

CREATION: BETWEEN ART AND MATHEMATICS

Art exhibition
9 APRIL - 25 JULY 2026

Maison Poincaré
Espace Laurent Schwartz

Introduction

Arts and mathematics strive to bring into our tangible world concepts and ideas that originate in the realm of thought. To achieve this, these disciplines employ means that may appear different. In both cases, however, this process of concretization does not occur spontaneously. The final result—whether a work of art or a theorem—often conceals the immense amount of effort required to bring it into being, to transform an idea into a result or a work: creation is not instantaneous; it is a process.

The works you will find in these pages highlight not only the creative process itself, but also the ways in which mathematical and artistic practices can enrich one another. To these ends, each of the presented artworks is accompanied by an account from its creators of its origins, along with numerous associated sketches, studies, and artefacts that provide a window on the work that brought it to life.

You will find instances of mathematicians working with artists, or becoming artists themselves. They reveal the beauty of their discipline or use their works to communicate subtle ideas. Artists, in turn, find in mathematics a rich material to explore, allowing investigation of their own abstract systems. Each work in this exhibition emphasises certain facets of the creative process, but you are encouraged also to look at how they relate to one another. These comparisons show how math and the arts support and challenge one another, both as disciplines of research and exploration, and as social practices.

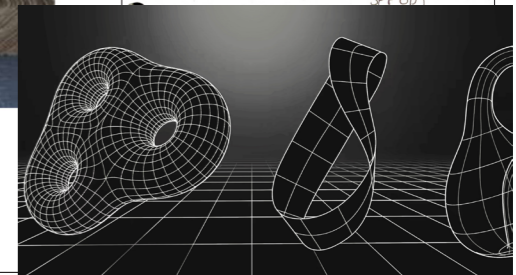
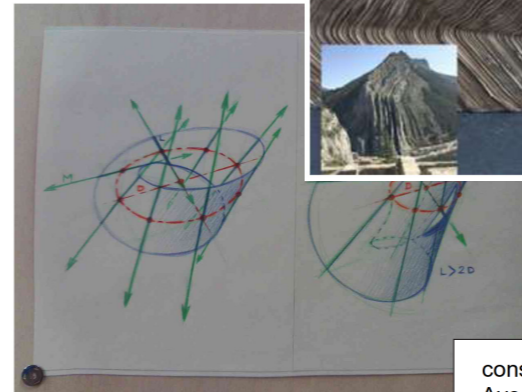


Gravel particles

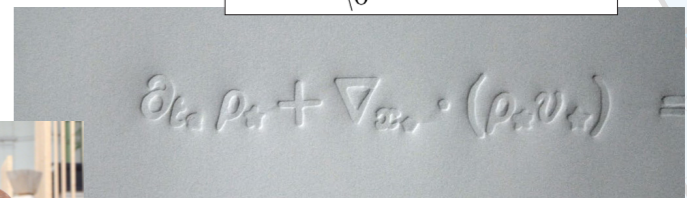
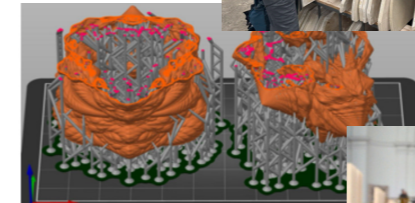
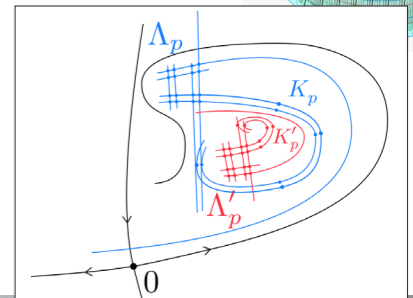
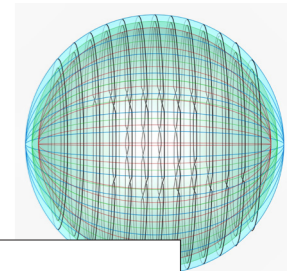
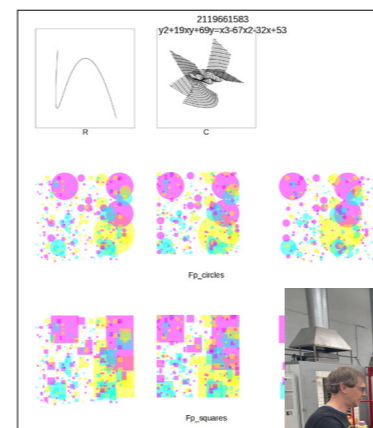
- Randomize color, rotation, scale
- ⇒ create attribute (collision on real?)
- ⊕ add noise then Random local scale

point (x,y) → Randomize types (scale, rot.) → noise (x,y) → Particles

↳ Lookup technique → Life span → Random (Instance Setup)

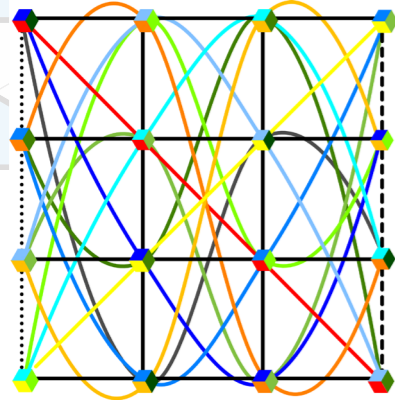


construction de 120 lignes verticales toutes différentes.
 Avec a = 4cm x 1,2
 b = 5cm x 2,1
 c = 7cm x 4,2
 d = 9cm x 0,6
 e = 11cm x 3,1
 Avec donc a + b = d ; a+c = e ; d+e = a+b+e ;



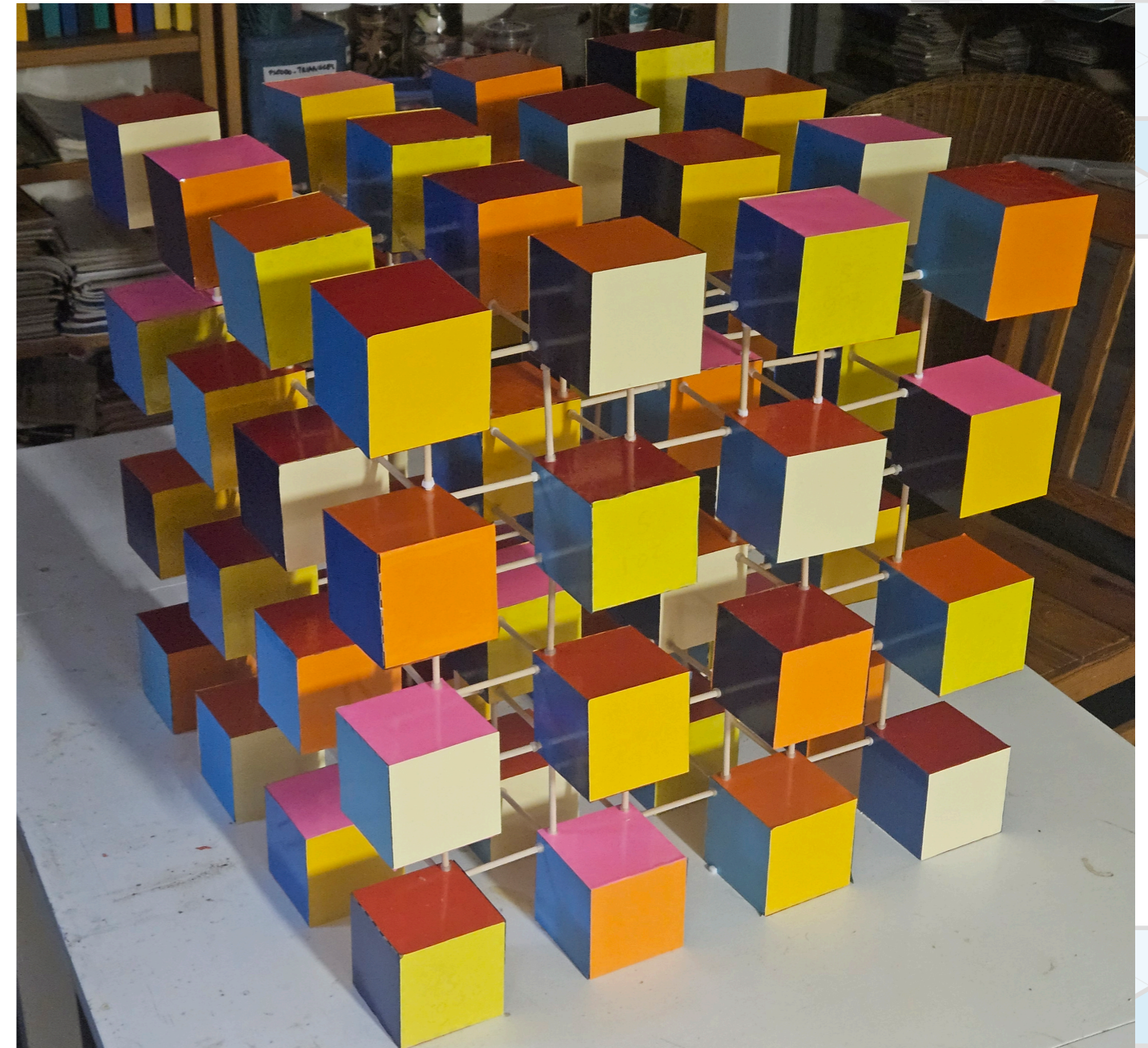
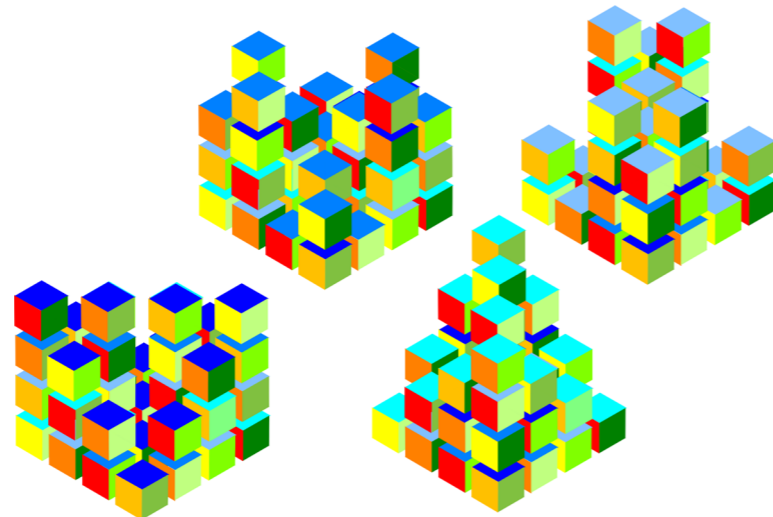
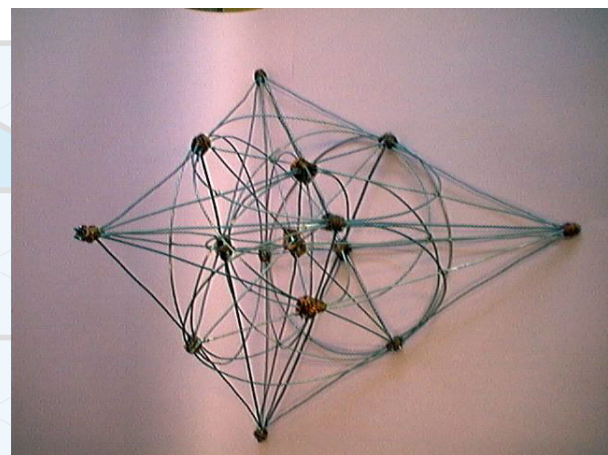
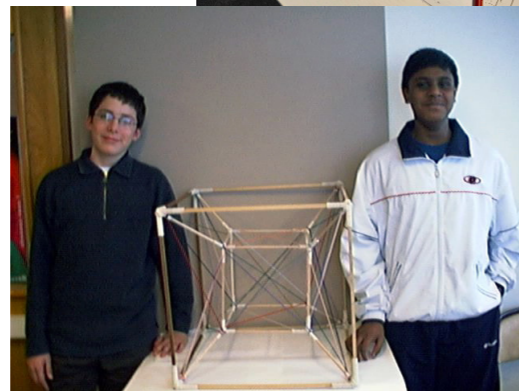
Cube arabo-gréco-latin

François Gaudel



This cube is a three-dimensional version of the problem of Greco-Latin squares. Each of the 64 small cubes has three colours (blue, yellow and red), with each colour appearing in four shades, giving $4 \times 4 \times 4 = 64$ distinct cubes. The constraint is that no line, row or column contains the same shade twice. Mathematically, each cube can be interpreted as a point in an abstract geometry known as three-dimensional *affine space of order 4*, the study of which provides a solution to the problem.

The project aims to imagine an original creative approach to exploring the richness of mathematical representations and problems offered by finite geometries. We built a first model of this cube in 2000 during a workshop for secondary school students. The objects presented here revisit those early models using today's fablab tools.



Cube arabo-gréco-latin
2026
Wood and paint, 60 x 60 x 60cm

Cube arabo-gréco-latin



François Gaudel



Born **1948** in Charleville, Ardennes

Studied at Ecole Polytechnique, went on to pursue research in mathematics

Deeply influenced by and committed to the May 1968 movement

1970: Left research to become an activist in the labor movement and teach mathematics in the suburbs.

1980: First computer club

1991: Mathematical Exploration Workshops

1995: CNRS Youth Club “Sciences et Citoyens”

2007: Founding of the “Association Sciences Ouvertes”

2018: *Ludomaths* exhibition

I was taught mathematics during the very brief period of intersection between traditional geometry and the excessive formalization of “modern math.” The advent of programmable calculators and computers gave me both the means and the desire to explore all of this directly: for example, by spending weeks calculating lists of prime numbers.

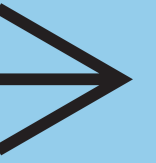
Then the graphical exploration of mathematical forms captivated me and became a true addiction that I shared in workshops with students. With them, I began learning again to understand and construct, and I reconnected with the mathematical community and the research world, which were very welcoming!

Starting with a mysterious shape that seems full of math, we can seek to understand it in order to construct it. Or, starting with a somewhat abstract theory, we can experiment with it and seek representations:

Aesthetic inspiration is always powerful!

With my students, we explored curves, fractals, small and large polyhedra (up to 5 meters), conics, tilings, and finite geometric spaces, creating new forms each time — at least for us. It’s a pleasure to create and share open, beautiful, and creative math!

Granny Life



Laura Taalman



Born **1973** in the northeastern United States

1994: Studied mathematics at the University of Chicago (BS)

2000: Continued studies at Duke University (PhD)

2016: *Type 9*, American Design Club and Wanted Design, Manhattan, NY, USA

2018: *Puente Encriptado*, [Art.MO](http://art.mo/), Monumental Callou residency, Lima, Peru

2020: *Steel Knot Conformations*, Flatland Gallery, Houston, Texas, USA

2023: *Knit Knots*, Bridges Conference exhibition, Halifax, Canada

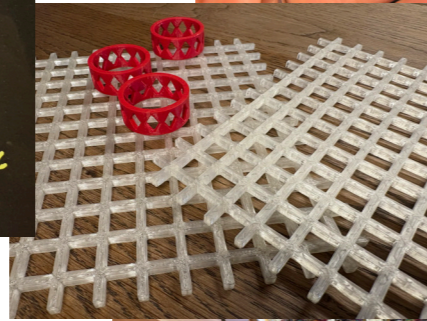
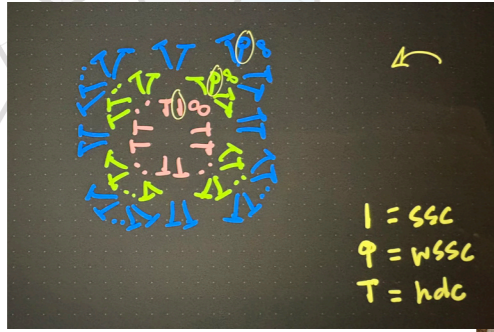
2025: *Forbidden Graphs*, ICERM, Providence, Rhode Island, USA

Laura Taalman is a Professor of Mathematics at James Madison University whose research and artistic interests focus on patterns, games, and algorithmic design. Her creative projects explore the intersection of mathematical structures, rule-based pattern generation, and physical making, bridging both traditional and modern crafts. Dr. Taalman’s current work centers on computational fiber arts, including global community art projects and the development of publicly accessible mathematical patterning software for knitting, crochet, and vintage punch card knitting machines.

