesis



About the Project

Concept

This private underground parking system suspends spherical vehicle pods from cavernous ceilings within the residential units. Inspired by dripping tree sap, the pods take organic, fluid forms, mirroring natural resin formations. Their suspension system, copper pipes shaped after brass instruments, features curving trombone-like structures that integrate seamlessly into the architectural space.

Technical Process

he pods were procedurally generated in Houdini, using sphere distortion, subdivision, and selective removals to create openings. Grouped subdivision normals were then extruded to achieve the dripping effect, while procedural paneling was applied to define surface detailing. The supporting copper pipes and texturing were developed in Maya, ensuring seamless integration with the surrounding environment.

Alien Private Underground Parking
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Houdini, Rhino, and Arnold

PORTFOLIO

Docking Station

3D Design: Master's Thesis

About the Project

Concept + Challenges

This project explored the challenge of visually representing the abstract nature of the quantum world while maintaining structural clarity and geometric integrity. To capture these elusive properties, the design incorporated the Möbius strip, a mathematical form frequently used in Quantum Mechanics and Quantum Computing to model topological behavior in quantum circuits, phase transitions, and novel states of matter.

Technical Process

The metropolitan loading dock was structured around a quadrupled Möbius strip, subtly integrating musical motifs through geometry inspired by the flowing arabesque curves of the G Clef. The form was modeled in Maya using nonlinear deform tools, allowing for smooth, continuous transformations that reinforced the project's conceptual and spatial logic.

Alien Public Underground Parking
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Maya and Arnold

PORTFOLIO

Furniture

3D Design: Master's Thesis

About the Project

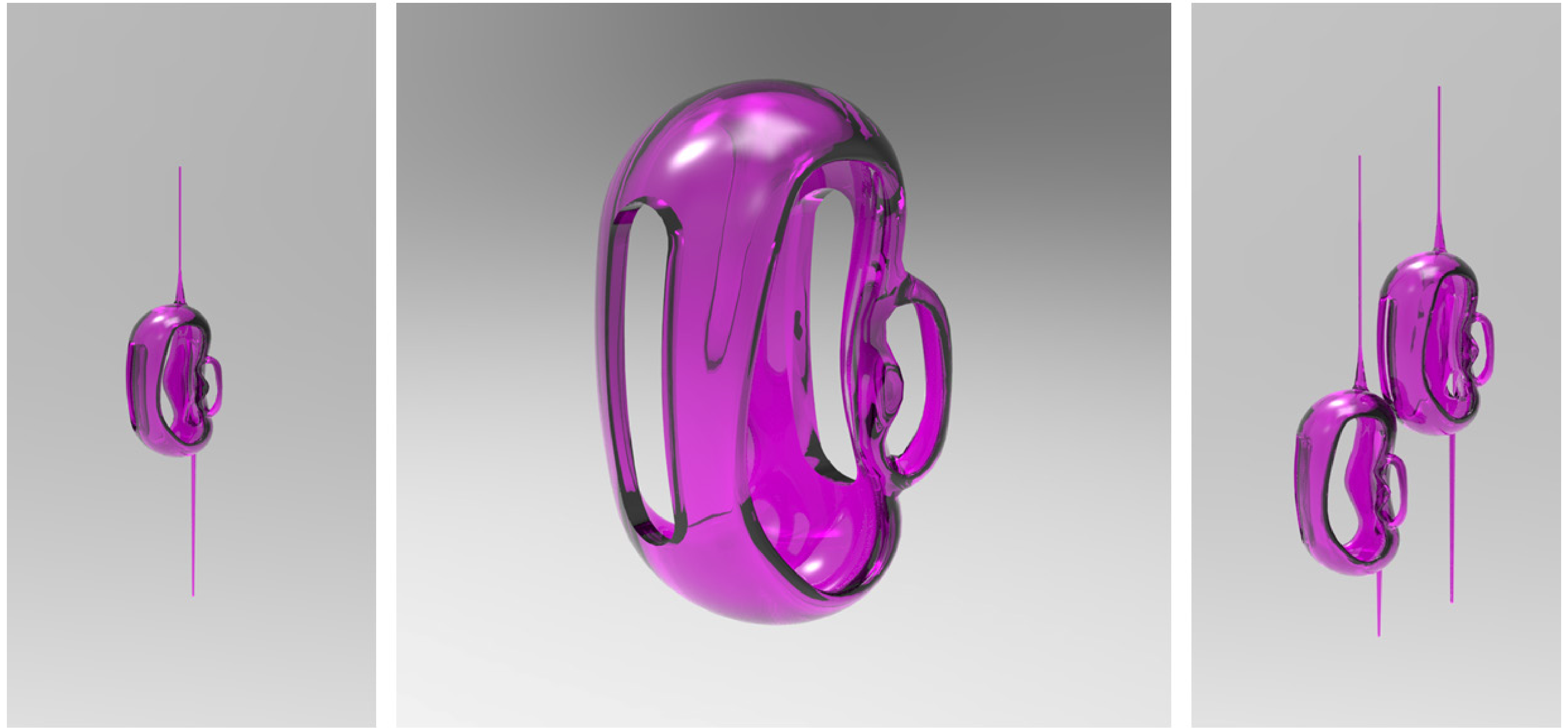
Concept + Challenges

Designed for a futuristic cyborg laboratory, these floor-to-ceiling suspension pods serve as both individual containment units and bio-incubators. Their form balances functionality with seamless integration, ensuring structural stability while maintaining an aesthetic fluidity that complements advanced sci-fi environments.

Technical Process

The pods were sculpted in ZBrush, starting with a lasso-isolated sphere that was elongated using the move brush to create a curved, organic form. This shape was duplicated and scaled to Boolean both the front and back, preserving a harmonious curvature.

A scaled-down repetition of the form was used to create a seamlessly integrated handle via dynamesh, refined with smooth, inflate, and flatten brushes. Pill-shaped fenestrations were Booleaned into the side panels, while symmetrical stretching along the Y-axis finalized the pod's sleek, futuristic design.



