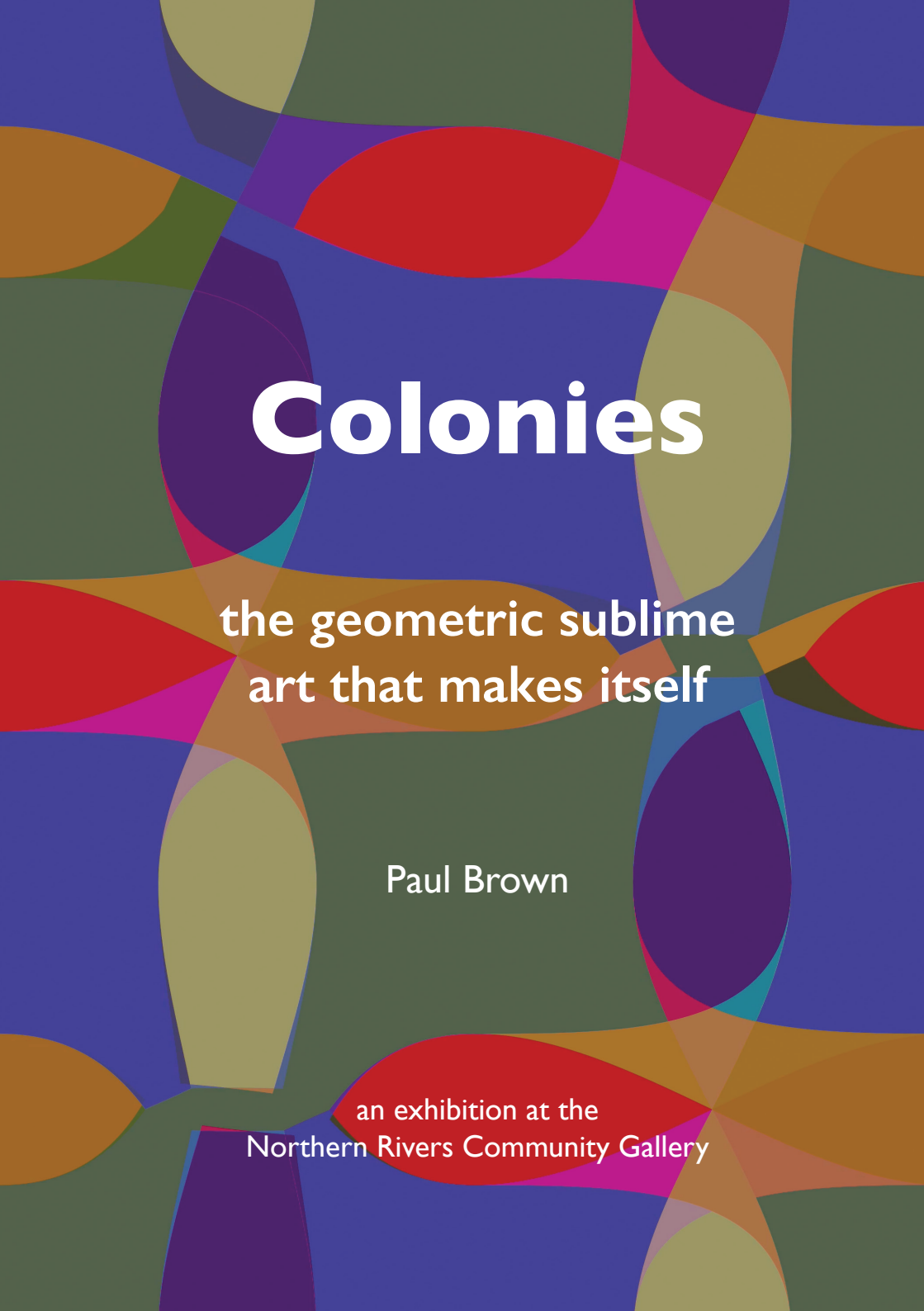
Colonies
the geometric sublime
art that makes itself
Paul Brown
an exhibition at the
Northern Rivers Community Gallery

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The Geometric Sublime
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an exhibition by
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Northern Rivers Community Gallery
Ballina

30 April to 21 June 2026

nrcg Northern Rivers Community Gallery & Ignite Studios

The Northern Rivers Community Gallery (NRCG) is pleased to present *Colonies: The Geometric Sublime – Art That Makes Itself* an exhibition by pioneering digital artist Paul Brown.

Spanning a distinguished international career at the forefront of generative and computational art, Paul Brown has long explored the intersections between art, science, and technology. Now a resident of the Northern Rivers region, his exhibition brings to NRCG a compelling body of work that continues his investigations into systems, emergence, and the aesthetics of self-organising structures.

Established in 2007 in the heritage-listed former Ballina Council Chambers, NRCG is a creative initiative of Ballina Shire Council. Over nearly two decades, the Gallery has evolved from a community-run gallery into a significant regional arts organisation comprising contemporary gallery spaces, the multi-arts facility, Ignite Studios, as well as a gallery shop, and café. Together, these spaces foster a dynamic environment for artistic practice, cultural exchange, and creative engagement across the region.

Presenting Brown's work within NRCG's main gallery space feels particularly resonant. The building (warm, storied, and imbued with a history of civic participation) echoes the conceptual foundations of Brown's practice. His generative artworks propose living, evolving systems: geometric colonies that assemble, interact, and transform in ways that exceed the artist's direct hand. These digital organisms, governed by coded rules yet capable of producing the unexpected, offer a poetic parallel to the gallery's own role as a site where community, heritage, and creativity continuously intersect and transform beyond their original structures.

This synergy underscores a deeper sense of belonging between Brown's work and NRCG's heritage architecture. Since its inception, the building has functioned as a communal hub, a place where relationships form and shared experiences take shape. Similarly, Brown's programmed agents operate through neighbourly interactions—each element responding, connecting, and collaborating to generate emergent forms and rhythmic movements beyond individual intention.

In this way, Brown's practice invites viewers to witness art that materialises through collective behaviour: an evolving, self-determining sublime. Each artwork becomes a testament to the generative potential of connection, mirroring both the building's history and the community it continues to serve.