“My work explores structure and patterns created through carefully crafted algorithms, parametric design, and controlled randomness. My goal is to create works and systems that invite others into the design process -- creating community, and allowing the community itself to create.”

Granny Life

Laura Taalman



Granny Life evolved over several years at the intersection of mathematics, crochet, code and community. Artist Laura Taalman began by studying crochet techniques and exploring 1D and 2D cellular automata to encode mathematical data into visual patterns, ultimately choosing 2D cellular automata for its consistent combinable motifs. As the project expanded, it shifted to a community collaboration involving mathematicians and fiber artists. Extensive work went into designing a flat, high-complexity granny square and building an app that reliably matched crochet output. The contributed granny squares were assembled into a double-sided hanging artwork, arranged by a custom-created optimizing tool to minimize color repetition.



Granny Life

2026
Crocheted wool, 185 x 185 cm



One motif appears twice in *Granny Life*. Can you find it?



The following craftspeople contributed to this artwork

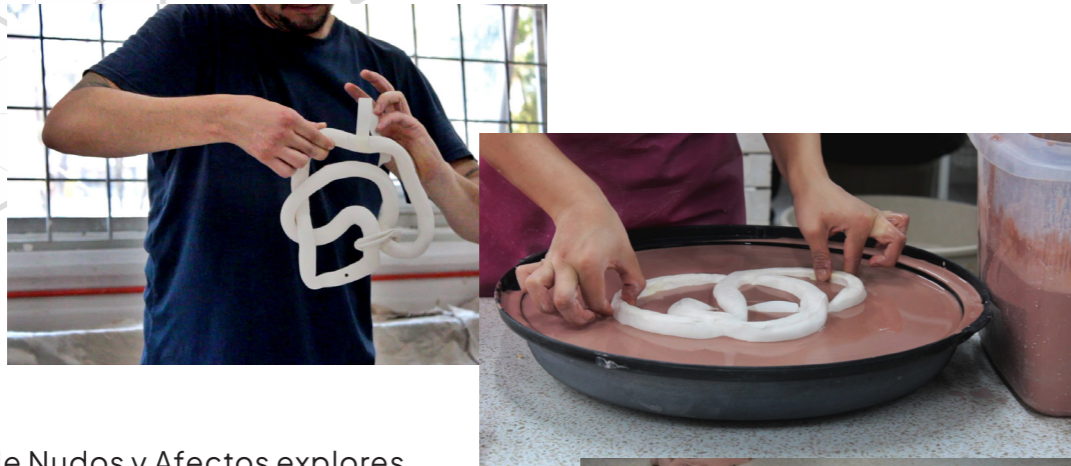
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|---------------------------------------|---------------------------------|------------------------------|
| Jeff Alexander (USA) | Claire Jones (USA) | Nancy Scherich (USA) |
| Lise Andreasen (Denemark) | Missy Karvecky (USA) | Katherine Seaton (Australie) |
| Eva Appel (Allemagne) | Therese Kinsella (UK) | Sally Secardin (France) |
| Jean C. Baker (USA) | Lorelei Koss (USA) | Soperlein (Allemagne) |
| Marie-Lou Barbier (France) | Clara Kraft (Suède) | Leah Gold Stella (USA) |
| Famille Berger Humann (France) | Anna Kraut (USA) | Nicolas T (France) |
| Julie Bergner (USA) | Amy Lai (USA) | Ann Tate (USA) |
| Sofia Blom (Suède) | Célestine Lapointe (France) | Ross Tate (USA) |
| Katherine Williams Booth (USA) | Heather A. Lewis (USA) | Coletta Tubbs (USA) |
| Marie Bourgerie (USA) | Baofen Lin (USA) | David Wildstrom (USA) |
| Emily Brown (USA) | Malou (Norvège) | Rachel Wilkerson (USA) |
| Sarah Christoph (France) | Lisa Marks (USA) | Jiangmei Wu (USA) |
| Lisa Collins (Australie) | Jessica Masterson (USA) | Carolyn Yackel (USA) |
| Elkie Crochet (France) | Sabeta Matsumoto (USA) | Yann-Situ (France) |
| Jessica Du Li (USA) | Marrit Meintema (Islande) | Lesley Yeo (Singapour) |
| Nicole Edmonds (UK) | Brigid Melloy (Irlande) | Rachel Zhu (USA) |
| Rebecca Field (USA) | Claire Merriman (USA) | |
| Elinor Flavell (Écosse) | Emma Morrison (UK) | |
| Natalie C. Fleury (USA) | Sarah Mosher (USA) | |
| Anne-Sophie Fradler (France) | Pat Nash (USA) | |
| Sadie Reaume Freeman (Canada) | Briana Newman (USA) | |
| Sarah Frey (USA) | Veronica Ory (USA) | |
| Euleun Fridebidehu (France) | Rachel Oughton (UK) | |
| Jessica Gericke (USA) | Olga Paris-Romaskevich (France) | |
| Courtney R. Gibbons (USA) | Tabitha Patterson (USA) | |
| Jaclyn Gidel (France) | Anne Perez (France) | |
| Pierre Gidel (France) | Abbey Perini (USA) | |
| Greg Hamerly (USA) | Lucy Pickett (USA) | |
| Andrea Hawksley (USA) | Gabriella Pinter (USA) | |
| Tanvi Kiran Hendrix (USA) | Sarah Poiani (USA) | |
| Dane Henson (USA) | Swantje Quarder (USA) | |
| Jessica Hergoualch (France) | Enayah Rahman (USA) | |
| Fran Herr (USA) | Alix B. Rodez | |
| Marie Holzer (France) | Erica Rosario (USA) | |
| Destiney Housley (USA) | Kimberly A. Roth (USA) | |
| Catherine Hueston (USA) | Seren Routledge (Écosse) | |
| Linda Jäckel (Allemagne) | Natalie Rubin (USA) | |
| Ásgerður Harriss Jóhannesdóttir (USA) | Jacqui Russell (UK) | |
| | Lauren Sager (USA) | |

Special thanks

- Indira Chatterji
- Rebecca Field
- Ásgerður Harriss Jóhannesdóttir
- Matt Parker
- Abbey Perini
- Phillip Riley
- Natalie Rubin
- Jiangmei Wu
- Carolyn Yackel

Laboratorio de Nudos y Afectos

Rocío Guerrero Marín, Darío Alatorre Guzmán



Laboratorio de Nudos y Afectos explores the conceptual, aesthetic, and symbolic potential of knots as objects of connection between mathematics and art. Chilean artist Rocío Guerrero Marín and Mexican outreach mathematician Darío Alatorre Guzmán chose knots, due to their liminal nature between rigorous mathematics and symbolic or sensitive interpretations. The knot becomes a gesture – a way to bind ideas and generate situated thinking – with the goal of learning and reflecting collectively.

Through a participatory ceramics workshops, knots are handmade. Within the context of this exhibition, a second iteration of this workshop was held, culminating in a collective mural installed on the museum's façade. This embodied experience intertwined art and mathematics to create affective networks around collaboration and knot theory.



This work was made possible thanks to support by the Institut Henri Poincaré Endowment Fund and its donors, and UNAM-PAPIIT IF102226

Laboratorio de Nudos y Afectos, Experience 1, IM-UNAM, CDMX, Mexico.

Photo credits: Diana Rosas (this page), Edmund Harriss (opposite page)



One knot from *Laboratorio de Nudos y Afectos*

2026

Stoneware, 22 x 22 x 4 cm

Laboratorio de Nudos y Afectos



Rocío Guerrero Marín



Born **1991** in Santiago, Chile

2014: BFA in Visual Arts from Pontificia Universidad Católica de Chile

2015: 1st place, BAJ Art Prize, Chile

2021: MFA in Studio Art from Hunter College-CUNY, New York, USA

2025: 3rd place, Colección Ca.Sa Art Prize, Chile

2026: Solo exhibition at Contemporary Art Museum, Santiago, Chile

Rocío Guerrero Marín is an artist and educator from Santiago, Chile. Her practice emphasizes sharing, listening, and presence through objects, installations, sound, and social practice. She explores the interplay between bodies, environments, and language, examining how relationships shape our understanding of the world and sense of being. Recently, she has focused on collective artistic processes with diverse communities, creating safe spaces for mutual learning. Rocío is currently participating in *Contested Desires: Constructive Dialogs*, an artistic program supported by Creative Europe, aimed at reflecting on Europe’s colonial legacies and consequences. She lives and works in Santiago, Chile.

Darío Alatorre Guzmán



Born **1986** in Mexico City. Raised in Xalapa, Veracruz

2017: PhD in math from Universidad Nacional Autónoma de México (UNAM)

2018: First exhibition of math art

2019: Begins work in math outreach for Institute of Mathematics, UNAM

2020: Founds the “Laboratory for Sensorial Mathematics”

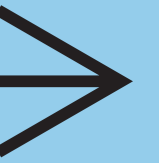
Darío Alatorre Guzmán is a mathematician at the National Autonomous University of Mexico (UNAM) whose work explores mathematics as a sensory and artistic practice.

He received his PhD with the dissertation “Tiling Spaces and the Irrational Torus,” where he proposed a diffeological approach to the study of tiling spaces.

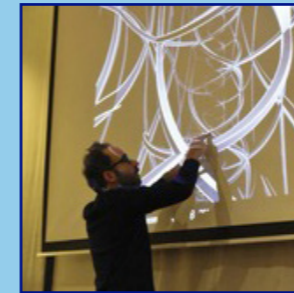
Working across mathematics, sound, and material practices, he develops projects that translate mathematical structures into perceptual experiences. His collaborations with musicians, sound artists, and visually impaired communities have led to interdisciplinary explorations in mathematics’ sonification, algorithmic composition, and tactile forms of mathematical engagement, including hand built ceramics.

These investigations have recently converged in the creation of the *Laboratory for Sensorial Mathematics*, an experimental platform dedicated to exploring mathematics through sound, sight, touch, and material processes.

Sculptures, Vidéos et Théorèmes



Pierre Berger



Born **1980** in Paris; mathematician and artist

2001: Student at the École Normale Supérieure; trained at ENSAD

2009: Joined the CNRS as a Junior Researcher; later a Senior Researcher at Sorbonne University

2013: Co-authored, with P.I.Y. Fave, the exhibition *Regards dans les espaces*, shown in Paris and Rio de Janeiro

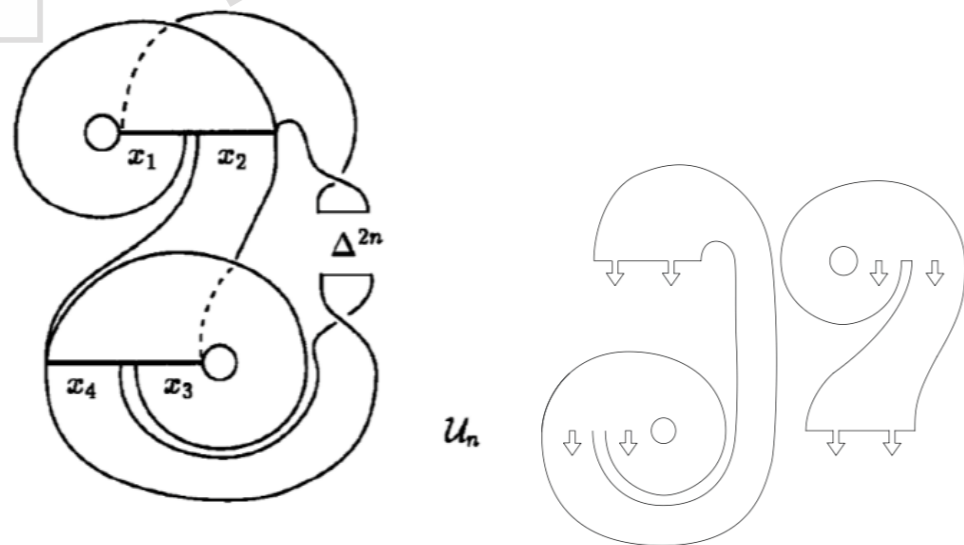
2015: Creator of the exhibition *Esthétique* at the IHP; a portion was acquired by the UNAM Museum (Mexico City)

2019–2026: Conceived the exhibition *Wild Dynamics*, shown in parts at the IHP, in Heidelberg, at the Artex Biennale, and in Philadelphia.

In my work, I seek to share the sensations I experience in my mathematical research, particularly those arising from the exploration of the most fundamental mathematics and the abstractions it generates. I design software that enables novel visual and auditory explorations, offering a glimpse into certain aspects of contemporary mathematics. My works are designed to spark new experiences for varied audiences, from young people to art enthusiasts and mathematics researchers.

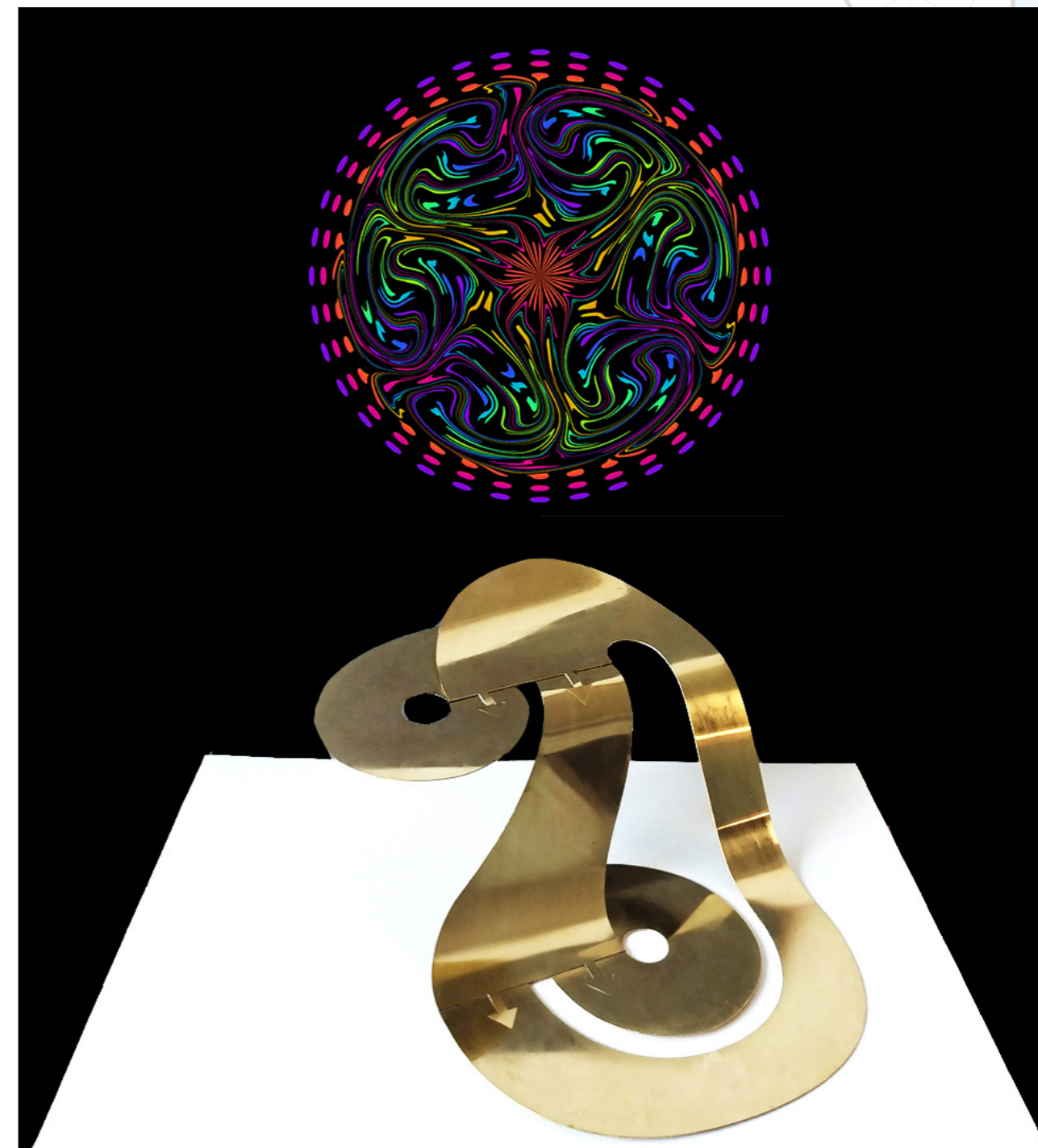
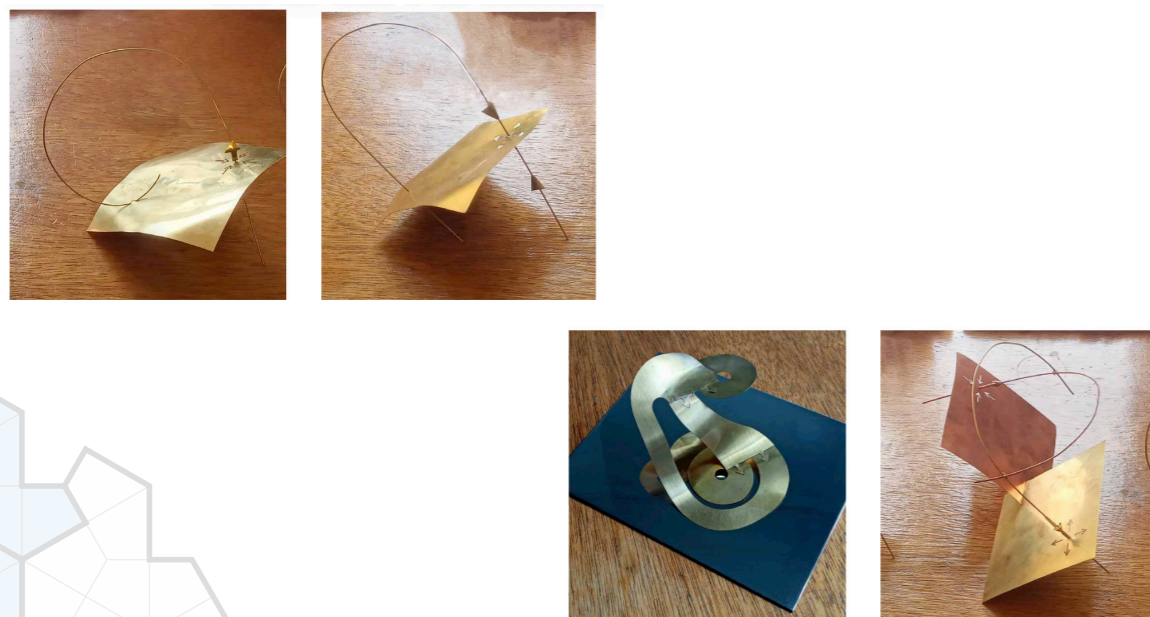
Sculptures, Vidéos et Théorèmes