Cyborg Suspension Pods
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in ZBrush and Keyshot

PORTFOLIO

Furniture

3D Design: Master's Thesis

About the Project

Concept + Challenges

Designed for a futuristic cyborg laboratory, this advanced restoration chair integrates respiration tubing and an energy-charging system to rejuvenate a fatigued cyborg. The tubing doubles as arm and footrests, with capped footrests modulating energy distribution while the armrests facilitate both power transfer and respiratory functions.

Technical Process

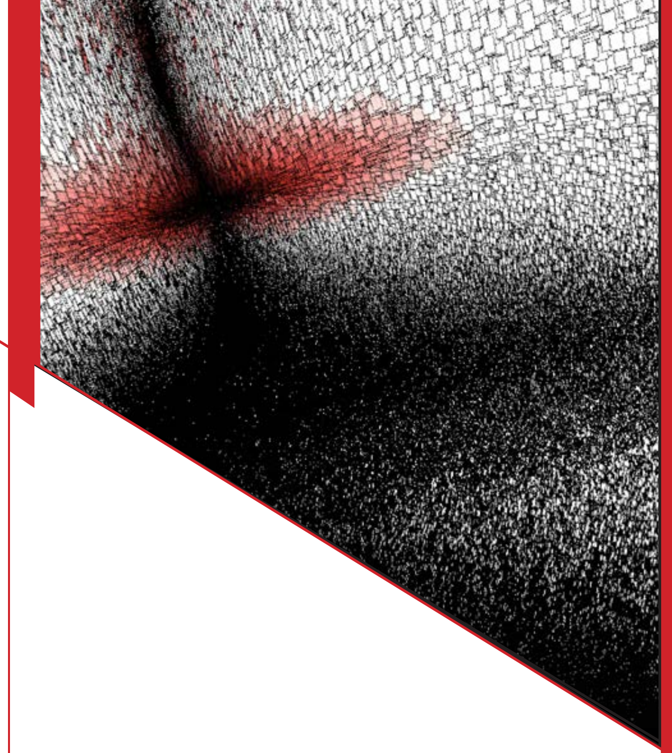
Modeled in Maya using the CV Curve tool, then converted to NURBS, subdivided, and extruded before rendering in KeyShot. A plastic material with a bump map was applied to achieve a high-spectroscopy reflective finish, reinforcing its futuristic aesthetic. Additional refinements were made to enhance functionality and character integration.

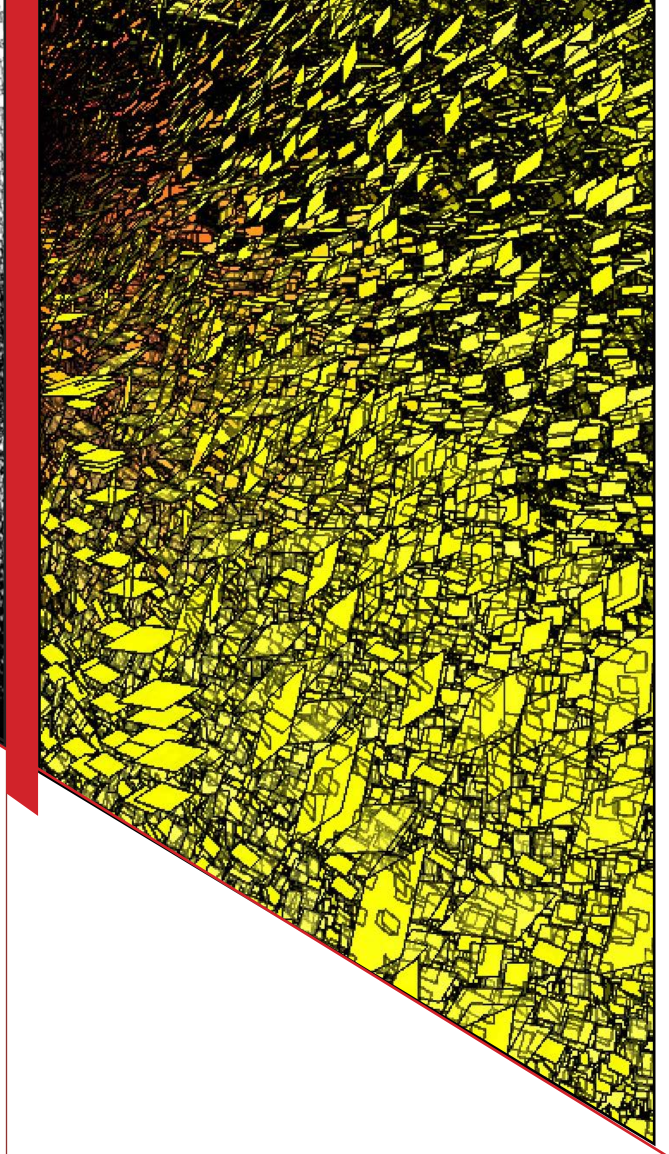
Electronic Cyborg Chair
DesignMorphine, University of Architecture, Civil Engineering & Geodesy
Created in Maya and Keyshot