Northern Rivers Community Gallery, photo by Kate Holmes

The pioneering elements of computer-based art, often considered niche or fringe, have a broad and enduring legacy in the creative and visual arts. Much like the aleatoric snowball drawings by Andy Goldsworthy, the installations of Céleste Boursier-Mougenot or Cameron Robbin's drawing machines, Brown's work involves the setting up of systems and structures and then allowing them to execute their forms in their own ways over time. Here the artist's hand is present but does not need to control every element of production and output. This approach is refreshingly contrary to the prevailing notions of the artist as singular creator. These processes and materialities offer provocative conversations about ideas of authorship and creativity that continue to benefit arts discourse.

It has been a pleasure to work with Paul Brown on this exhibition. We look forward to seeing visitors engage with Paul's work and NRCG is excited to present and share this exceptional catalogue of digital artworks, prints, and A-Life programs with its audience, particularly in the Northern Rivers region.

Imbi Davidson | *NRCG Gallery Coordinator*
Travis Paterson | *NRCG Exhibitions Officer*

Making Visible Abstract Thoughts: Paul Brown's Art as Process

Catherine Mason

> *Although the processes I create are based on simple structures, their emergent and iterative properties are also potentially infinite, and it is this potential that invokes sublimity: whole universes of discourse contained in just a few simple marks.* Paul Brown

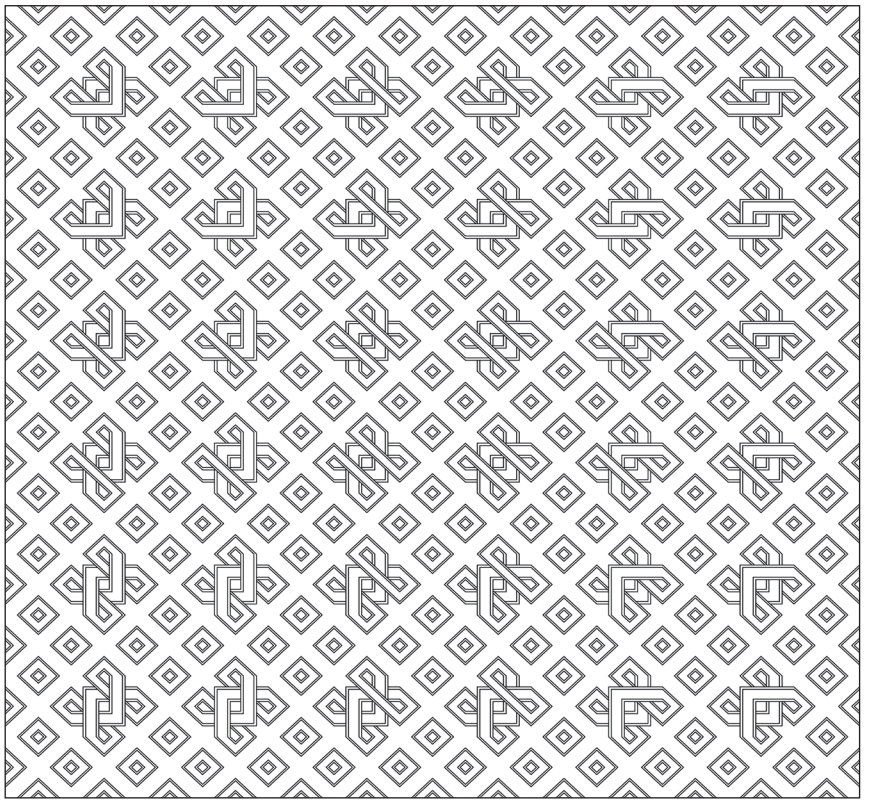
Paul Brown has spent over six decades exploring the intersection of art and technology through systems based on mathematical logic. A pioneer of computer-based art since the 1970s, he was an early adopter of artificial life principles (a-life) and the learning systems that anticipate today's artificial intelligence. Rather than depicting the natural world, Brown studies its processes by devising mathematical systems that generate entire universes of new form and composition. For him, process is both a way of thinking and a means of creation—mathematics becomes not just a tool but a language for communicating ideas about humanity's relationship to the ordered cosmos. He makes intangible ideas visible, transforming the unseen laws of logic into palpable artistic experiences.

As Brown explains: "My work explores a graphic universe: it takes simple units and combines them to create emergent phenomena—new universes of image and thought. It doesn't represent the universe, and neither does it abstract from the universe. It creates its own universe—one that has metaphorical parallels with all other universes."[1] This approach aligns with 20th-century modernism's emphasis on experimentation, abstraction, and the objectification of artistic process, reflecting modern industrial and technological life.

Brown's artistic roots lie in Constructivism, De Stijl, and particularly Art Concret. Theo van Doesburg's 1930 manifesto[2] proclaimed that nothing is more concrete than a line, colour, or flat plane—art conceived by the mind before execution. Swiss artist Max Bill, a key proponent of Concrete Art, described it as logically structured, autonomous, and self-referential: "concrete composition is composition which develops according to its own means and its own rules, without basing itself on natural phenomena, without

1 Paul Brown, Tracey M. Benson, "From Thought-Forms to Art Concret: Tracey M. Benson Interviews Paul Brown", *Leonardo* 2023; 56 (6), p.629–634

2 Theo van Doesburg, *Concrete Art Manifesto,* 1930, https://monoskop.org/images/9/91/Concrete_Art_Manifesto_1930.pdf



36 Knots for Fu Hsi, Plotter Drawing, 1979

transforming those phenomena, that is, without the intervention of a process of abstraction."[3] Bill's Bauhaus background, with its integration of art, science, and technology, profoundly influenced Brown's conviction to create tangible forms of abstract ideas.

Like Bill, Brown uses mathematics as a neutralising compositional device to transcend personal expression and achieve universal communication. His technique emphasises clarity and mechanical precision across paint, print, and moving image. Through programming logic, he creates computational entities that drive the work, ensuring long-term behaviour that is both interesting and

3 Max Bill, quoted in Collection Pictet: https://www.collection.pictet/artwork/veranderung-von-weiss-violett see also: https://www.collection.pictet/artist/bill

non-repetitive. His lifelong ambition is to create A-life and AI agents capable of producing artworks autonomously—art that truly makes itself.