Pierre Berger



These brass sculptures embody theorems. The videos project mental images inspired by these theorems and are created using numerical simulations.

These theorems occupy a central place in my research in dynamics. I wanted to give physical form to their geometric solutions through metal sculptures, drawing inspiration from the historic models at the IHP and taking advantage of the high precision of digital laser cutting. I sought to showcase their power – on the one hand their strength and graphic simplicity, and on the other the mathematical disruption they provoke. To express their meaning, I have created digital simulations using GLSL and Blender.



Patron universel
2025
Brass, 30 x 30 x 30 cm

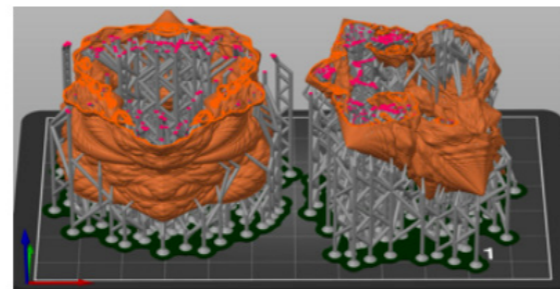
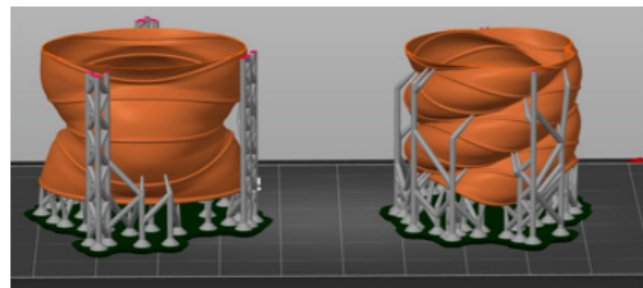
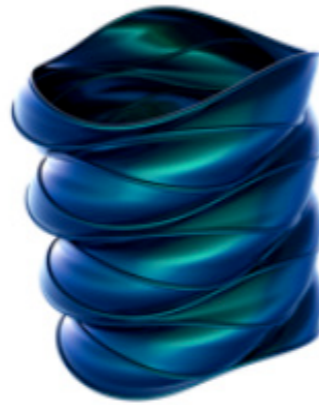
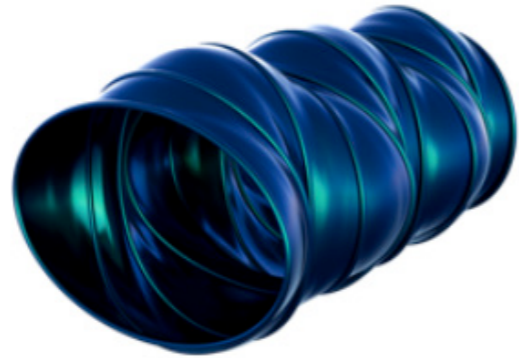


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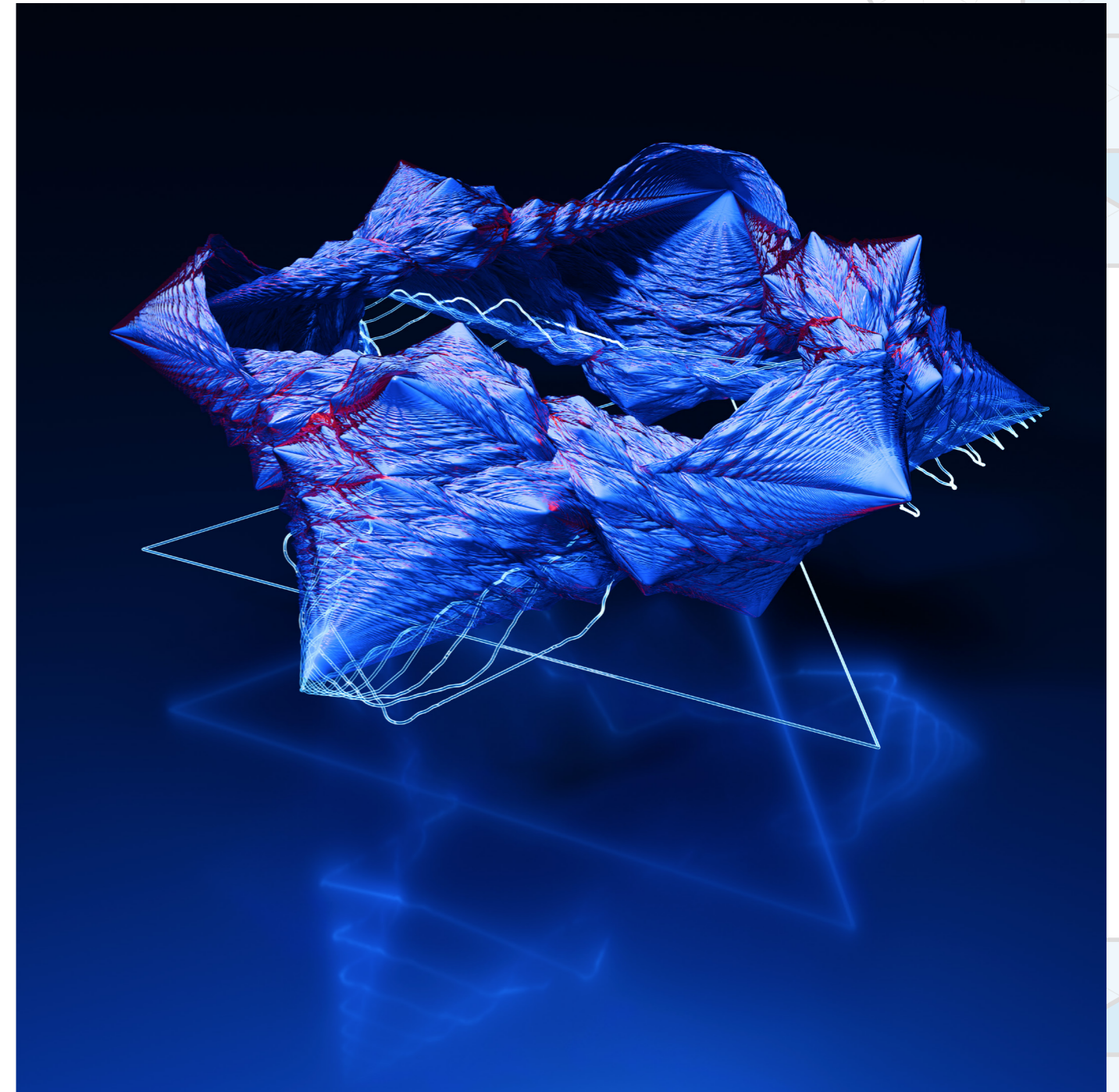


The Shape of Turbulence

Jiří Minarčík



A vortex is a structured rotation of air or other fluid, like a tornado or a smoke ring. This project visualises the full trajectory of thin vortex filaments as a fractal surface, revealing complex geometric features. The fractal surface was generated through numerical simulations and experiments guided by the mathematical theory of partial differential equations and prior work in fluid dynamics including foundational results from researchers like Jerrard, Smets, De la Hoz, Vega and Banica.



The Shape of Turbulence
2025–2026
3D-printed resin, 20 × 20 × 10 cm

The Shape of Turbulence



Jiří Minarčík



Born **1993** in Velké Karlovice, Czech Republic

2024: Ph.D. in Mathematics, Czech Technical University in Prague

2025–2026: Fulbright–Masaryk Scholar, Carnegie Mellon University

I am fascinated by geometry in motion. My research focuses on the evolution of curves and surfaces over time, and on how evolving geometry can capture natural phenomena. I study vortex filaments, knotted field lines, and moving boundaries. Through computation and fabrication, I transform these dynamic structures into objects that make their motion visible.

From Diagram to Disorder



Nancy Reid Hocking



Born **1952** in Michigan, USA

1976: B.A. in sculpture from Central School of Art, London

1976–1980: Partner in Fountain House Workshop lithographic studio, London

1981: Birth of my daughter

1982–1984: Reader in Ancient Cypriot ceramics at the British Museum, London

1985–2006: Partner in Triskelion Pottery, Cyprus

1994–1995: Lectures in Ancient Cypriot pottery technology, Harvard, Michigan State University, M.S.U. and Cyprus American Archaeological Research Institute

1994: Solo exhibition in Nicosia

2002, 2003, 2004: Solo exhibition at The Chocolate Factory, London

2025: Solo exhibition at The Crypt, London

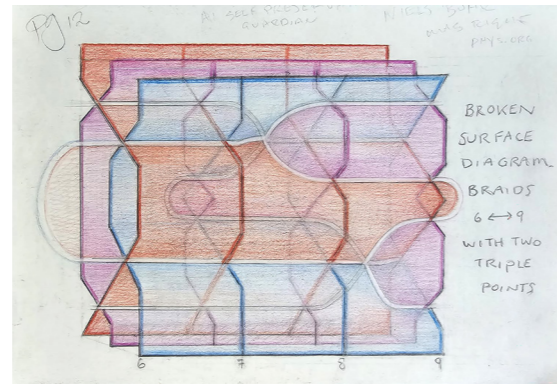
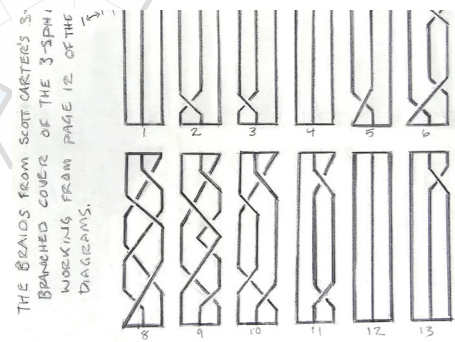
From the age of 16 my intention was to go to art school in London. I left the United States, age 18, in 1970 and fulfilled my ambition. I have lived on this side of the Atlantic Ocean ever since.

My father, J. G Hocking, was a professor of mathematics and taught topology at Michigan State University. As a young girl I was fascinated with his Klein bottles and Möbius bands. This fascination lay dormant in my creative life until about 12 years ago. After art school I followed a winding path which finally brought me to interpreting topological surfaces and specifically to knot theory. The path went through print making, then a long spell of making replicas of ancient Cypriot ceramics and running Triskelion Pottery in Cyprus with my late husband, Ara Nigogossian, then to portrait sculpture, painting and life drawing, and finally to knot theory.

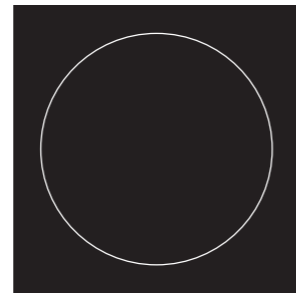
I came across the book *How Surfaces Intersect in Space* by Scott Carter, Professor emeritus, University of South Alabama. I contacted him via email with two images of my work. He graciously answered me back and suggested that we collaborate on an art project. This resulted in both of us exhibiting separate pieces at the 2019 Bridges Maths Art conference in Linz, Austria. We meet via Zoom regularly where he patiently tutors me in his work. Our mind-bending journeys deep into 4-dimensional space light up illusive, tantalising images in my imagination. Deconstructing them and then bringing them into the real world happily is my work.

From Diagram to Disorder

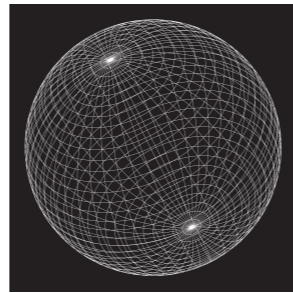
Nancy Reid Hocking



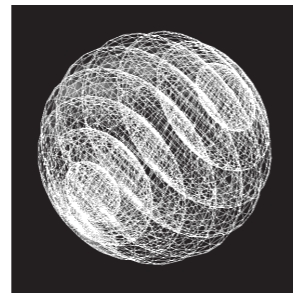
This project grew from collaboration with knot theorist Scott Carter and is centered on his 3-fold branched cover of the 3-sphere along the trefoil knot. Through years of conversations, Hocking studied knot theory and 4-space as conceptual inspiration rather than formal mathematics. The process began by meticulously dismantling Carter's diagrams and translating layered, abstract structures into a three-dimensional drawing language. Using colour, spacing, and curvature, Hocking reconstructed flattened sections of nested spheres and their braided interactions. As the work progressed, precise translations yielded to visual instability, where order broke down and intuition took over, reflecting the inherent difficulty of representing 4-dimensional space in three dimensions.