PORTFOLIO

2D Parametric Design

11:11





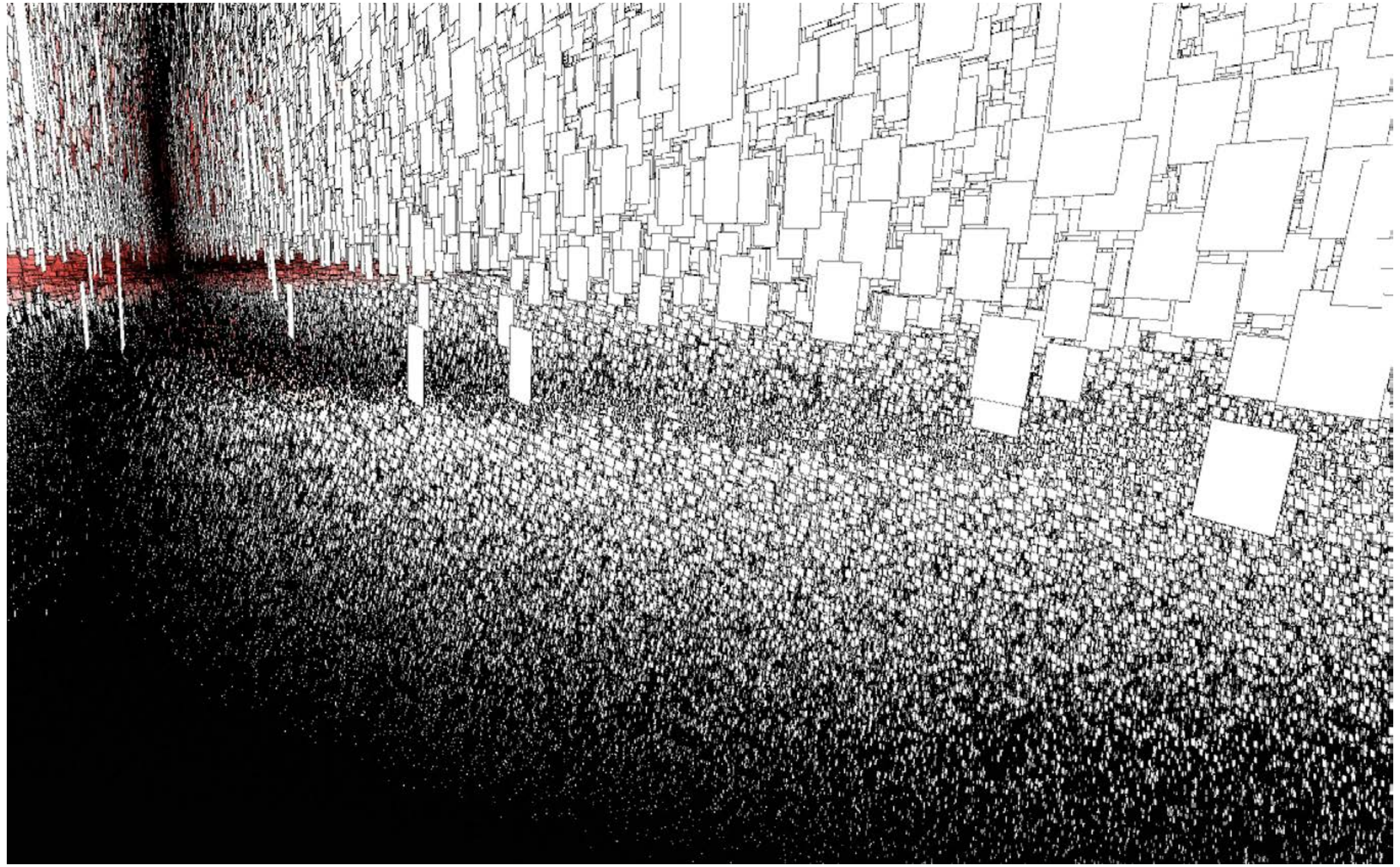
About the Project

Concept + Challenge

These projects explore the 11:11 phenomenon, examining its mathematical symmetry and metaphysical synchronicity. The number's unique properties—doubling upon addition and folding inward when multiplied—inspired a visual representation that bridges numerical theory with storytelling.

Technical Process

This concept was visualized using for-loops in Java, generating a dynamic sequence that mirrored the structure of a classic D.C. comic strip. Recognizing this parallel, a vibrant comic book-inspired color palette was applied to reinforce the visual and thematic connection.



11:11 Iteration
MIT
Created in Java

P O R T F O L I O

Alien World Map

2D + 3D Design: Master's Thesis

About the Project

Techical Process

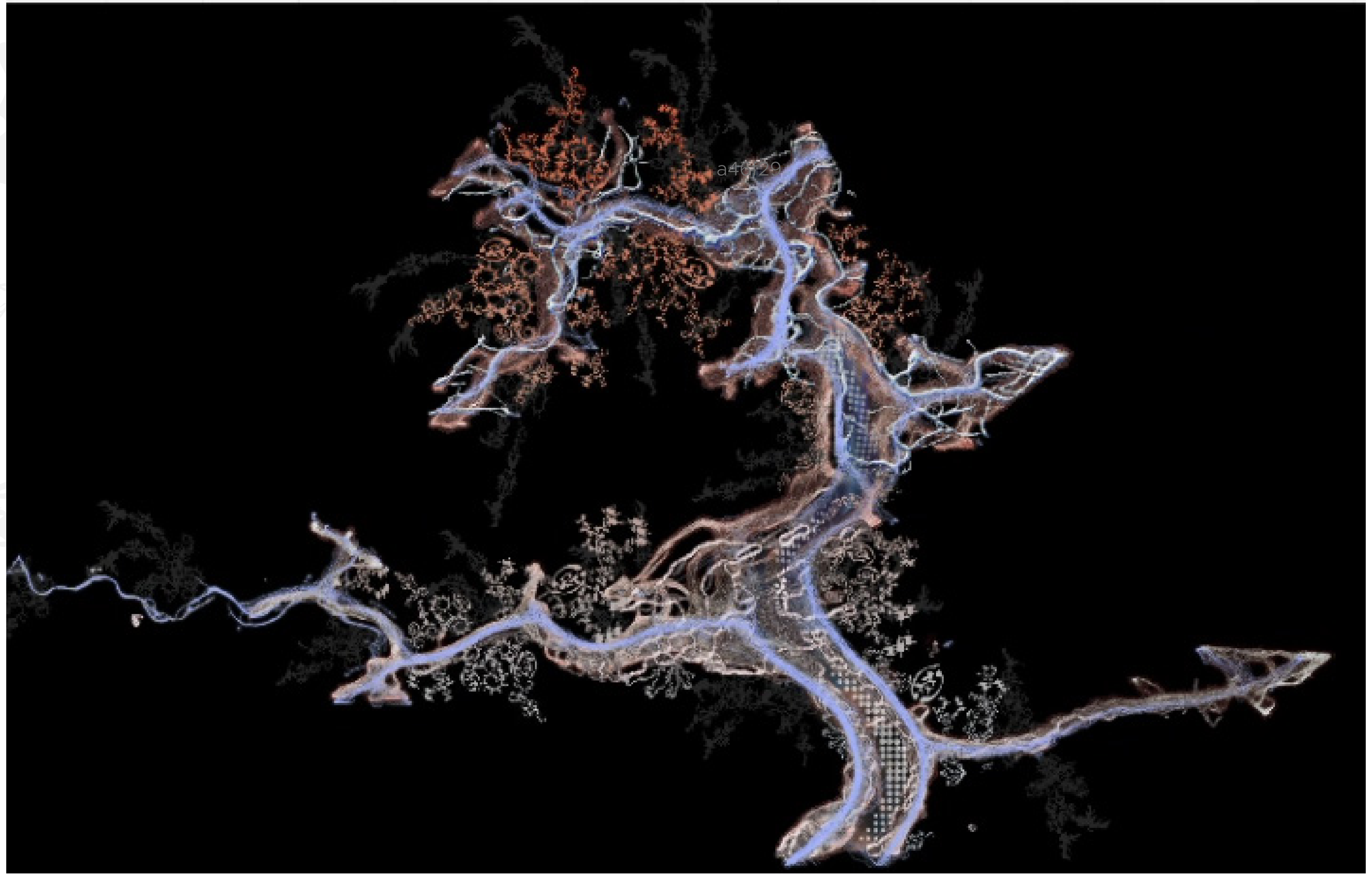
This project explored intricate network formations using Grasshopper Nuclei, Rhino, C#, Illustrator, and Photoshop. Rooted in the cosmic tree narrative, the system represents three cohabiting tribes—two locked in perpetual warfare, while the third forms an alliance with the protagonist tribe, creating a distinct, unified network separate from their adversaries.