Art and Technology

Art has always been inseparable from technology, and the post-World War II period brought unprecedented change. Artists from the mid-1950s began employing technological systems to extend art's meaning and functionality. Cybernetics—the study of how machine, social, and biological systems interact—offered new frameworks for art production, appealing to those already thinking systematically. Concepts like behaviour, process, and interdependence entered the artistic realm. As Brown notes, "Systems and Conceptual artists embraced these ideas, and in the 1970s a new generation began to encode these concepts of process using the formal linguistics made possible by computing."[4]

The groundbreaking 1968 exhibition Cybernetic Serendipity at London's ICA profoundly inspired Brown. The first comprehensive show exploring computing and the arts, it featured computer-generated drawings, cybernetic devices, and robotic art. Brown encountered Edward Ihnatowicz's interactive SAM (Sound Activated Mobile)[5], which predated artificial life as a discipline by decades. The Computer Arts Society, founded in the exhibition's wake and of which Brown remains a long-time member, provided a forum for artists exploring humanity and technology through art.[6]

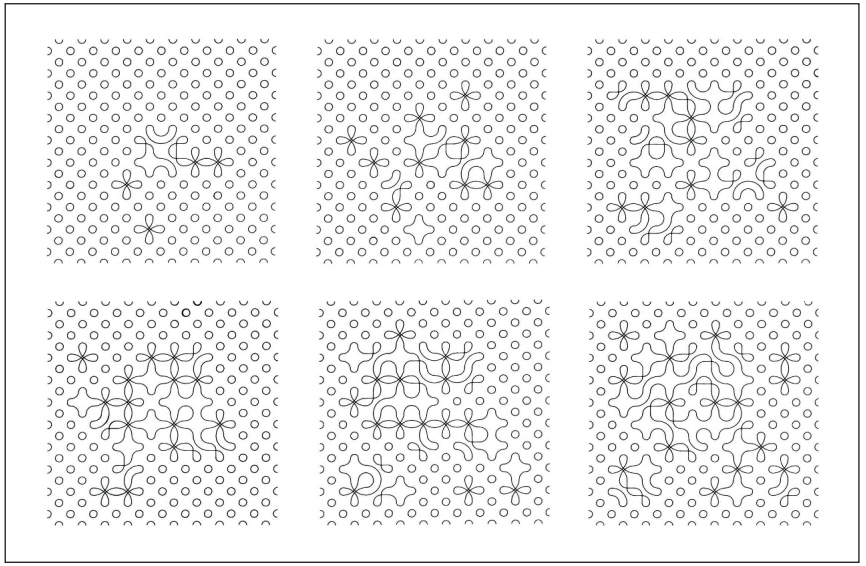
Brown first encountered computing at Liverpool Polytechnic, working between the Maths, Engineering, and Sculpture departments. Learning FORTRAN and other languages, using punched cards and paper tape, he produced plotter drawings that automated his previous hand-drawn work. An example from this period, Untitled Computer Aided Drawing (1975) (p. 19), is now in the Victoria & Albert Museum.

American artist Sol LeWitt was another early inspiration. LeWitt's artworks—written instructions for work executed by others—excluded personal expression. He said, "the idea becomes the machine that makes the

4 Paul Brown, "Notes Towards a History of Art, Code and Autonomy", *Interalia Magazine,* April 2016

5 Edward Ihnatowicz, *SAM – Sound Activated Mobile*, http://www.senster.com/ihnatowicz/SAM/sam2.htm

6 For more about this history see Catherine Mason, *A Computer in the Art Room: The Origins of British Computer Arts 1950-1980*, (Norfolk: JJG, 2008, eBook 2021)



LifeMods, Six Plotter Drawings, 1978

art."[7] Brown valued LeWitt's understanding that artwork comprises input (idea), process (system), and output (object)—including both conception and execution. In computer art, it's the program under the artist's direction that creates the work.

The Geometric Sublime

Brown's artworks begin with basic geometry governed by logical rules operating like formal grammars. He might take three simple elements, generate all possible permutations through rotation and reflection, and reduce them to unique arrangements. This process appears in his book The Complete Grammar, (p. 27) which builds a complete set of permutations from first principles. This recalls Max Bill's concept of art as an experimental field for testing aesthetic ideas through rational structure, describing his technique as "shaping the environment according to the morphological method"[8]—finding the best possible solution for each task.

7 Sol Lewitt, "Paragraphs on Conceptual art", *Artforum* 5, Summer, 1967, p.80

8 Max Bill, quoted in Haus Konstruktiv: https://www.hauskonstruktiv.ch/en/artists/max-bill

Colours are carefully selected to harmonise with geometric shapes and create dynamic ambiguity between vertical, horizontal, and diagonal elements, referencing Piet Mondrian's universal harmony through pure abstraction. In the 1970s, before colour computing, he used Liquitex Munsell acrylics to hand-colour computed images on canvas using computer-generated colour mixes based on hue, value, and chroma.

Brown coined *The Geometric Sublime* to describe work based on mathematical magic[9]. Consider Pi (π)—the irrational ratio between a circle's diameter and circumference, whose decimal expansion is infinite and non-repeating. "By converting individual digits to colours and using them to populate successive frames," Brown explains, "it's possible to generate an infinite sequence that will include every image that has ever been or ever will be made. The problem is that we don't know where to look." Like 18th-century concepts of the sublime, the immensity of such numerical systems threatens individual autonomy. Brown's art creates pathways through this vast universe, helping us navigate complexity.