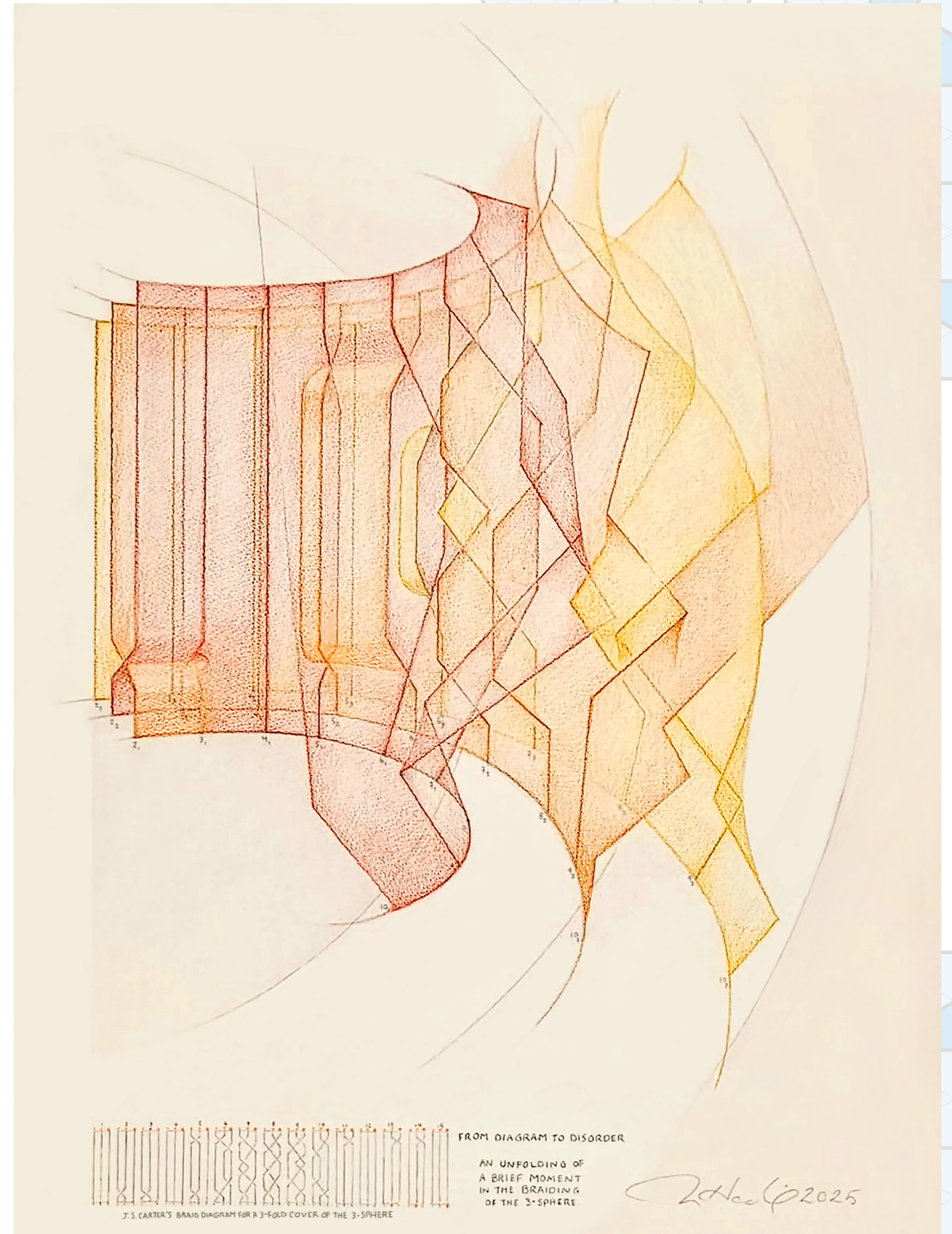
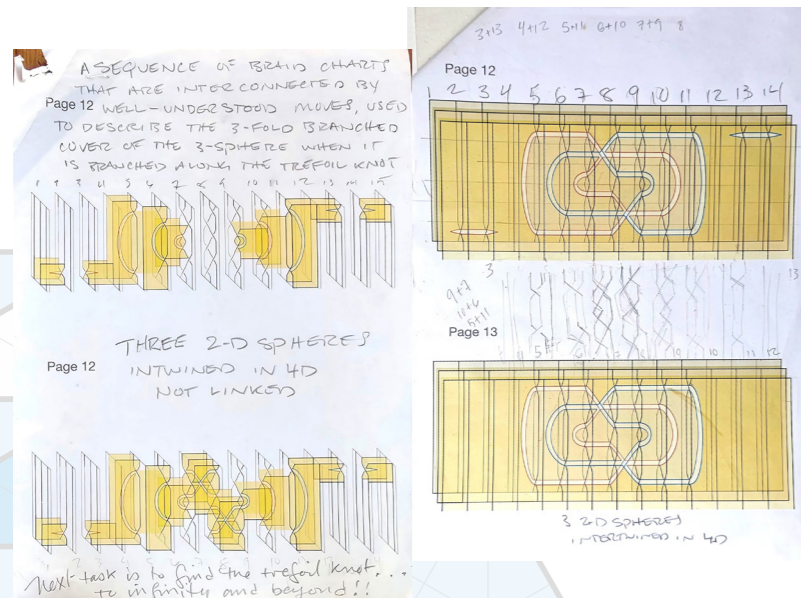
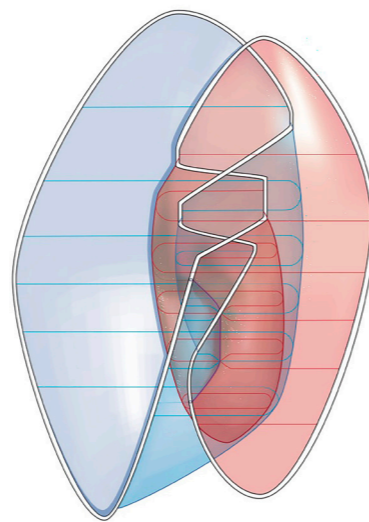
Cercle / Circle



Sphère / Sphere



Sphère de dimension 3 / 3-sphere



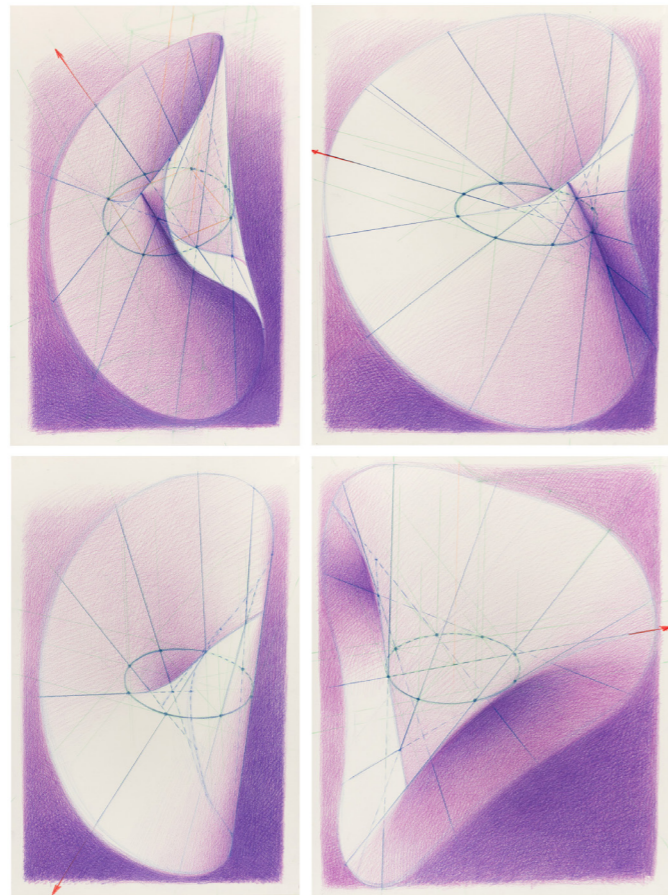
From Diagram to Disorder

2025

Pencil and colored pencils on paper, 77 x 57 cm

Flächen

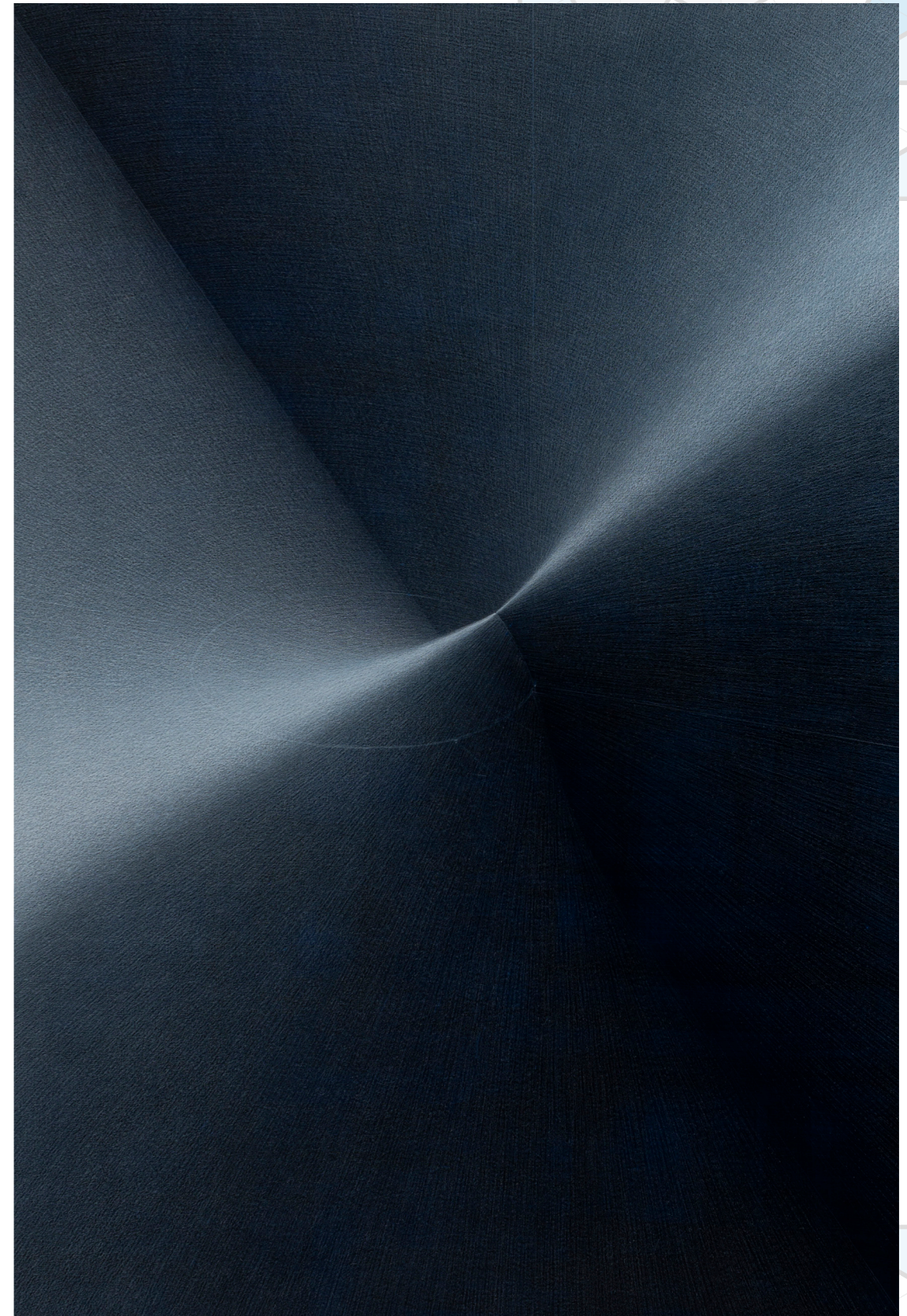
Sylvie Pic



My interest lies first and foremost in natural and living forms – those towards which we spontaneously feel empathy. Without biology, without living beings capable of feeling and thinking, there would be no mathematics!

Observation reveals regularities, constants and symmetries in all forms, living or not. This is where mathematics (geometry and topology) comes into my work: as a tool for studying and classifying these regularities, and then imagining other forms by varying the parameters.

In my work, there are no numerical calculations and no mechanical interventions; everything is done by hand. The repeated gesture of drawing embraces the form and allows it to be incorporated. What I feel and seek to capture is movement – the generation of form, its growth, and its transformations.



Flächen

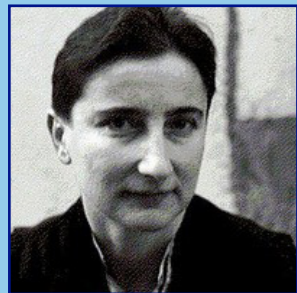
2025

White pencil on acrylic-coated paper, 110 x 75 cm

Flächen



Sylvie Pic



Born **1957** in Marseille

2013: Began teaching in the interdisciplinary Bachelor's program in Sciences and Humanities

2018–19: Together with philosopher Julien Bernard, coordinated the research program and exhibition *Biomorphism* at the Friche Belle de Mai (Marseille)

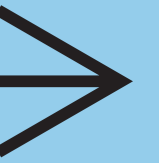
Numerous exhibitions, residencies, publications, and works in public and private collections in France and abroad

<http://www.documentsdartistes.org/pic>

The question, existential from the outset — yet no less aesthetic — concerns our relationship to the world and its form, its topology. Because we are bodies situated within an extended world, this relationship is spatial; yet this spatial character — this *having-a-place* — does not, *a priori*, entail or imply any form of mathematical treatment (particularly since no space pre-exists the relationship itself).

It is a fundamental intuition of continuity — yet this continuity is neither flat nor amorphous; it presents inflections, articulations, and knots (a style?). The question is to determine whether our presence in the world is defined by a relationship of exteriority (*partes extra partes*) or whether, conversely, we are woven from the very flesh of the world itself.

La surface de l'Envol



Ulysse Lacoste



Born **1981** in Paris; lives and works in Semur en Auxois (Bourgogne)

2002: Diploma Métiers d'arts, ENSAAMA metal workshop – Olivier de Serres (Paris)

2005: Member of the Lemplume collective studio, producing monumental sculpture for traveling exhibition

2012: Established studio in Côte d'Or (Young Talent Award, AAF regional winner)

2017: Created a series of mathematical models / poetic modules inspired by the IHP collection and maquettes for monumental sculptures

2018: First permanent installation in a public space (Évreux)

2022: Exceptional craftsmanship recognized by the Hermès and Rémy Cointreau foundations

2023: *Rulpidon* acquired by Maison Poincaré, IHP (Paris)

A sculptor steeped in science, Ulysse explores themes of balance, gravity, and movement. For the past 20 years, he has been developing a unique expertise in metalwork, combining traditional craftsmanship with contemporary and industrial techniques. These techniques result in simple forms born of geometric interplay.

His kinetic sculptures showcase the distortion of volumes, dancing with their shadows and traces. Within the concept of stability, he seeks instead to materialize the forces of immobility that cancel each other out: internal tension. He plays with physics to create an accessible and vibrant "Sculpture of Interactions."

He currently collaborates with several science and technology museums (Musée des Arts et Métiers, Palais de la Découverte, IHP, Exploradôme, etc.), designs sets and equipment for the circus world, exhibits monumental sculptures, and stages performances in public spaces.

Sensitive to the nuances of their environment, Ulysse's sculptures seek synthesis, are drawn to abstraction, and speak of simplicity.

Rémi Coulon



Born **1983** in Nancy, France

2010: Ph.D. in Mathematics from the University of Strasbourg

2010–2011: Researcher at the Max Planck Institute for Mathematics, Bonn, Germany

2011–2014: Assistant Professor at Vanderbilt University, Nashville, Tennessee, USA

2014: Junior Researcher at the CNRS

2019: Project *3-dimensional.space* on Thurston geometries (with Matsumoto,

Segerman, and Trettel)

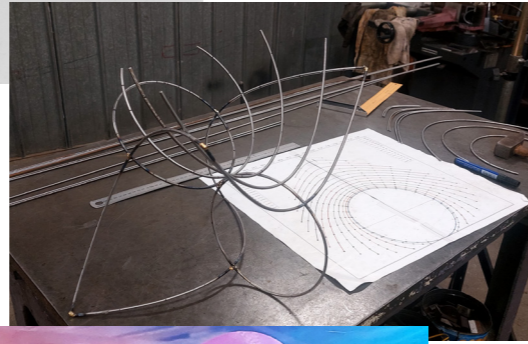
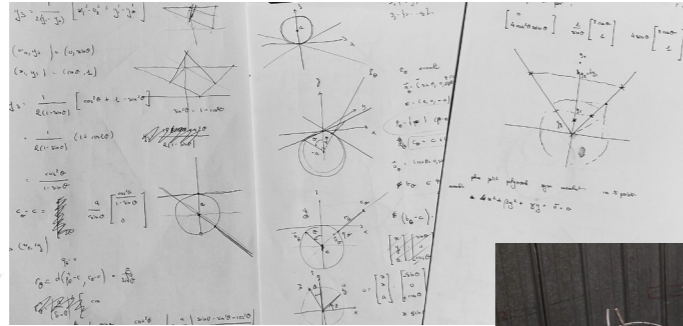
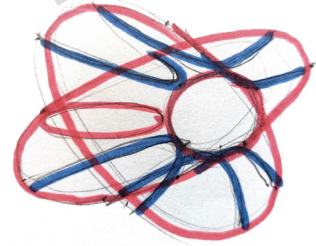
2023: Joined the Comité de culture mathématique at the Institut Henri Poincaré

2023: Senior Researcher at the CNRS

Rémi Coulon lives and works in Dijon.