Primary Networks

A Midjourney-generated image was transformed into a bump map, segmented into four layers: the foundational network; the primary network; the protagonist-ally regional network; and the adversarial region of the protagonist's foe. Using C# within Grasshopper, territorial boundaries were delineated, defining each tribal region.

Regional Networks

To establish the boundary between the protagonist-ally union and the adversarial faction, the bottom two regions were merged. Grasshopper Nuclei bifurcation simulations generated multiple network variations, from which two designs were selected. These were divided horizontally along tribal boundaries, ensuring each network pattern represented its respective region.

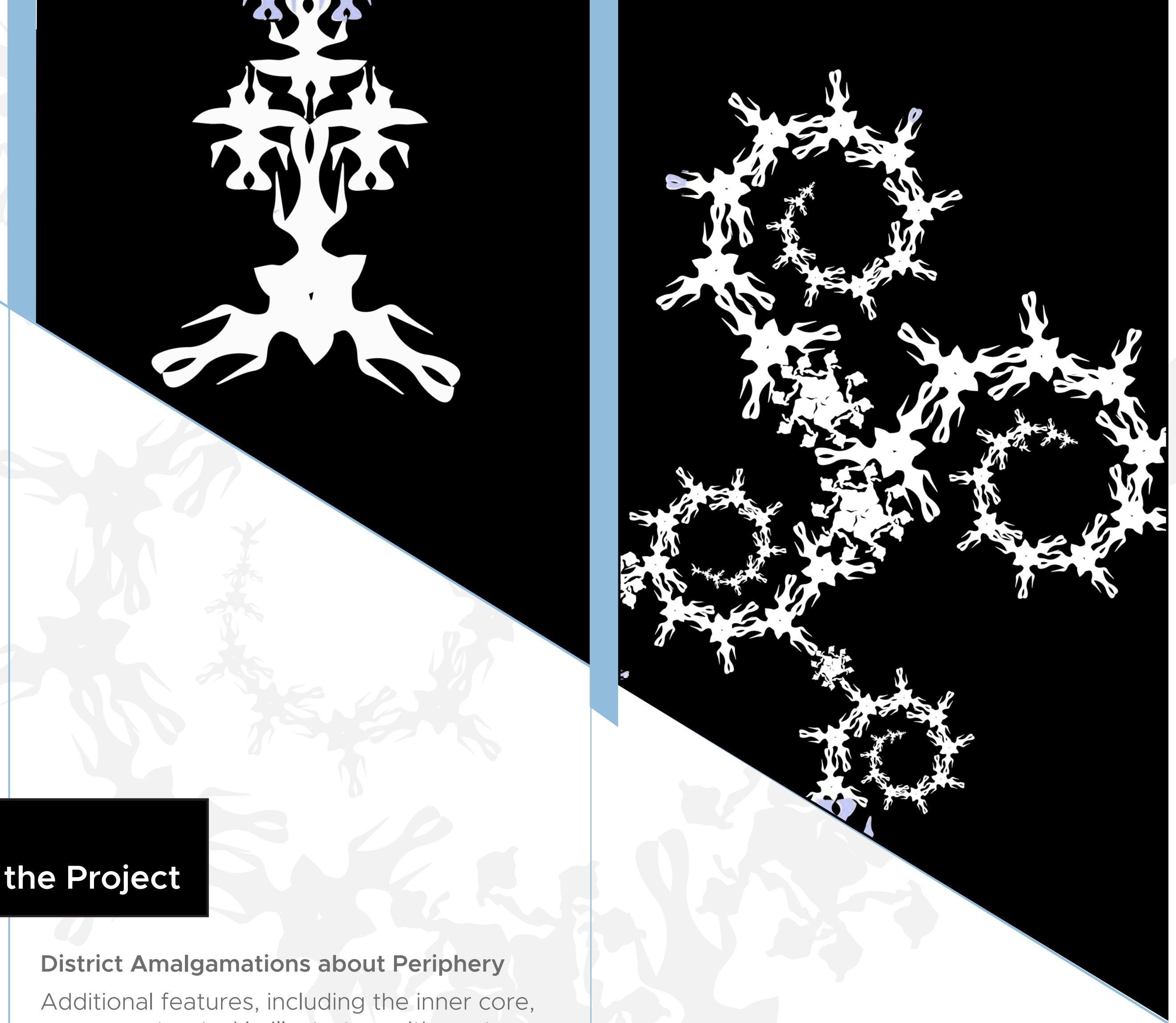


Alien World Map
DesignMorphine, University of Architecture, Civil Engineering, and Geodesy
Created in Rhino, Grasshopper, Photoshop, and Illustrator