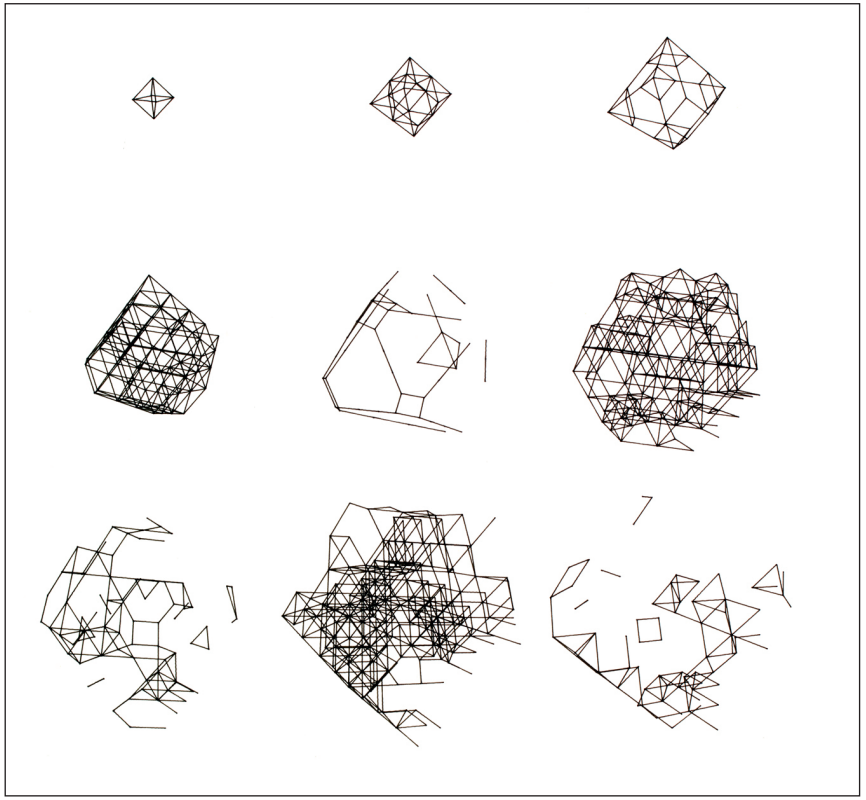
Brown's long-term interest in the *I Ching or Book of Changes*[10] also informs his work. The ancient Chinese oracular cosmology presents Ying and Yang as a symbolic microcosm where change is the only constant. Brown constructs shapes and compositions in finite sets influenced by the I Ching's combinatorial structures (p. 5 & back cover). Similarly, sacred geometry—particularly the golden ratio Phi (ø=1.618), representing perfect balance—connects mathematics to spiritual perfection. Embedded in natural growth and spiral structures, this proportion has been considered aesthetically pleasing and intimately connected with the universe since antiquity.

A-Life Art

At the Slade School of Fine Art, University College London, in the late 1970s, Brown consolidated his methodology using their pioneering computing facility. He began using cellular automata (CA), which enable unending imagery beyond human conception. CA use deterministic rules to define a cell's next state based on its neighbours—a framework originally proposed by Stanislaw Ulam

9 From the artist's reading of Jon McCormack and Alan Dorin, "Art, Emergence, and the Computational Sublime", *Proceedings of The Second International Conference on Generative Systems in the Electronic Arts*, Vic. Australia: Monash University, 2001, p.67-81

10 Richard Wilhelm & Cary F Baynes (trans), *The I Ching or Book of Changes* (Bollingen Series), 1967



Big Dim / 0 10 10 0 0 0 0 200, 120 / 11, 969, Plotter Drawing, 1979

and John von Neumann in the 1940s—that informed early AI research.

A-life as a science emerged in the late 1980s, studying artificial systems exhibiting behaviour characteristic of living systems through simulated evolutionary processes[11]. John Conway's Game of Life (1970)[12] demonstrated how simple CA generate unpredictable patterns—life-like dynamics emerging from simple rules. Brown understands life as a dynamic process interacting with its environment.

11 Mitchell Whitelaw, *Metacreation: Art and Artificial Life*, Cambridge, MA: MIT Press, 2004

12 Martin Gardner, "The fantastic combinations of John Conway's new solitaire game 'life'" in "Mathematical Games" *Scientific American*, October 1970, Vol. 223, no. 4. pp. 120-123. https://web.stanford.edu/class/sts145/Library/life.pdf

His series drawings, like LifeMods (1978) (p. 7) and the 3D Big Dim series (1979) (p. 9), demonstrate CA behaviour—oscillating between over and under population, each iteration based on the previous according to the automaton rules. Rather than being designed, these works evolve. Like a scientist, Brown sets hypotheses and explores their artistic consequences, discovering geometric worlds that might not otherwise exist.

The moving image work Builder/Eater (1977) (facing page) was inspired by Paul Klee's "taking a line for a walk"[13]. It features two identical concurrent random walks—one turning pixels on, the other off—that compete endlessly. As the lines progress unpredictable patterns emerge. Because the work is computed in real-time, the animation never repeats. This independent interactivity recalls cybernetic sculptor Nicolas Schöffer's 1960s insight: "We are no longer creating a work, we are creating creation."[14] For Brown the computer becomes a creative assistant and collaborator.

His Kinetic Paintings (p. 14 - 17) combine hypnotic movement with vibrant colours to mesmerise viewers. Animated transitions flow with meditative quality—"slow art" offering respite from information overload. These works also explore human cognition: the visual cortex finds meaningful associations in what Brown calls "well-dressed noise."[15] Images unfold endlessly—as long as electricity flows, the digital medium generates continuous, never-repeating variations. This presents reality as a process of becoming, not an absolute system—all derived from simple yet rigid logical rules.

In contemporary life, we seek meaning amid chaos. Brown connects with beauty to transform technology's destabilising influence through the sublime power of mathematical logic, using the very technology that is shaping our lives. His skill in revealing the universe's hidden logic emerges across two-dimensional painting, printing, and moving image. Harnessing mathematics' infinite possibilities, he reminds us that the universe operates as a single, complex, interactive system in which the smallest and largest events interconnect. As Roy Ascott wrote, we can "glimpse the unseeable, to grasp the ineffable chaos of becoming, the secret order of disorder."[16]

13 Paul Klee, *Pedagogical Sketchbook*, London: Faber & Faber, 1968, p.16

14 Nicolas Schöffer quoted in Jack Burnham, *Beyond Modern Sculpture: The effects of science and technology on the sculpture of this century*, New York: G. Braziller, 1968, p.245