La surface de l'Envol

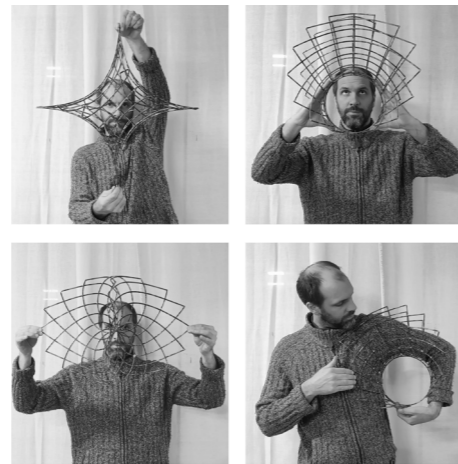
Ulysse Lacoste, Rémi Coulon



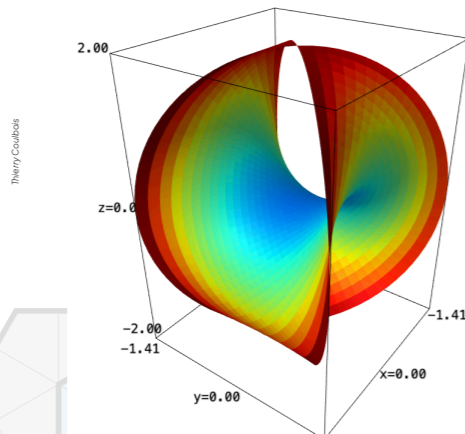
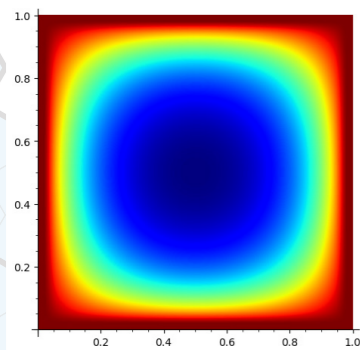
L'Envol is a small sculpture created by stretching a 10x10cm square copper plate. By progressively hammering from the centre towards the corners, the material deforms into four waves, and opposite corners of the square meet in pairs, forming a symmetrical shape composed of clearly defined curves.

To scale this form up to a monumental size, an investigation by mathematician Rémi Coulon made it possible to develop a model describing *l'Envol* as an algebraic surface. While the artist feels the metal deform under the hammer, the mathematician visualises the abstract parameters of a surface extending towards infinity.

This back-and-forth between materiality and abstraction has produced several models using planar wires or triangular surfaces, allowing a change of scale and leaving the form imprinted with mathematical analysis.



Remerciements particuliers
Jérémié Bernard
Thierry Coubois



La surface de l'Envol
2026
Steel, 130 x 130 x 130 cm

En recherchant la vague

Gaëtan Robillard

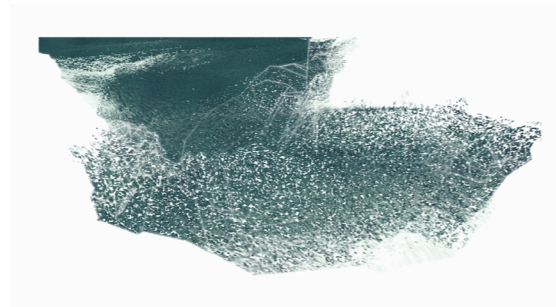
The installation is inspired by Henri Charrière's autobiography. Imprisoned in the penal colony of Cayenne in French Guiana, he used basic counting techniques to familiarise himself with the movement of the waves and then plan his escape. The work results from a dialogue between artistic creation and mathematical modeling. In collaboration with researchers in applied mathematics, artist Gaëtan Robillard explores the simulation of fluid phenomena using theoretical models.

The film shows the island landscape in which the simulation experiment unfolds: an ocean of particles confronts a rocky shore to which the camera itself seems captive. On the wall, the paper works bear the imprint of the equation that models the movement of fluids in time and space – the Navier-Stokes equation.

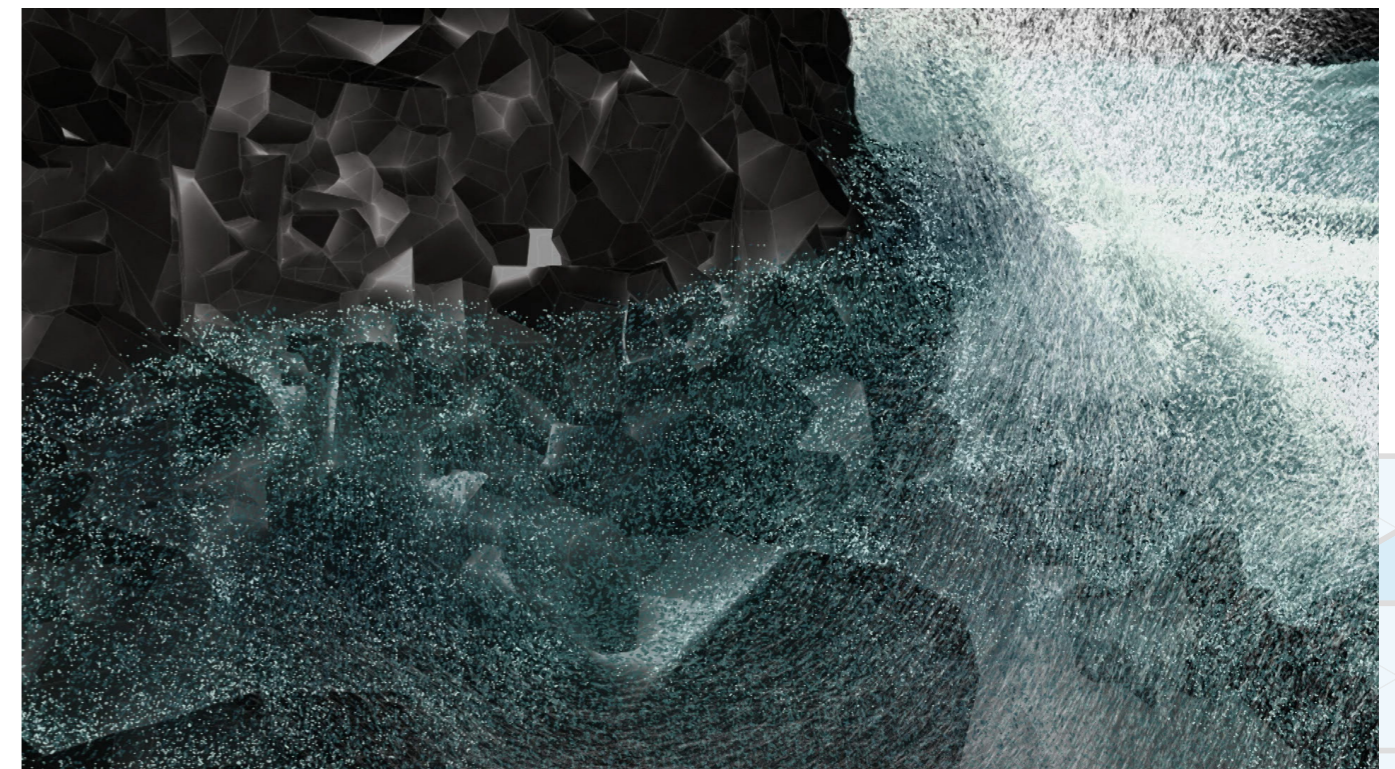
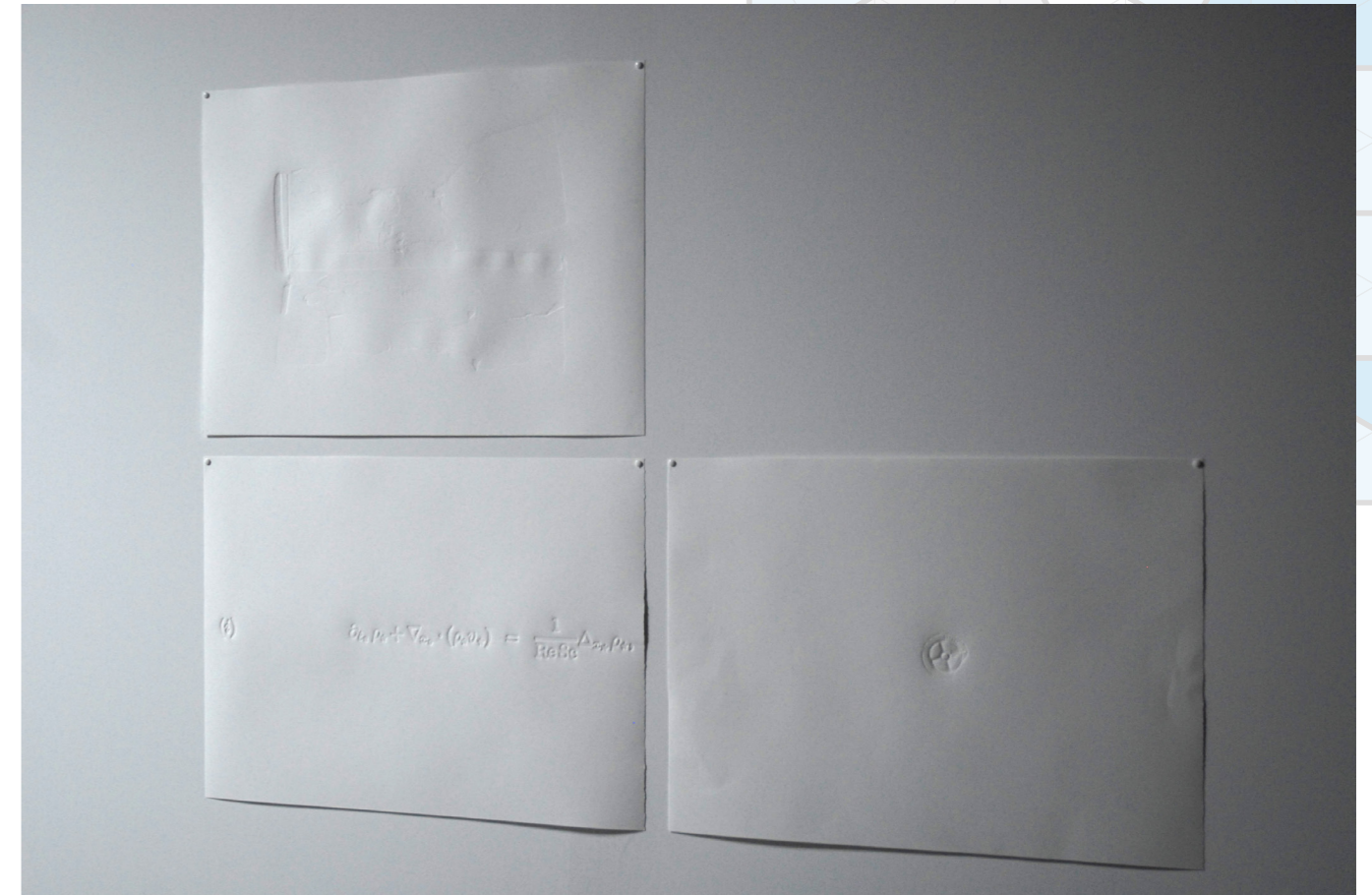
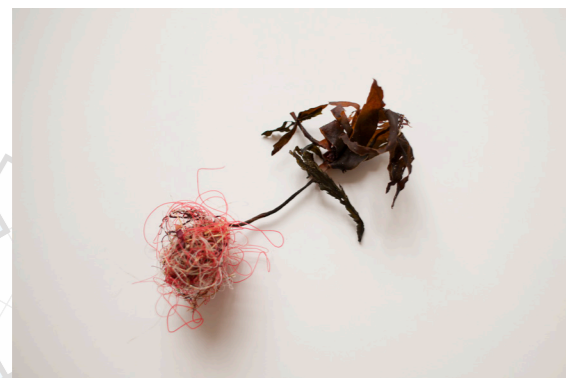
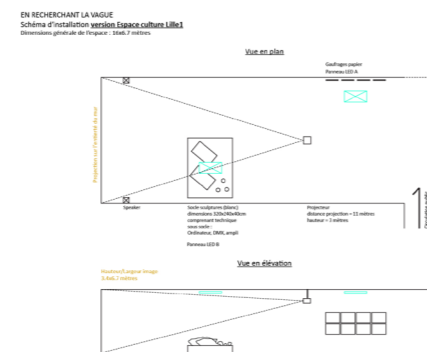
This installation: HD video projection 6'11" with sound and 8 images on embossed paper, 76x55 cm each, 2013. Additional elements for a complete installation: animated LED panels, CNC milled polystyrene on a pedestal, 320x240x40cm (overall installation may be of varying dimensions).

Based on interviews with Caterina Calgaro and Emmanuel Creusé - Paul Painlevé mathematics research group, Université Lille 1, and EPI SIMPAF Inria Lille Nord Europe.

A production of Le Fresnoy.
Images courtesy of Gaëtan Robillard.



$$\begin{cases} (i) & \rho_s \cdot \nabla_x \cdot (\rho_s v_s) = \frac{1}{\text{ReSc}} \Delta_x \rho_s, \\ (ii) & \rho_s (\partial_t v_s + (v_s \cdot \nabla_x) v_s) + \nabla_x p_s = \frac{1}{\text{Fr}^2} \rho_s g_s + \frac{1}{\text{Re}} \text{Div}_x (\mu_s (\rho_s) \nabla_x (v_s)) \\ & + \frac{1}{\text{ReSc}} \nabla_x \cdot (\nu_s - \nabla_x v_s^T) \nabla_x \rho_s, \\ & \nabla_x \cdot v_s = 0 \end{cases}$$



En recherchant la vague

2013

HD video projection 6'11", sound,
8 sheets of embossed paper, 76x55 cm each

En recherchant la vague



Gaëtan Robillard



Born **1982** in Ploemeur, France

Studied at art schools in Nantes and Lyon

2007: First solo exhibition, Sycomore Gallery, Paris

2013: Graduated from Le Fresnoy – Studio national des arts contemporains

2017: Exhibition at the Palais de Tokyo, Paris

2022: Ph.D. in Aesthetics, Science, and Technology of Art, Université Paris 8

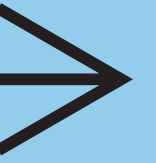
2023: BCS Futures Award (Lumen Prize) and the STARTS Prize (European Union)

2024: Best Art Paper Award at the SIGGRAPH International Conference (United States)

I am interested in how certain natural phenomena are transformed when translated into the languages of equations and of machines. For me, the wave has become a central motif: at once a physical movement, a mathematical object, and a computed image. In the installation *En recherchant la vague*, equations, numerical simulations, and objects found on the shore interact to explore different ways of approaching the same phenomenon.

The images in the central film are generated by fluid simulation: millions of particles move according to parameterized physical forces, producing an entirely computational ocean. The off-screen presence of philosopher Bernard Stiegler accompanies this landscape. His voice introduces a reflective dimension where the experience of computation merges with that of thought and narrative. The relief prints and (in the complete installation) large white volumes, produced by digital milling, extend the computed image into the viewer's space.

Triarchie matricielle



Bardula



BARDULA is a pseudonym created by an artist born in Zurich to a Ukrainian father and a Belgian mother, who lived in Brussels until 1993, New York until 2002, and Paris ever since.

She studied jewellery at the Academy of Fine Arts in Antwerp (Belgium) in **1988**. Bardula founded her collective in **2013** and works with other artists on collaborative pieces.