P O R T F O L I O

2D + 3D Design: Master's Thesis

Patterns



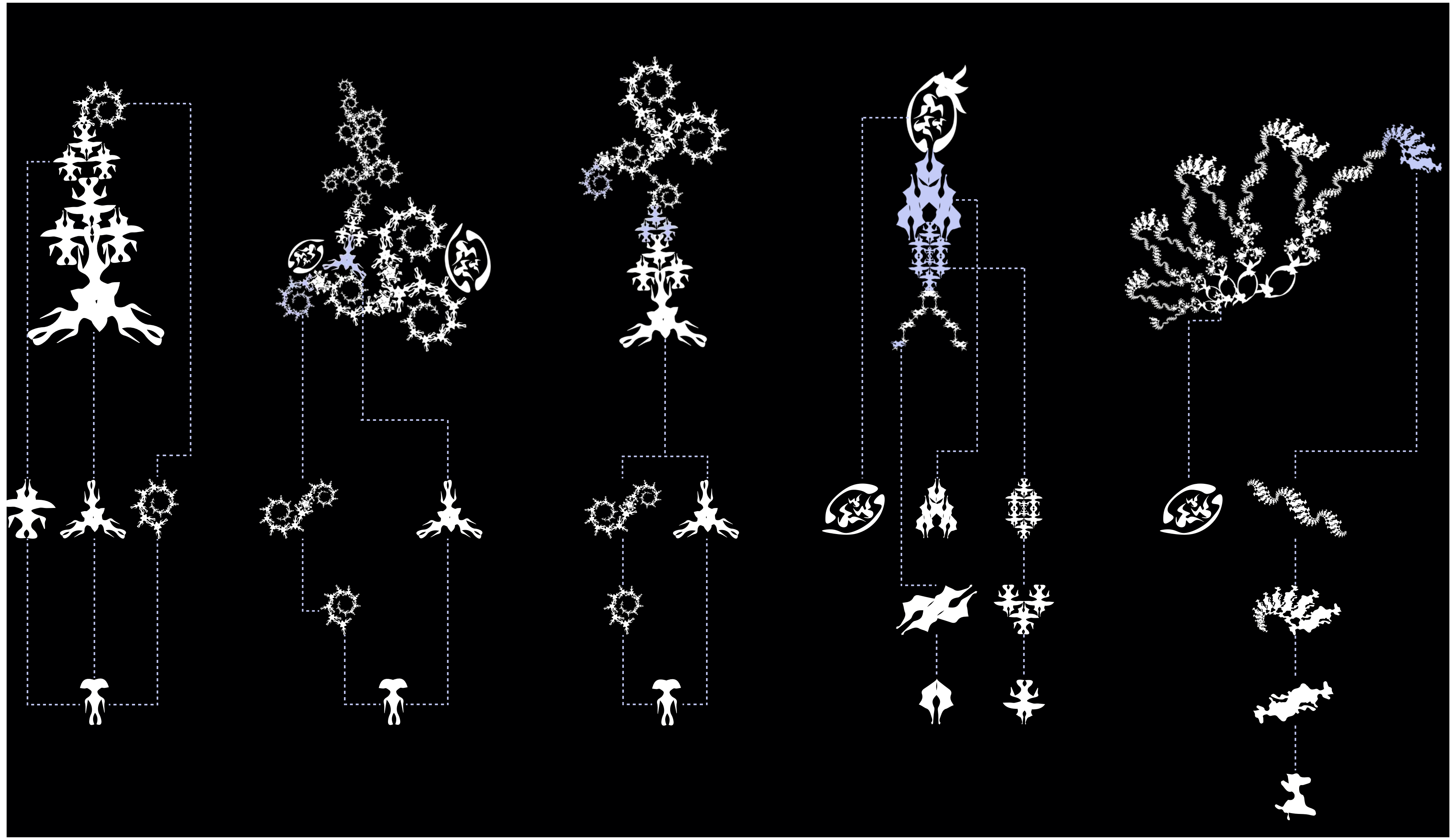
About the Project

District Amalgamations about Periphery

Additional features, including the inner core, were constructed in Illustrator, with post-production refinements applied in Photoshop.

Perimeter & Pattern Formation

Along the map's perimeter, diverse district patterns emerge, representing distinct regional units. These patterns originate from a deconstructed 2D top-down view of a previously modeled metropolis. The extracted shapes were used as modular components developed through a combination of manual and computational modeling, and arranged along the periphery to reinforce the city's structural logic.



Alien World Map Patterns with Base Shapes

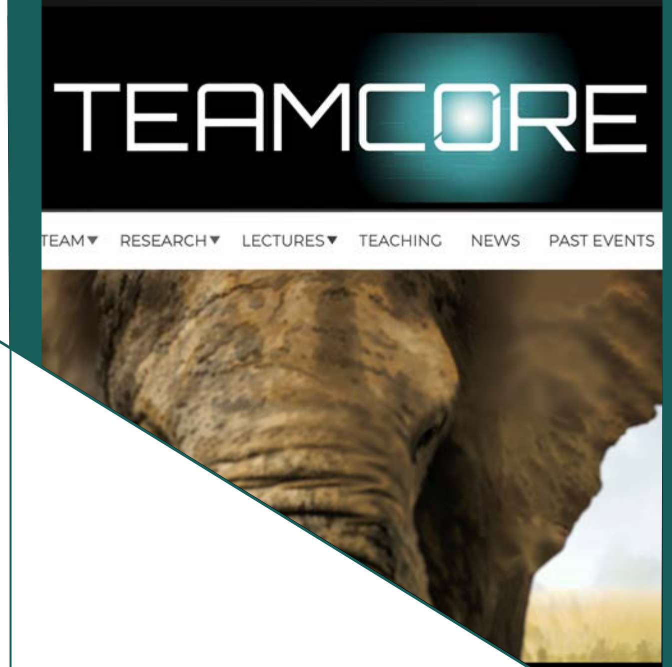
DesignMorphine, University of Architecture, Civil Engineering, and Geodesy