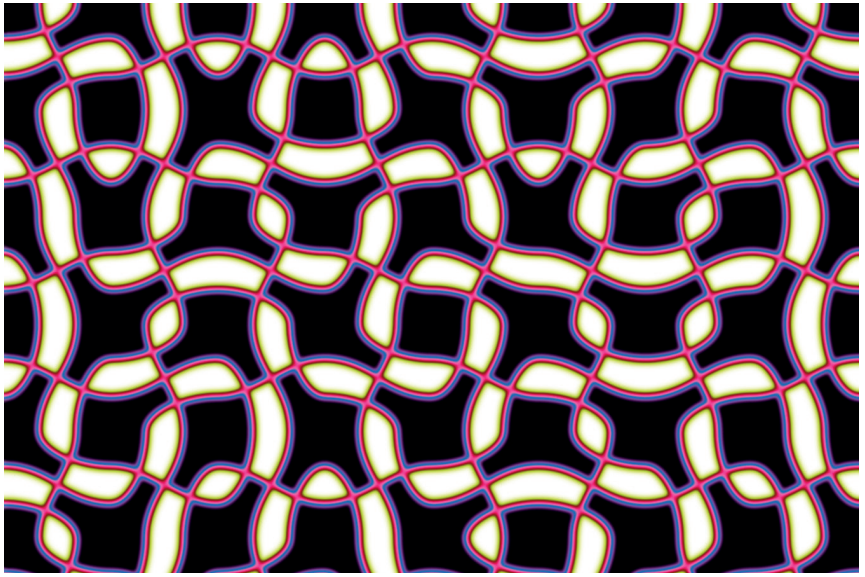
15 Paul Brown, communication with author

16 Roy Ascott, "Is There Love in the Telematic Embrace?" *Art Journal*, vol. 49, no. 3 (Fall 1990), p.246-7

Builder / Eater, 1977 (2014)
Computational & Generative Artwork
Photo: Caroline Menezes

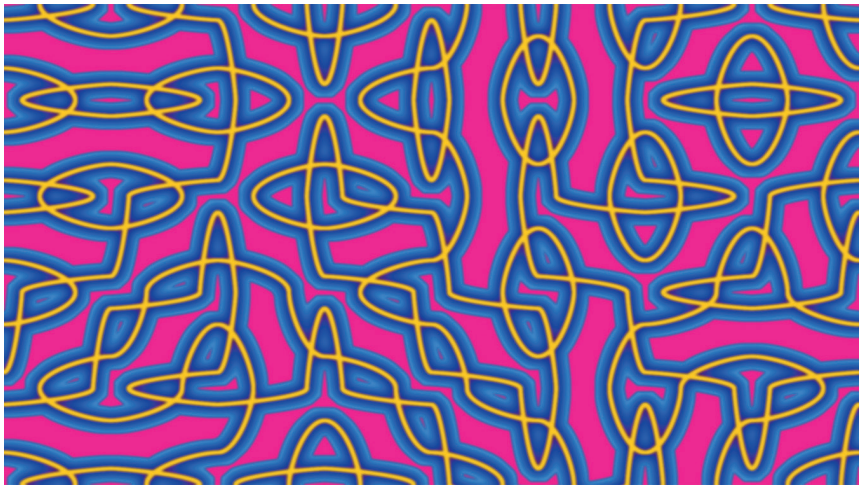
Catherine Mason is an internationally recognised expert in art and technology history, author of *A Computer in the Art Room: the Origins of British Computer Arts 1950-1980* (2008, re-issued 2021), and Visiting Research and Knowledge Exchange Fellow at Goldsmiths, University of London.