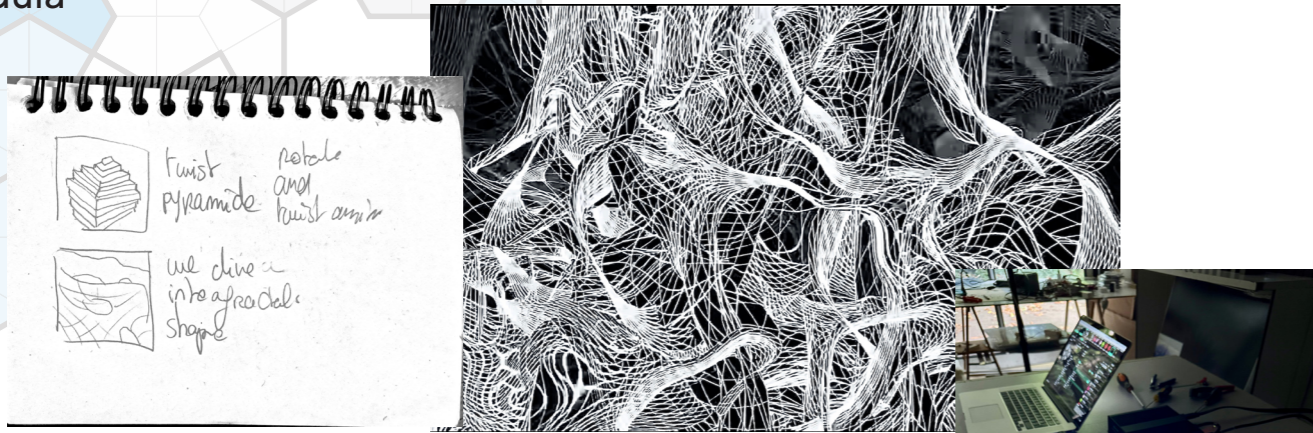
Bardula's work falls within the traditions of optical and kinetic art, and revisits these artistic movements with a particular interest in science and new technologies. Drawing on light, transparency, reflection, and virtual volume, she explores optical effects and mathematical figures.

Bardula uses material and light to study the correlation between two and three dimensions: her luminokinetic works focus on visual perception and the spatial experience created by light-based perspectives.

Since 2015, Bardula has presented work in over fifty exhibitions and is represented by seven galleries, all specializing in geometric abstraction, concrete art, optical art, and kinetic art: Galerie La Ligne (Basel), Valmore Studio d'Arte (Vicenza and Venice), Galerie Kellermann (Düsseldorf), Galerie Denise René (Paris), Galerie Nery Marino (Paris), Oliver Cole Gallery (Miami), and Galerie Wagner (Paris).

Triarchie matricielle

Bardula

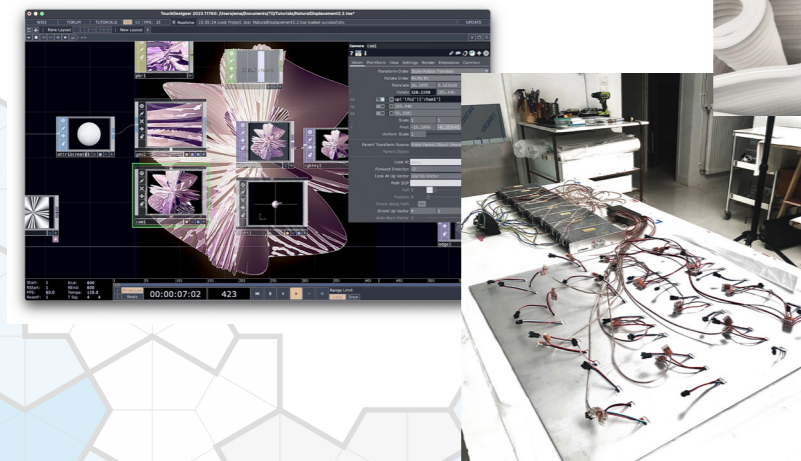
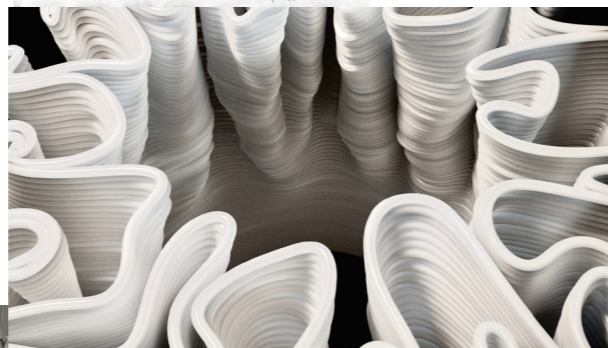
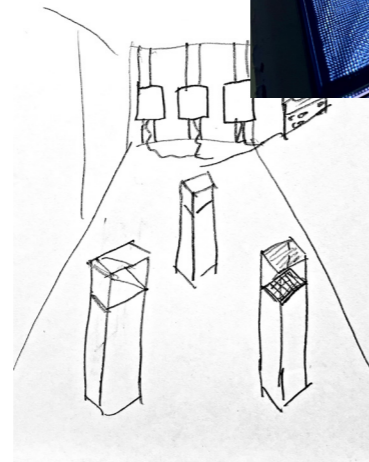


This work explores light, technology and optics through a vertical triptych composed of LED matrices.

The triptych presents geometric animations in perpetual renewal within a three-dimensional space. The diodes, spaced 2.5mm apart, create a schematic of the Euclidean plane: rows and columns of straight lines constructed from points. Semi-transparent mirrors placed above the diodes generate a virtual luminous space. Plane geometry becomes volume.

The luminous elements represent the colour of a pixel. The animations highlight the interaction between the points constructing the volume and the successive planes of optical reflection, illustrating how we explain and perceive the space around us.

The horizontal diptych, composed of large diodes spaced 10mm apart, illustrates the research process. Its animation is synchronised with that of the triptych.



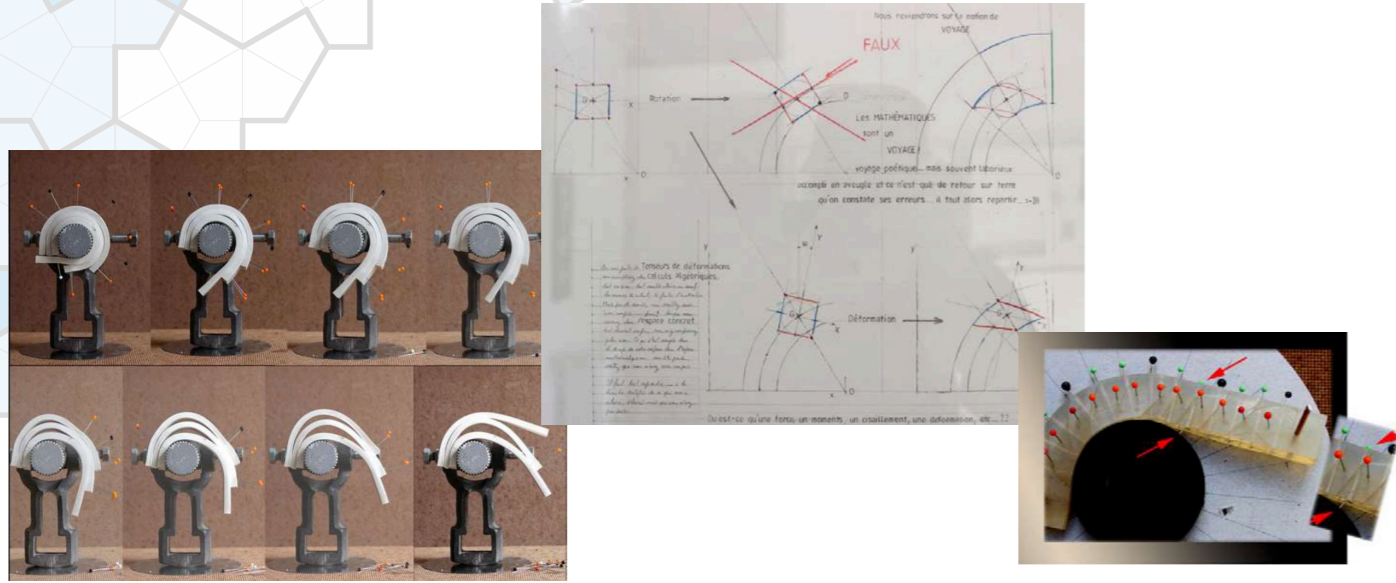
Triarchie matricielle

2026

Three LED matrix panels with lenses, 65x65 cm each

D'un espace... l'autre

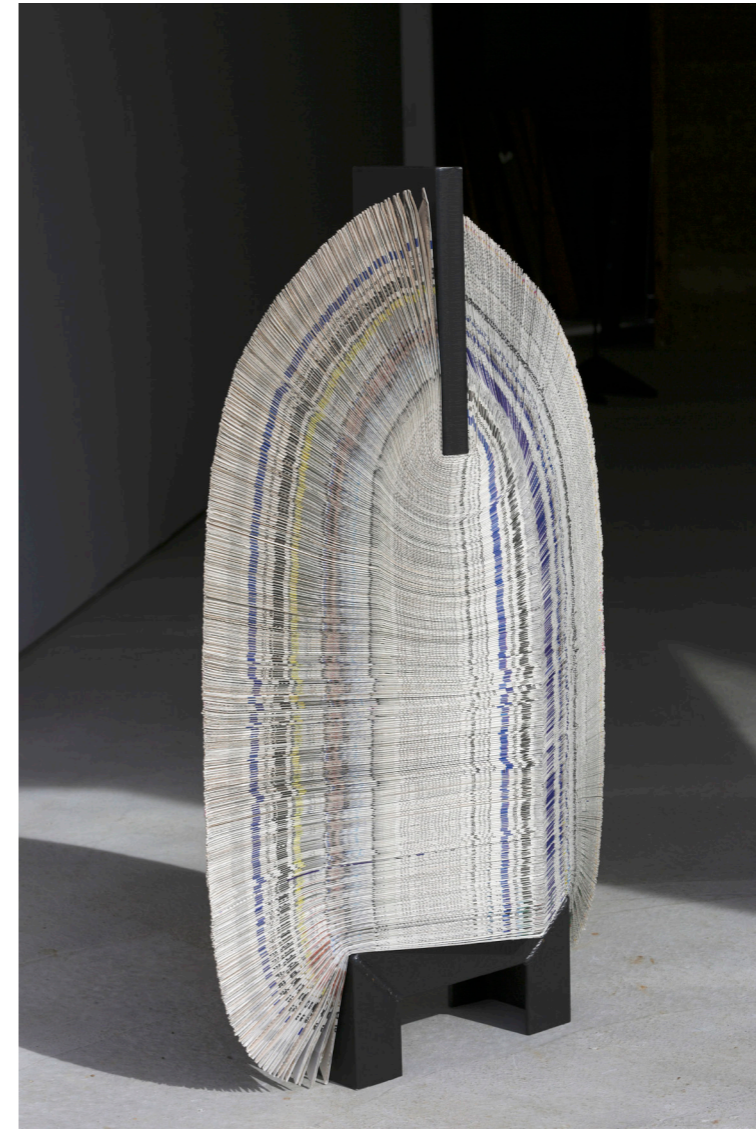
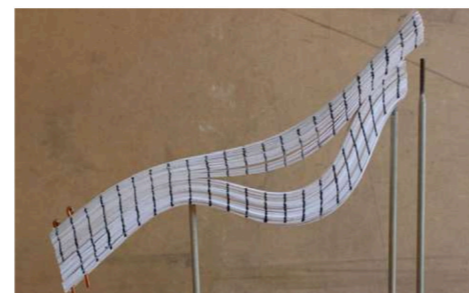
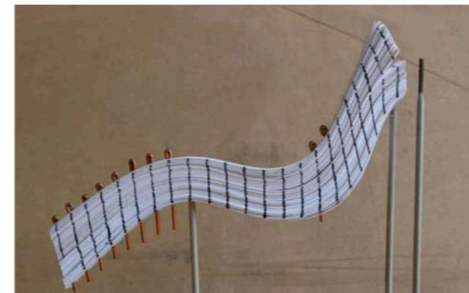
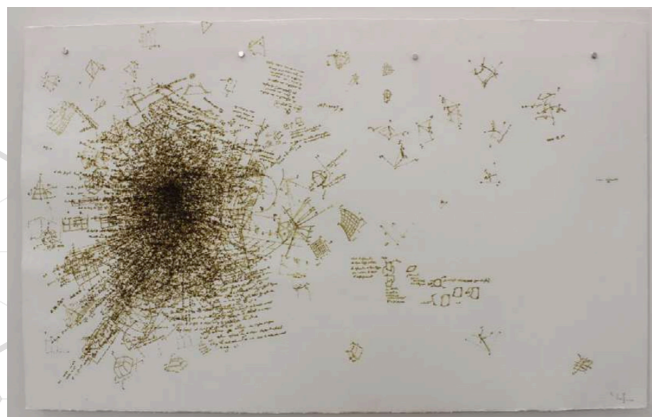
Pierre Gallais, Vincent Gontier



Vincent Gontier reads the news in his own way. By compressing stacks of newspapers or rereading pages with a magnifying glass in sunlight, he burns the text and reveals, through each of his actions, the traces left by compression and calcination.

From the striking effects caused by Vincent's compression of the pages, Pierre Gallais takes the opportunity to explore, both mathematically and poetically, the mechanical constraints which, while remaining invisible, give rise to visible deformations in the material. The result is a series of calculations and drawings.

This singular encounter with the everyday - current affairs for Vincent, familiar objects for Pierre - invites us to immerse ourselves in perceptual content that escapes us at first glance.



Compactus n°5

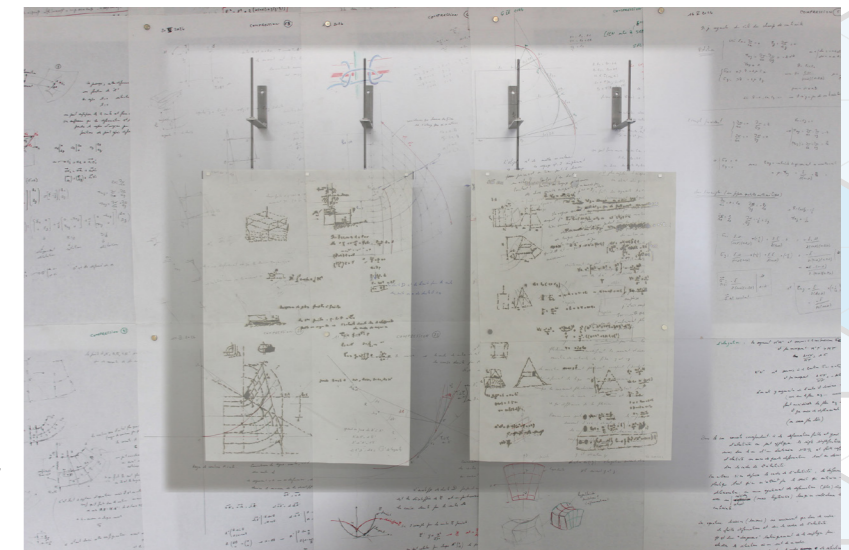
Vincent Gontier
2024

Paper and steel, 81.5 x 51.5 x 18 cm

**Pages d'études Pierre Gallais
brûlées à la loupe et au soleil**

Vincent Gontier
2024

Paper and sheet metal, 80x40x20cm



D'un espace... l'autre



Pierre Gallais



Born in Brittany in **1950**.

Completely unprepared for it, art and mathematics took root in a land devoid of any culture other than agriculture. Like a wild plant drawing sustenance from what it finds in its environment, I drew from mathematics and what I thought was art the elements that unconsciously resonated with my personality. To understand and make it my own... then express it in order to share.

A unique approach and journey led me to traverse a scientific landscape (École Centrale de Lyon and a Master's in Mathematics) while simultaneously practicing the visual arts as a self-taught artist.

These experiences allowed me to express myself equally well

- with music composers (acousmatic, electroacoustic: Pierre Henry, François Bayle, the INA-GRM music research group),
- through installations in public spaces (Hors Champ: Frac Rhône-Alpes / 1994; the Paillart site in Nièvre / 2000; *Voyage mathématique: sentier de montagne*),
- as well as for or with mathematicians (*Habillage de la sphère* with Étienne Ghys; *Sous la surface les maths* at the Musée des Arts et Métiers),
- and finally on solo personal projects (*surfaces seinpathiques*; *Fragile*),
- and even with poets.