Created in Rhino, Grasshopper, and Illustrator

P O R T F O L I O

Website Banner

2D + Graphic Design



About the Project

Concept + Challenges

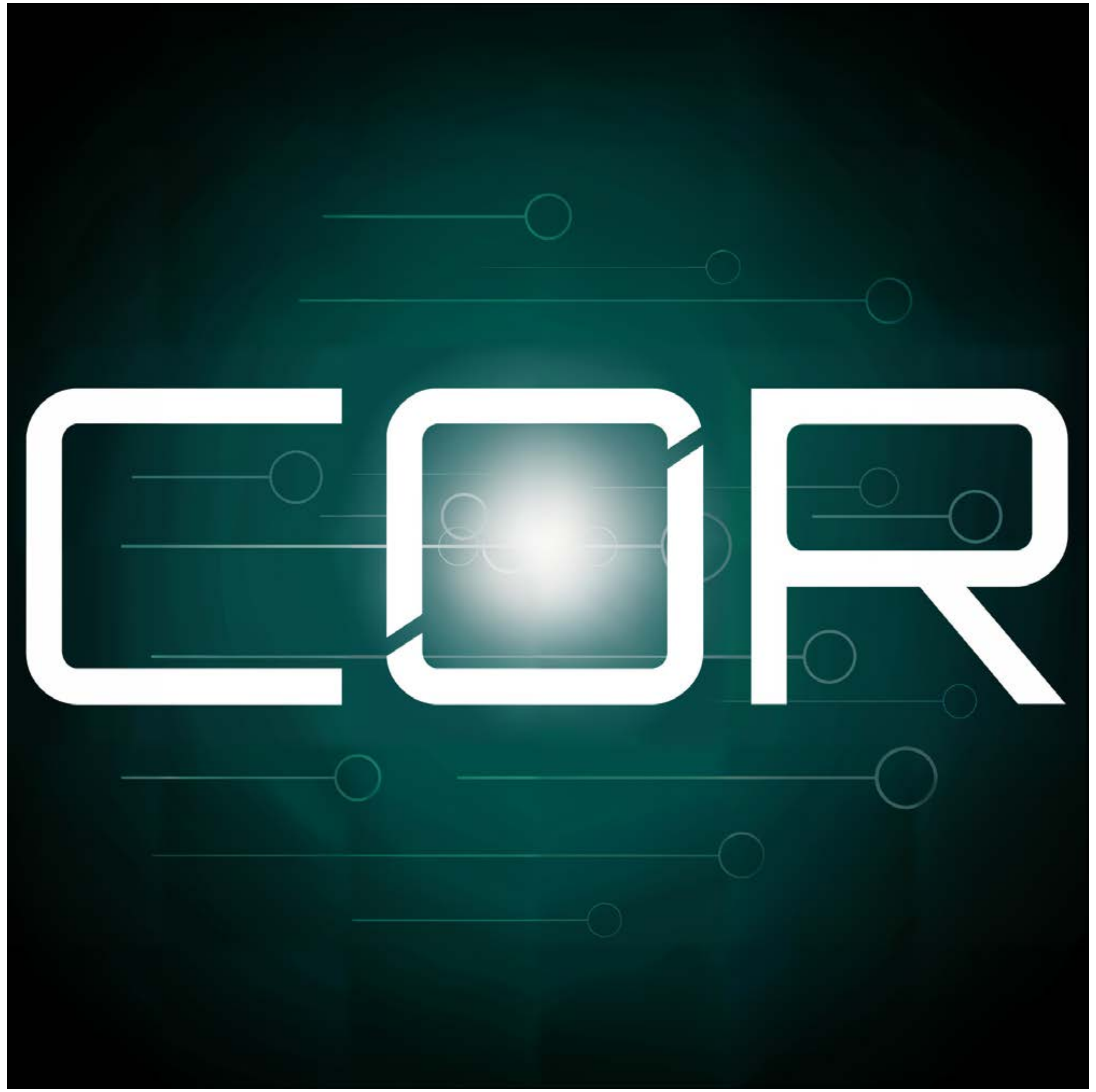
Designed in Illustrator, this project reimagined the banner for Harvard SEAS Lab, Teamcore, a research lab specializing in cutting-edge computer science technology. With its sister organization focused on humanitarian applications, this banner emphasized Teamcore's technological innovations, reinforcing its role as a hub for advanced research and AI-driven solutions.

Design Objectives

To establish a distinctly technical aesthetic, the design needed to differentiate Teamcore from its humanitarian-focused counterpart, position the lab as a leader in computational research, and visually communicate its pioneering advancements in AI and technology.

More on This Design

The letters *C*, *O*, and *R*—extracted from "core" in the title—were highlighted in tech-inspired teal green with a digital glow, while the *E* was omitted to reinforce an internalized, research-driven focus. Interwoven circuit elements emphasized the centrality of computer science technology. Illustration was crafted in Adobe Illustrator, incorporating photography. (Elephant photo credit: Professor Milind Tambe).



Teamcore Website Banner
Harvard University
Created in Illustrator

Illustration

2D Design

“Arms are the Wings of the heart.”

Frog Lotus Yoga teachers

About the Project

The Challenge

Created in Adobe Illustrator, the Arm Challenge tasked DesignMorphine master’s students with interpreting the concept of an arm through computational and artistic exploration. My approach blended conceptual analysis, physical study, and parametric evolution, drawing from hand sketches, media references, and Midjourney explorations to transform theoretical motifs into a newly generated form.