Art Works

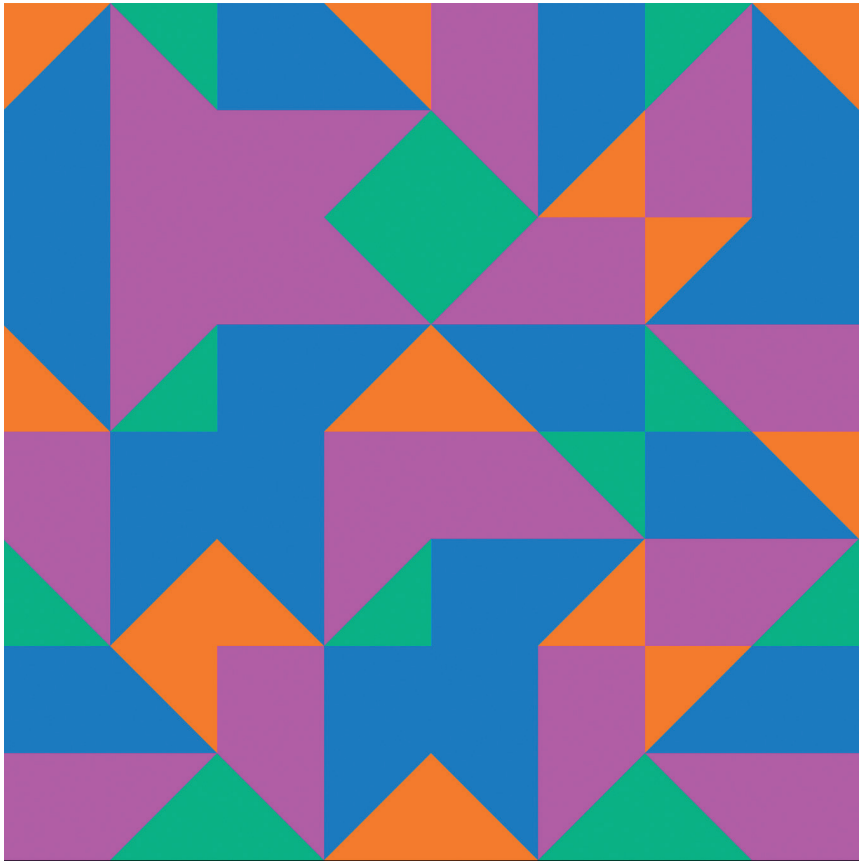


Gymnasts, 1997
Giclée Print on Canvas
136 x 101 cm

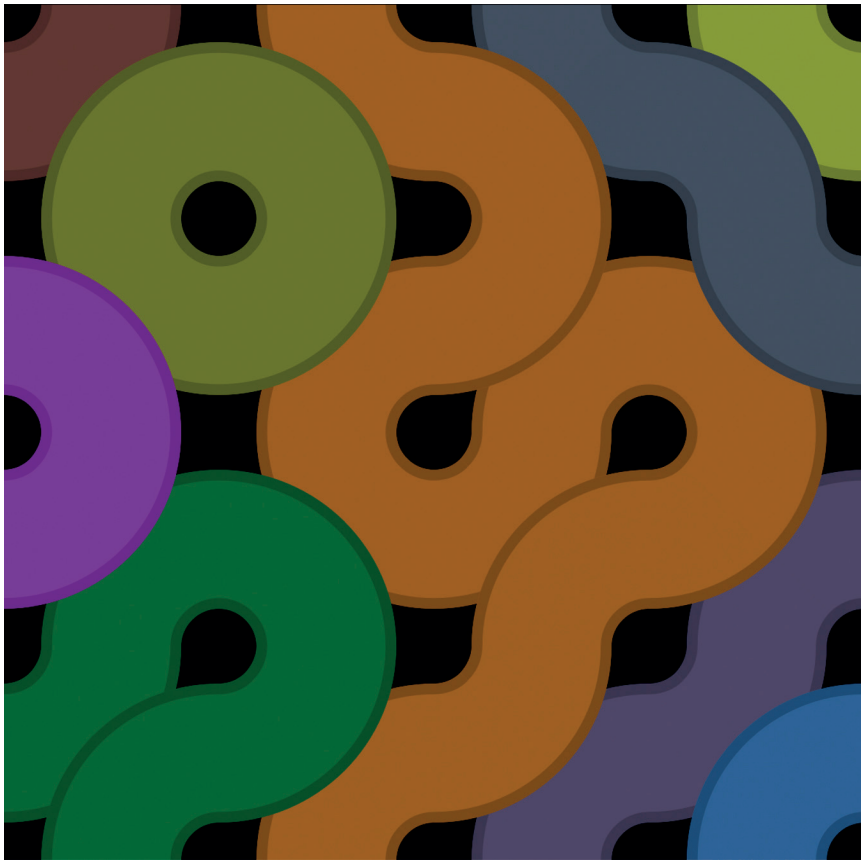
Double Dragon, 2025
Kinetic Painting
Size Variable



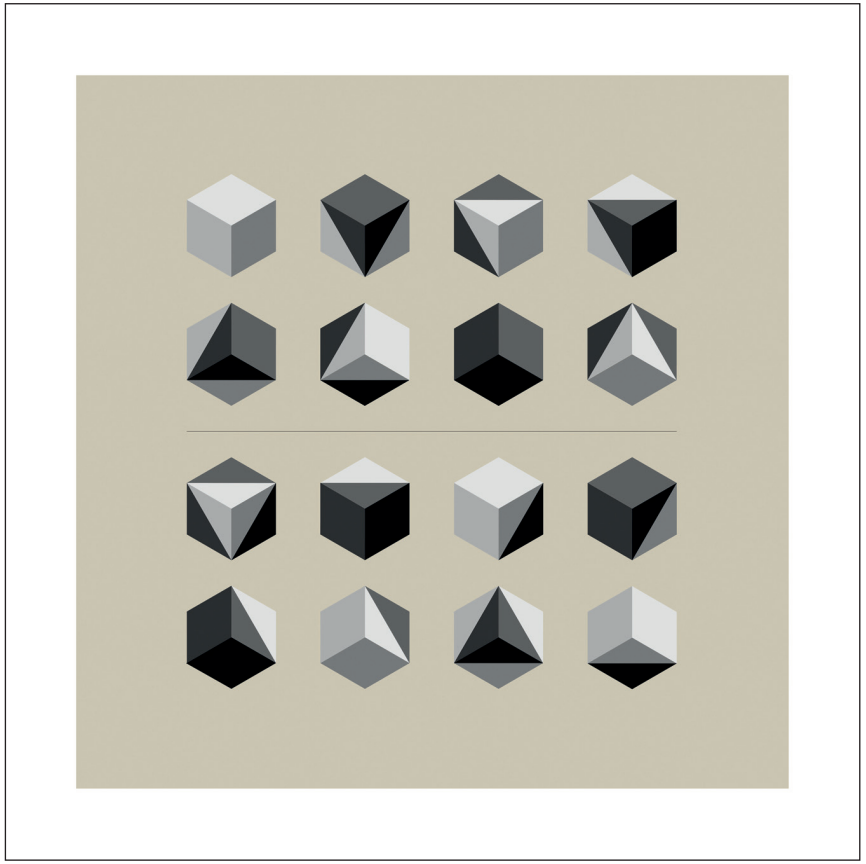
Brick Bradford in Cyberspace, 2026
Kinetic Painting
Size Variable



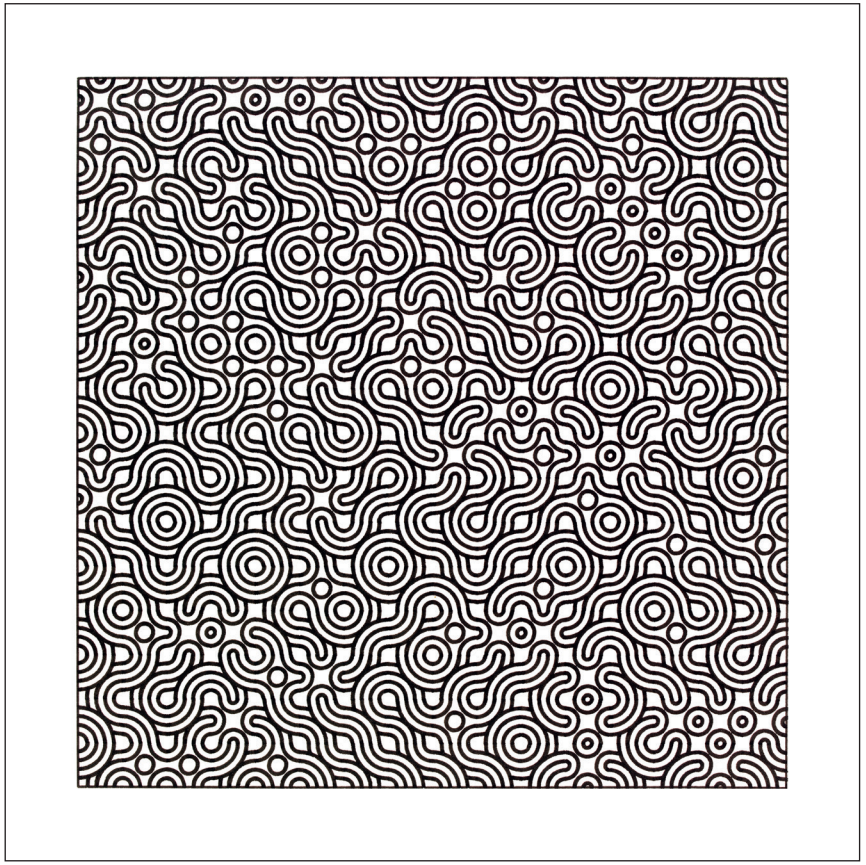
4^16 Revisited, 2025
Kinetic Painting
Size Variable