In each of these situations, even if sometimes only partially visible, mathematics is present, like the framework of a building whose art is the roof.

For more details or information, see my website <https://institutdemathologie-pierregallais.fr>

Vincent Gontier



Born **1962** in Fourmies, Nord

Graduated from the Fine Arts Schools of Cherbourg and Rouen

1987: Grenoble, represented by the Antoine De Galbert Gallery

1990: I began exhibiting my work in France and abroad, notably in the United States during a workshop led by Anthony Caro, and in Great Britain, Poland, Finland at the Kuopio Museum, Switzerland, Belgium, New Zealand, and Quebec.

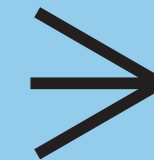
1995: The group exhibition *Couleurs et Constructions* at the Musée de Grenoble

A game of signs, a formal alphabet — the “Croquis-sculpture” (or *Compactus en réduction*) are a series of miniatures that test the plasticity of paper... The interplay of deformation, assembly, and constraint brings together two opposites, testing the limits of fragility and resilience.

This exploration of formal possibilities combines repurposed newspapers and steel volumes, scaled to one-tenth the dimensions of a standard newspaper. The size of the newspaper thus becomes a unit of measurement. On the scale of daily papers, the *Compactus* pieces take up space, and the steel modules constrain the newspapers in a silent struggle of forces.

On sunny days, I read my clippings from the daily *Le Monde* using a magnifying glass in the sunlight...

Les reflets d'une courbe elliptique



Frédéric Jean



Born **1975** in Le Mans, France

Graduated from the École Polytechnique; earned a Ph.D. in Mathematics

2016: Began exploring mathematical and generative art

2023: Joint Mathematics Meetings Art Exhibition, Boston

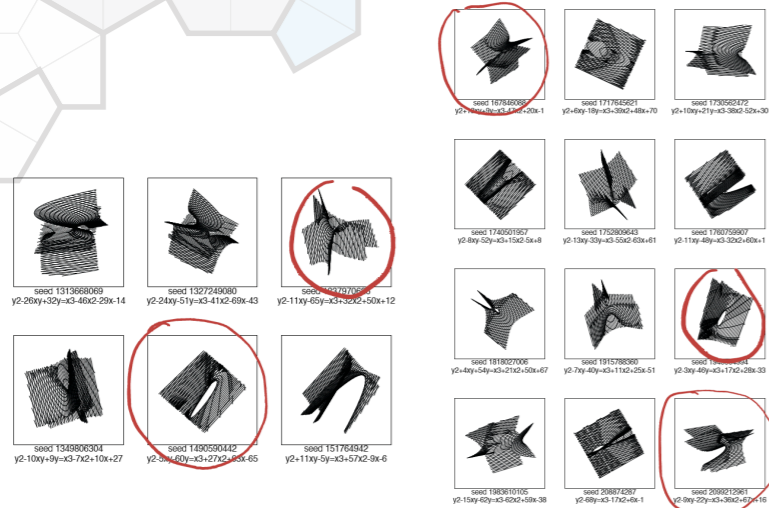
2025: Bridges, Mathematics and the Arts, Eindhoven

Long fascinated by the graphic and visual representation of abstract mathematical objects, I explore in my work how forms derived from calculation can become tangible and perceptible. The central question is so: how can I translate the abstract aesthetic and the pleasure I find in it into a visual and material experience? This exploration has naturally led me to the study of “elliptical curves.”

At the origin of *Reflets d'une courbe elliptique* lies an invisible form that exists only in the language of mathematics. The artwork reveals this abstraction as a reflection on the surface of our tangible reality. Each detail offers a distinct representation — sometimes partial or concealed — mirroring the way in which these objects gradually reveal themselves within theoretical space. The transparent medium allows for the illustration of the correspondences, resonances, and occlusions inherent to the study of these curves. It also invites the viewer to adopt multiple perspectives to uncover the various interpretations the work has to offer.

Les reflets d'une courbe elliptique

Frédéric Jean

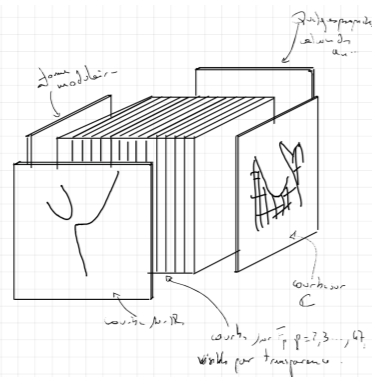
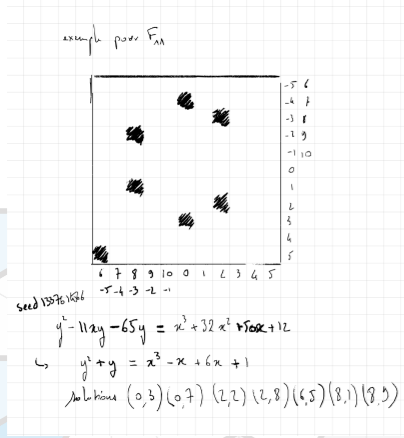
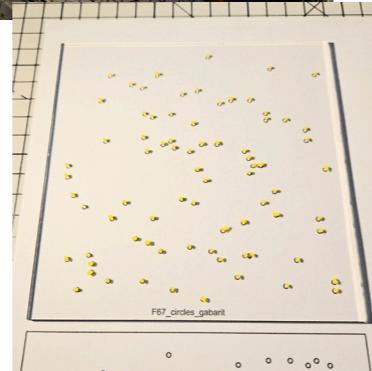


The transparent medium brings together several viewpoints on the same mathematical object. It creates correspondences, overlaps and concealments, revealing the underlying abstraction and its multiplicity of properties. This transparency invites the viewer to move around the work and explore its different perspectives.

Mathematically, this work is based on the equation:

$$y^2 + 19xy + 69y = x^3 - 67x^2 - 32x + 53.$$

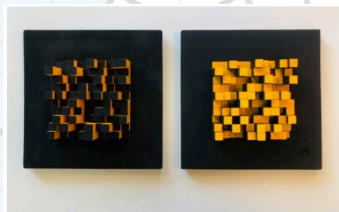
This is an example of an elliptic curve. It can be solved using different kinds of numbers: rational, real, complex, or elements of a finite field. Each of these produces a different representation of the curve. Above them, the modular form — derived from the complex representation — opens the whole to a deeper level of structure, in which various mathematical properties and tools are subtly integrated to illuminate the work.



Les reflets d'une courbe elliptique
2026
Acrylic with paint and digital printing, 40 x 40 x 20 cm

Bleue comme une orange

Natacha Caland



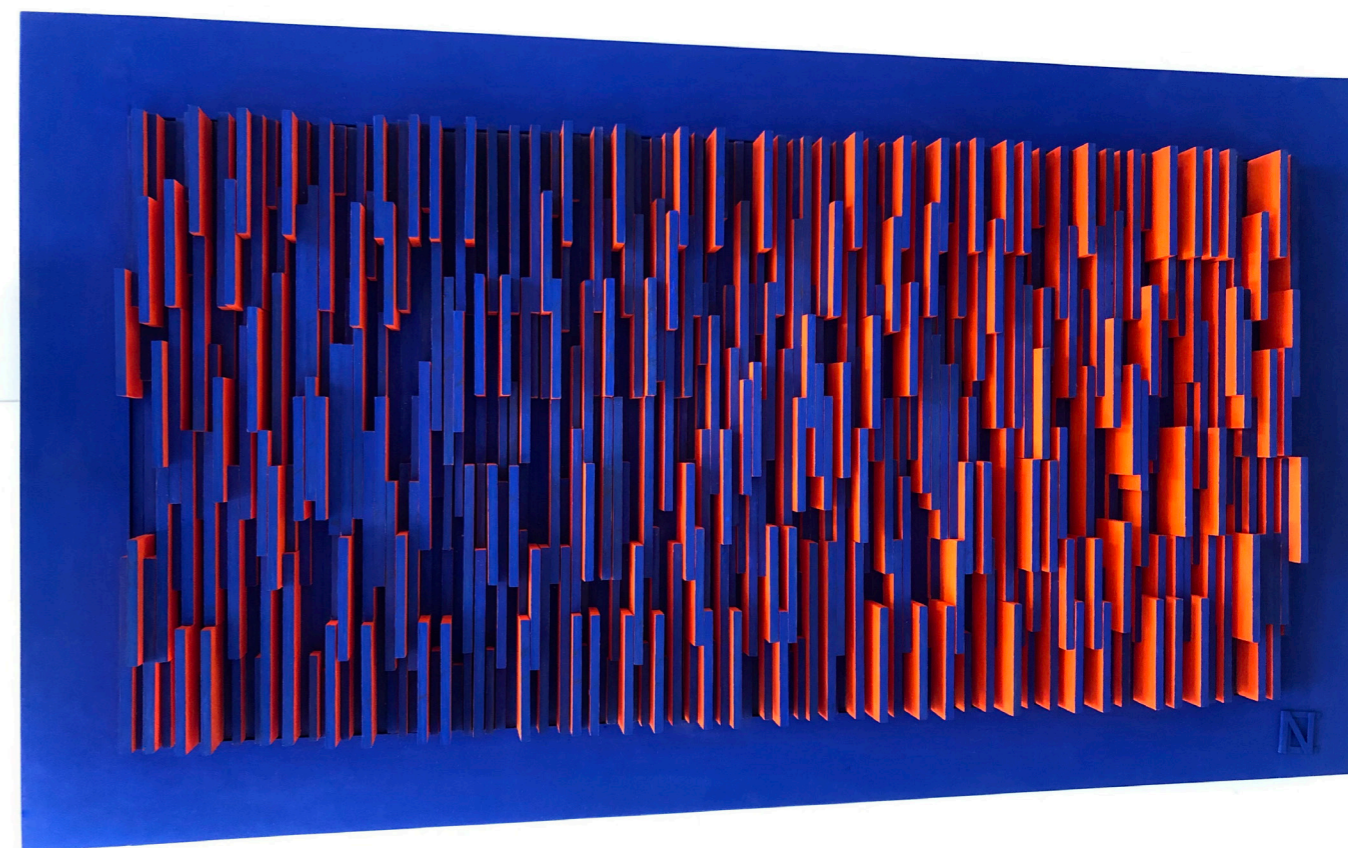
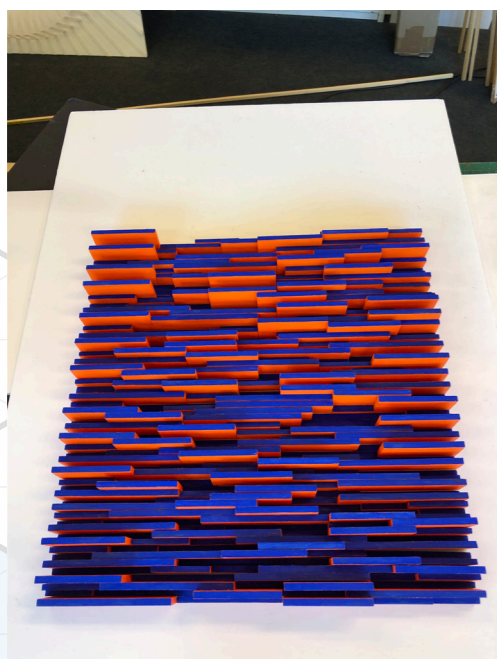
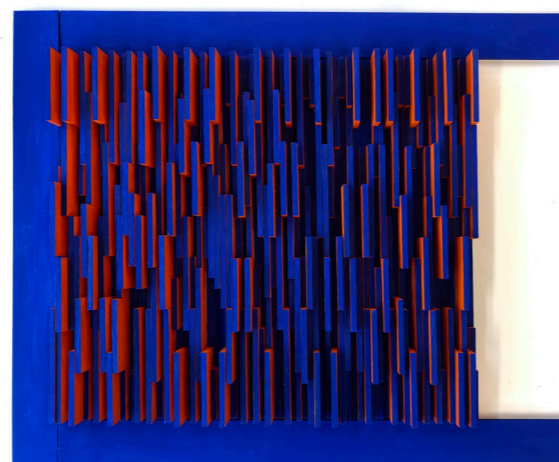
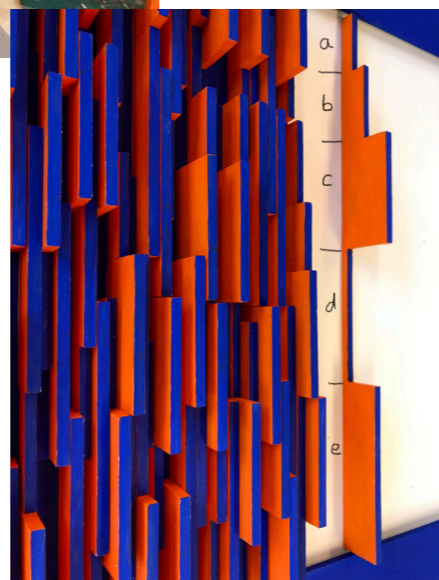
"luit pour elle
et aile pour lui"
(2025)



Viewed at an angle, the work fascinates us with its multiple combinations and induces a sense of vertigo. Viewed face on, perspective dissolves this complexity, offering instead a monochrome and soothing vision.

The work is based on the permutations of a set of five elements of varying length and thickness (lengths: a=4cm, b=5cm, c=7cm, d=9cm, e=11cm). There are 120 such permutations, which determines the number of vertical bars, themselves arranged in random order. The number of tableaux that could be obtained by choosing a different order for the 120 bars each time exceeds the number of elementary particles in the entire universe!

The artist explores the infinite possibilities of combinatorics and their poetic power to generate true aesthetic project at the heart of abstraction.



Bleue comme une orange

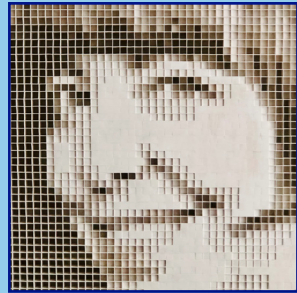
2025

Wood and acrylic collage, 85 x 48 x 6 cm

Bleue comme une orange



Natacha Caland



Born **1968** in Epinal, in the Vosges region

1990: Bachelor's degree in musicology from the University of Strasbourg

2005: DPLG architecture degree from ENSAS (École nationale supérieure d'architecture de Strasbourg)

2009: Devoted herself full-time to artistic work

2017: Selected by competition to create a public artwork at the hospital in Uznach (Switzerland): *Wall of Hope* (16m x 2m)

2023: Participated in the exhibition *Comme par hasard* at the Museum of Art and History in Cholet

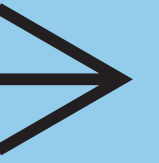
2025: L'Œil Prize at the Réalités Nouvelles 2025 fair

The artist captures the viewer's interest through a system of more or less random constructions. She often says that she "knits materials together stitch by stitch and row by row."

She seeks neither to provoke nor to unsettle, but rather to pique curiosity with this recent work based on the juxtaposition of five modules of different sizes organized according to a system of permutations not necessarily perceptible at first glance.

The potential combinations of these juxtaposed modules are fascinating and dizzying if viewed from an angle, while the frontal view dissolves this complexity through a perspective effect, yielding a monochromatic and soothing vision of the work. The two complementary colors, and their variations depending on the viewer's perspective, reveal the poetic power of a true aesthetic project at the heart of abstraction and invite us to reflect on the interplay of chance and necessity.