Concept + Inspiration

The project began with a fundamental question: What defines an arm? Beyond its function, what does it symbolize? Inspired by teachings from Frog Lotus Yoga, where “the arms are the wings of the heart,” the design integrates both functionality and poetic expression, embodying emotion, growth, and transformation.

General Themes

- “Heart of Glass”: Fragility, resilience, and emotional expression
- Pathway Between the Heart & Mind: Physical and symbolic connection
- Emitting emotion: A vessel for experience and evolution

Main Concept

The design envisions a bio-augmented being with sensitivity to self and to others. As it matures, it undergoes trials of heartbreak and grief, each experience shattering its form. However, with every fracture, new growth emerges, evolving into biological expansion and transformation. Once fully formed, these beings attain wisdom shaped by their endurance gthrough adversity.

Parameters

“Where there is a crack, there is growth.” The arm’s structure evolves through breakage, embodying the principle that resilience is forged through challenge.

The Arm Challenge
DesignMorphine, University of Architecture, Civil Engineering, and Geodesy
Created in Illustrator

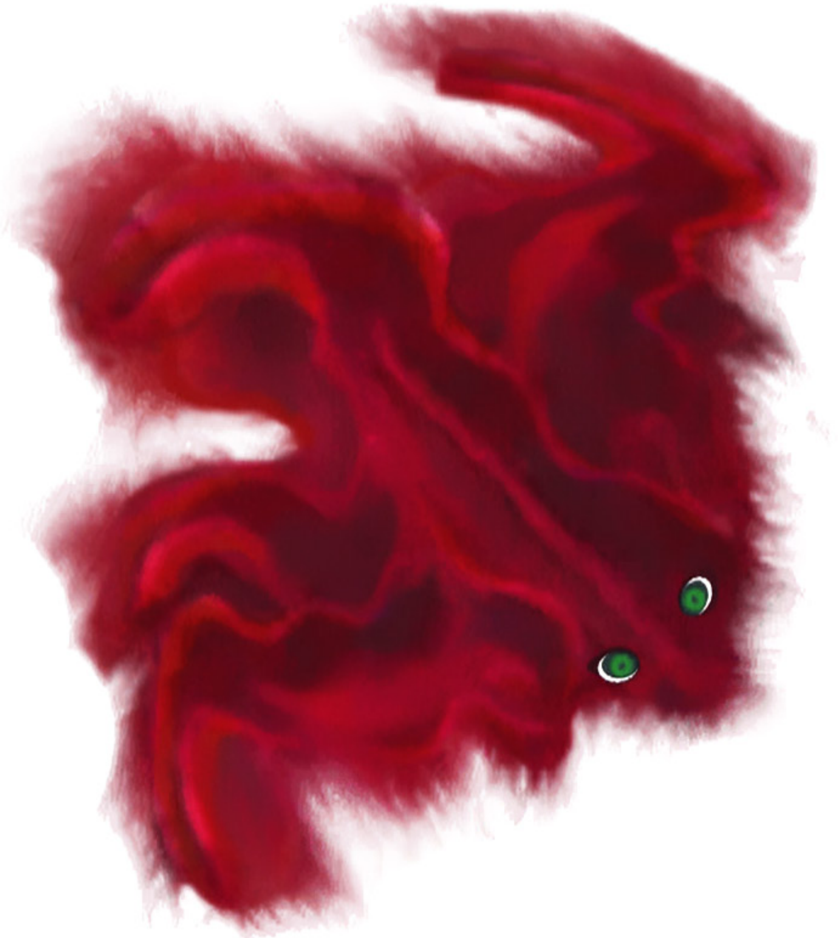
PORTFOLIO

Illustration

2D Design

About the Project

Created in Adobe Illustrator, this image marks the inception of a twelve-part series depicting the evolutionary journey of a fictional species, The Curious Critter. The narrative begins in a tropical climate, where its feathery body seamlessly camouflages among native flora. Its mating rituals depend on strong winds, allowing its flat body to drift toward others of its kind, fostering an innate drive for migration. As the species navigates environmental shifts, ranging from climate change to radioactivity, it undergoes progressive adaptations, developing evolutionary survival strategies that respond to its transforming ecosystem. This series explores the intersection of speculative biology and design, blending visual storytelling with ecological evolution.



Curious Critter
MIT
Created in Illustrator

PORTFOLIO

Parametric

2D Parametric Design

About the Project

Concept + Challenge

Created using Adobe Illustrator, Photoshop, and iMovie, this project deconstructs and reinterprets the First Amendment of the United States Constitution through the lens of "electrAcity," a theory by Greg Ulmer that positions digital media as the modern equivalent of literacy in the print age. Ulmer suggests that in the digital era, consciousness extends beyond the human body, enabling distributed intelligence and complex communication. The octopus, with its bioelectric properties and decentralized cognition, serves as a metaphor for this evolving digital consciousness. By mirroring octopus-like behaviors, camouflaging, manipulating technology, and navigating restricted spaces, this project aggregates polarized perspectives on contemporary American political discourse, weaving them into a visual narrative that reflects the shifting landscape of First Amendment interpretation in the digital age.

Learn More

Watch the process in action: https://www.youtube.com/watch?v=CwHWIUa92Pw

Read the full project analysis (CATTts process): https://gfranzetta.com/wp-content/uploads/2023/02/The-Octopus_CATTts.pdf merging computational precision with organic dynamism.