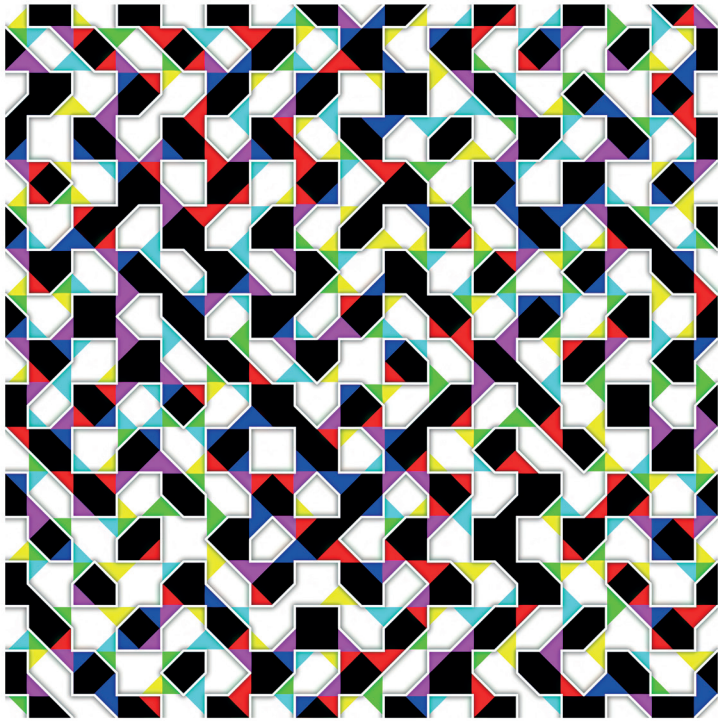
Three Dragons, 2026
Kinetic Painting
Size Variable



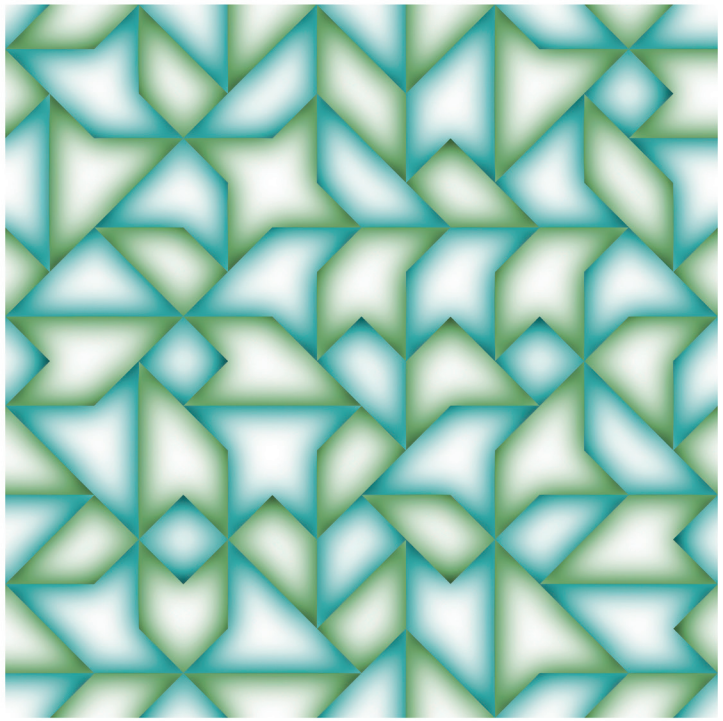
Two Unique Cubes, 2026
Giclée Print on DiBond
60 x 60 cm



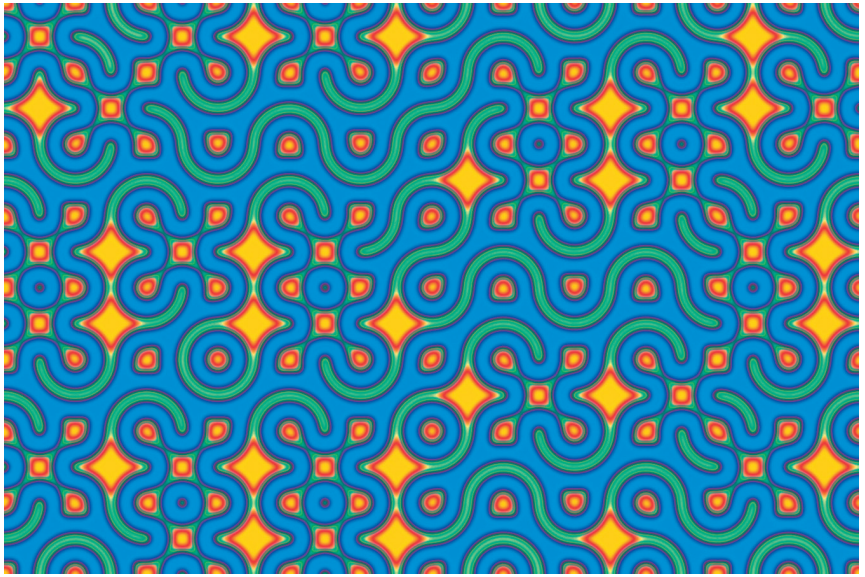
Untitled Computer Assisted Drawing, 1974 (2026)
Giclée Print on DiBond
60 x 60 cm