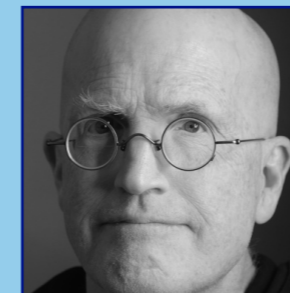
Misshapen chaos (of well-seeming forms)



Jean Schmitt is a multimedia artist and educator based in Fayetteville, Arkansas, and Assistant Professor in the Foundations Program at the University of Arkansas. She has exhibited internationally. In 2026 she participated in the Rigorous Illustrations - Their Creation and Evaluation for Mathematical Research workshop at the Institut Henri Poincaré, Paris, part of the thematic program Illustration as a Mathematical Research Technique. Her practice investigates how complex structures become perceptible through form. Working across drawing, ceramics, and interdisciplinary collaborations with mathematicians and technologists, she develops material translations of abstract systems and living processes, allowing pattern, rhythm, and change to be explored through making.
<https://jeanschmitt.net/>



Vincent Edwards, an MFA graduate of the Herron School of Art and Design, is a furniture and object designer integrating traditional craftsmanship with advanced digital design and fabrication. His work explores the dynamic interplay between skilled craft, technological tools, and material properties. Vincent's commitment to design innovation extends beyond individual pieces to developing collaborative design and fabrication systems that explore new modes of human-machine expression. He is the Director of Technology at the University of Arkansas School of Art and leads the 3D Design + Fabrication lab, where he fosters creative exploration of materials and processes. His notable clients include Runway Group, Crystal Bridges Museum, Indiana University, and Alice Walton.
<https://www.vincentedwardsdesign.com/>



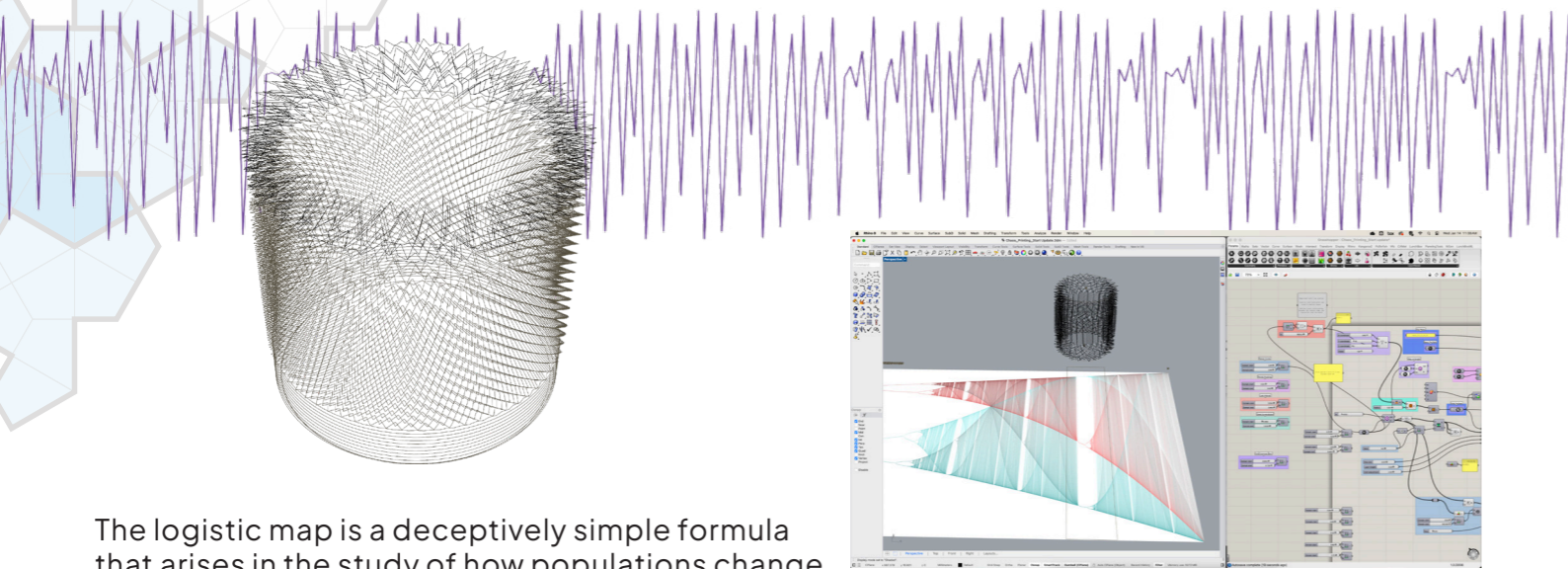
Matthew M. Conroy creates sound and visual art with an emphasis on rule-based methods and noise. He is interested in naive signal processing, code minimalism and the digital application of tape techniques. He uses scratch-built code, Csound, field recordings and occasional homemade circuitry. He has a PhD in mathematics from the University of Colorado and has taught at the University of Washington since 2001. He lives in Seattle.
<https://matthewconroy.com>



Edmund Harriss is a Mathematician, Artist, Teacher, Maker, and Assistant Professor in Mathematics and Art at the University of Arkansas. He works to corrupt people into mathematical thinking and experiences through toys, colouring images, and more. We do so much work to show that mathematics is worthy and useful (as it is), but less to show the deep sense of joy and play that inspires so many mathematicians in their work. He believes mathematical art and toys are paths into maths that can both lead to deep ideas and motivate the rigorous study required to capture them.
<https://maxwelldemon.com/>

Misshapen chaos (of well-seeming forms)

Vincent Edwards, Edmund Harriss, Jean Schmitt, Matthew Conroy

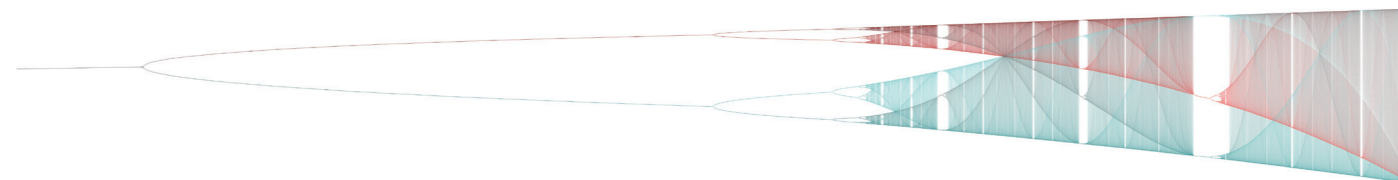
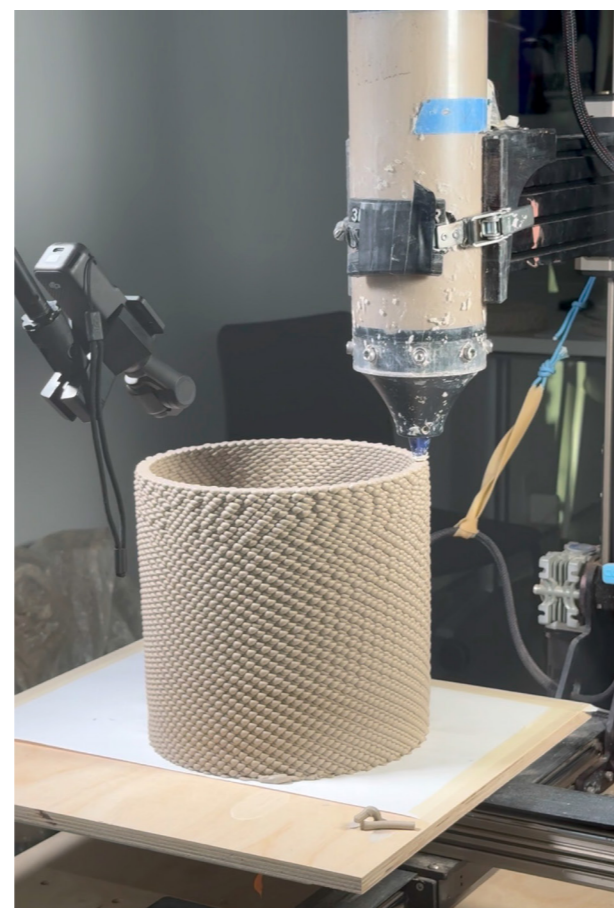


The logistic map is a deceptively simple formula that arises in the study of how populations change over time, that can lead to very complex behavior.

How does its order give way to chaos? This work investigates the period-doubling bifurcation: Equations become machine code controlling a clay 3D printer, generating forms that track increasing instability as parameters shift.

We anticipated the clay form visibly collapsing during the transition to chaos, but no such behavior emerged organically. We could not find a way to realise this from the mathematical rigor, rather than forcing it artificially.

The bifurcation diagram makes the transition to chaos explicit; on the vessel's surface, the chaos is seen directly. The sonification shows the rhythmic patterns in the period doubling cascade. None of these gives a complete picture of the logistic map's changes, but between them we get a richer experience than any one form provides.



Misshapen chaos (of well-seeming forms)

2026

3D-printed ceramic pots, 140 x 70 x 30cm

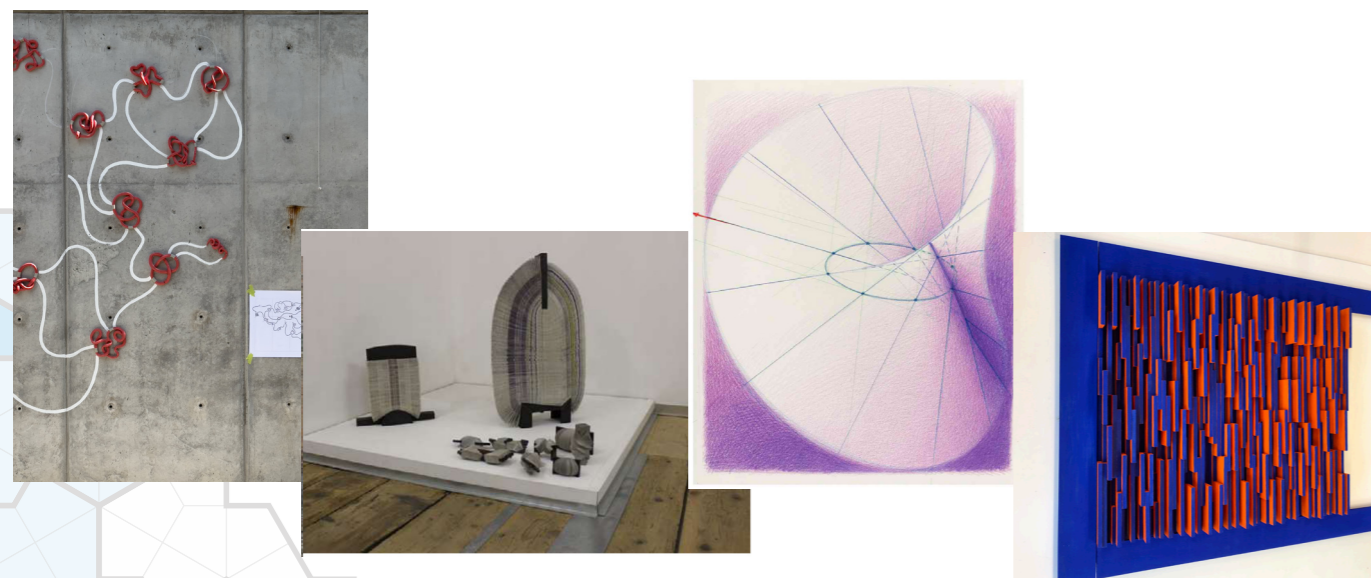
Ink-jet printed diagrams, 240 x 30 cm

This is not the end...

You are near the end of what this brochure has to show, but not the end of the process of creation. Hopefully, these pieces have inspired interesting artistic and mathematical thoughts in you, or at least made you think about the human effort and creativity that go into polished theorems and creative artworks. Perhaps you're even considering the human processes behind the other "finished" artefacts we see around us in the world. They too are just steps in an ongoing process.

This show itself developed out of a trimester program at the Institut Henri Poincaré on illustration as a mathematical research technique. Asking how ideas and processes from art could help push the boundaries of mathematical understanding. In its final section, the exhibition included artefacts and works in progress from the participants in that trimester, showing how that work continues.

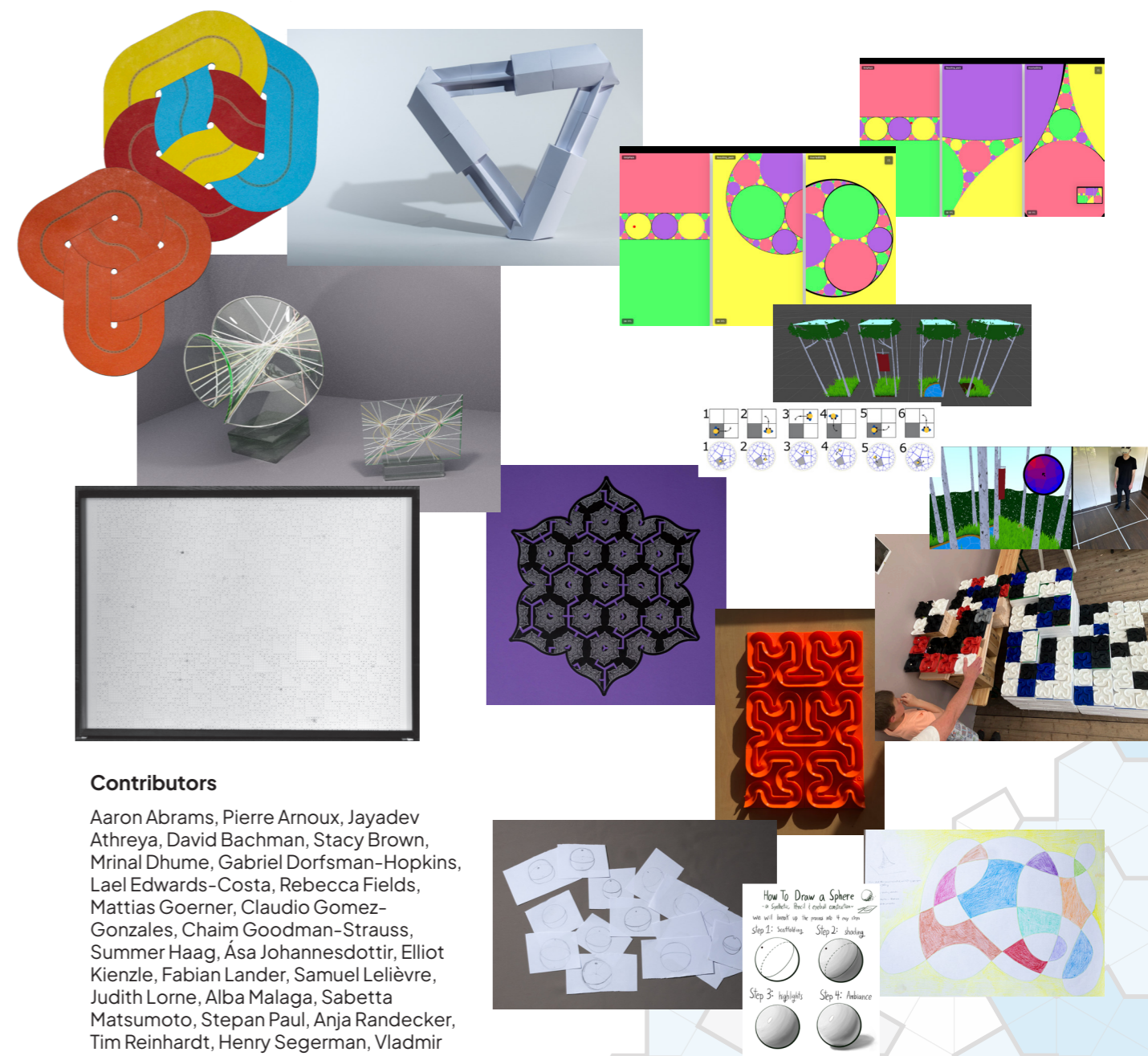
The creative process never ends.



Programme scientifique de l'IHP « Illustration as a Mathematical Research Technique »

5 January 2026 - 3 April 2026

Mathematicians engage with their mathematics in many different ways; illustration and making art can be a central part of the research process. Making concepts visible or physical is not only helpful in explaining established ideas, but also in looking for new ones. Over the past several weeks and months, a group of mathematicians worked in the Borel building of the IHP, directly facing the Maison Poincaré. Below you can see some of the objects, sketches and prototypes they produced, representing ideas just forming, newly discovered, or under refinement and development. These artefacts allow a rare glimpse of new ideas as they form, before they have crystallized into an academic article or presentation. Perhaps you can see in them echoes of moments when your own creativity manifested itself.



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The background image on these pages is the monotile
dubbed the "hat," discovered by Dave Smith, which led to
a publication with coauthors Samuel Myers, Craig S. Kaplan
and Chaim Goodman-Strauss. For more information, see:

<https://cs.uwaterloo.ca/~csk/hat/>



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Monday, Tuesday, Thursday, and Friday from 9:30 AM to 5:30 PM

Saturday from 10:00 AM to 6:00 PM



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