The Octopus

The Octopus
MIT
Created in Illustrator, Photoshop, and iMovie

PORTFOLIO

Poster Design

2D Design

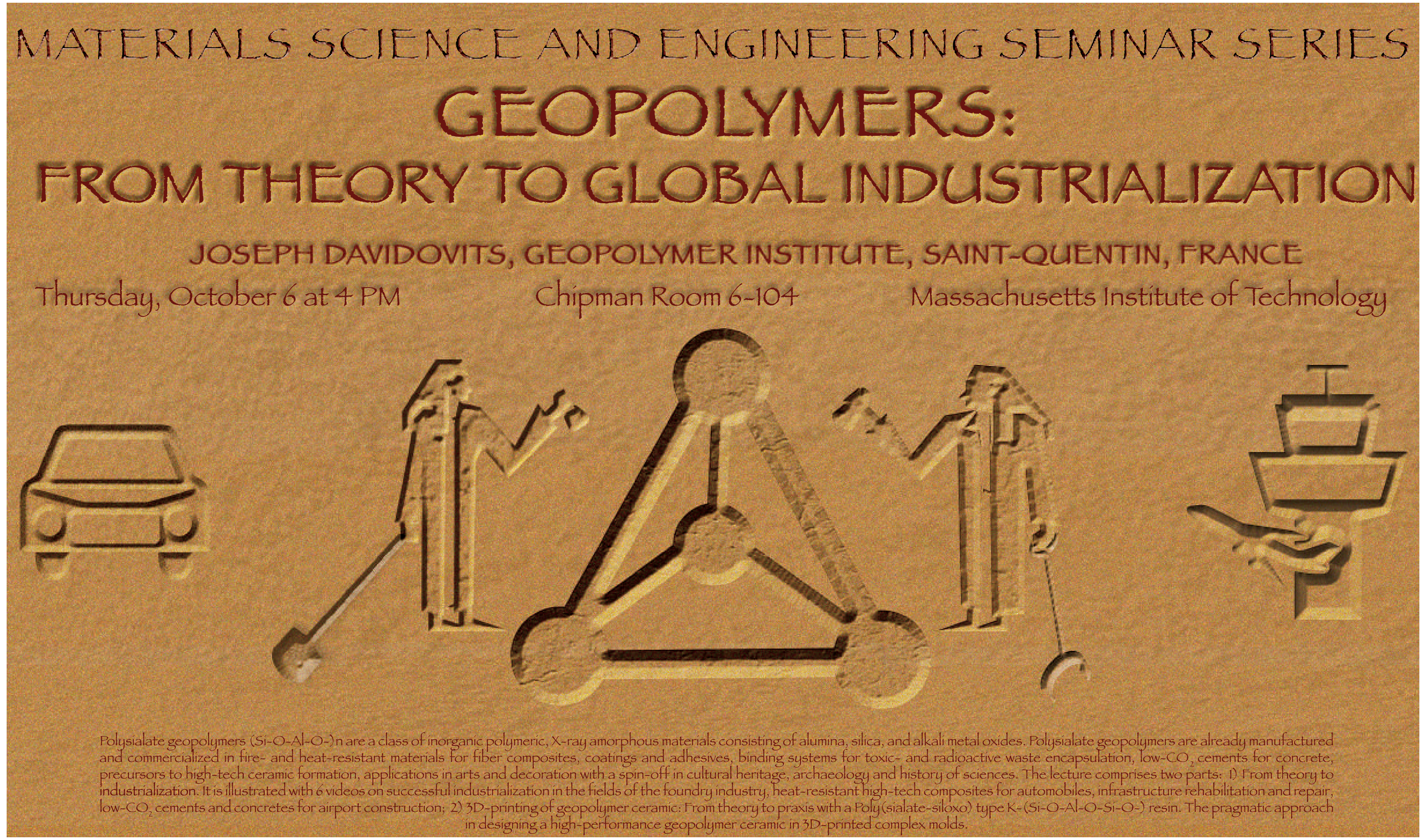
About the Project

Concept + Challenges

This design was created to promote a seminar by renowned research chemist Prof. Joseph Davidovits, a pioneer of geopolymers whose work has been featured in Nova and other high-profile media. The talk explored **geopolymers—an advanced inorganic polymer integral to modern industry—**examining its applications in airport construction, foundry operations, and automobile manufacturing. Expanding beyond contemporary usage, Davidovits proposed that ancient Egyptians harnessed geopolymer technology to construct the Great Pyramids, challenging the traditional belief that massive stones were transported to the site. Instead, he asserted that Egyptians developed and implemented geopolymer techniques to fabricate the monumental building blocks in place.

Technical Process

At the composition's core, a geopolymer molecule serves as the focal anchor, underscoring the material's historical and modern significance. Flanking this central element, two ancient Egyptian chemists—one male, one female—wear lab coats, symbolically bridging antiquity and modernity. Each figure holds a beaker in one hand and foundry tools in the other, representing the fusion of alchemy and industrial science. Along the outer periphery, hieroglyphic depictions of a car and an airport emerge from the background, illustrating the evolution of geopolymers from ancient innovation to a foundational element of modern engineering.



Geopolymer Hieroglyphics
MIT
Created in Illustrator and Photoshop

P O R T F O L I O

Logos

2D Design

About the Project

MIT LEAP

Top left: This design was created for MIT's Laboratory and Library for Engineering and Analytics of Polymers (LEAP) as part of a proposal for a $25M National Science Foundation grant to advance polymer research. The flowing hyperboloid imagery symbolizes cross-linked structures of fluid polymer chains, simplified into elegant, dynamic lines to visually represent the interconnected nature of polymer science.

The Veridians Logo

Bottom left: Created in Illustrator, this logo represents a futuristic cyberpunk cyborg character. The "V" shape draws inspiration from mechanical forms commonly found in cyberpunk graphic art, incorporating sharp geometric elements to reinforce a high-tech, futuristic aesthetic. The color palette included neon pinks (not shown) and blues, aligning with the signature tones of cyberpunk visual language.

MIT Working Group (WG) Logos

Created in Illustrator. The MIT Working Group (WG) supported multiple departments across administration, IT, and design. As the founder and chair of the WG subcommittee, Design Support Staff (DSS), I developed a temporary logo to represent the WG until the DSS team was large enough to collaborate on an official design.

The top design reflects the human-centered mission of the WG. The bottom design became the final DSS logo, collaboratively developed by team members. This project involved research, sketching, magazine clippings, and brainstorming sessions to craft a visual identity that encapsulated the diverse skill set and expertise of MIT's support staff. Our team unanimously agreed that gears best symbolized the DSS mission, illustrating MIT's support staff as the cohesive force that operates behind the scenes to keep the institution running smoothly.

P O R T F O L I O

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