Primary Diagonal, 2005
Giclée Print on DiBond
60 x 60 cm

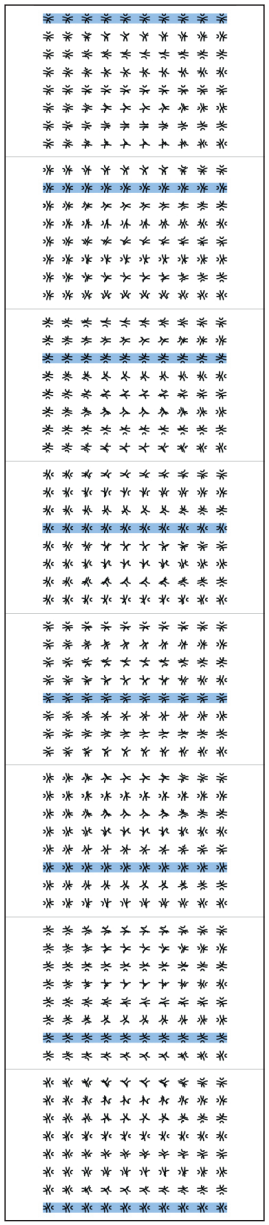


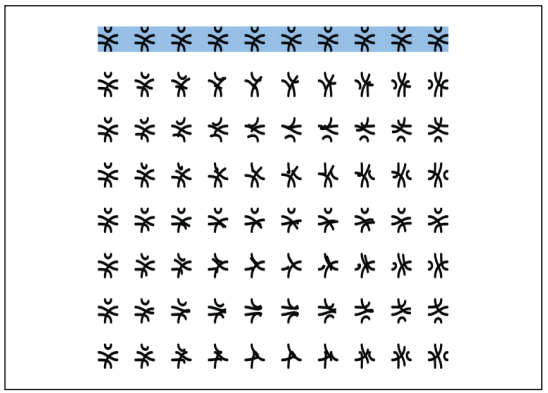
English Summer, 2000
Giclée Print on DiBond
60 x 60 cm



Night Sky, 1996
Giclée Print on Canvas
151 x 101 cm

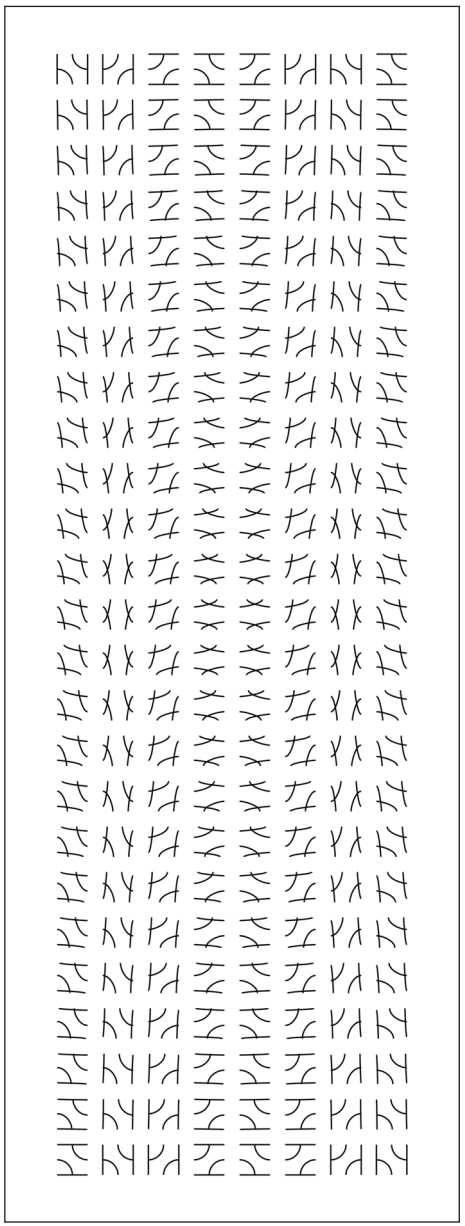
Homage to Miro, 2026
Giclée Print on Canvas
151 x 101 cm





detail

The Book of Transformations
aka
Homage to Jacquard, 2026
Eight threaded cards, each 48.25 x 33 cm



Long Loop, 2006
Giclée Print on Poly-Satin
84 x 225 cm

the derivation of two unique cubes, 2020
Book
19 x 19 cm

The Complete Grammar, 2026
Book
20 x 20 cm

Acknowledgements

My artworks are created by digital colonies of artificial agents—small programs that use artificial intelligence and artificial life (A-Life) to interact. Each agent observes its neighbours and adjusts its behaviour based on the overall state of the colony. From these simple rules, something larger emerges: patterns, movements, and forms that no single agent could produce alone. It's a kind of art that makes itself—where the final image is not directly designed, but grows from within the system. I began working with these generative systems in the 1960s, influenced by Systems Art and Art Concret—European movements rooted in Constructivism, De Stijl, and the Bauhaus. I call this approach The Geometric Sublime, where simple rules give rise to an immense and unexpected richness of form.

The title of the show also recognises Australia's post-colonial legacy, and I acknowledge the traditional owners of the land where I live and work: the Minjungbal people, the Arakwal people, and the Widjabul people of the Bundjalung Nation. I pay my respects to their elders – past, present and emerging. The art of First Nations people has been an ongoing source of contemplation and inspiration for me.

I moved to the Northern Rivers region in 2013 and soon discovered a creative community of old and new friends. It is a beautiful and rewarding place to live and work and it gives me great pleasure to be able to show my work here at the Northern Rivers Community Gallery. I would like to thank Imbi Davidson, coordinator of the gallery and Ignite Studios; Travis Paterson, gallery exhibitions officer; Ella Millard, creative programs producer and Helen Saye, gallery services officer for their support.

A special thank you to both Catherine Mason who has written an informative and insightful essay for this catalogue and to Wendy Mills: my muse, amanuensis and sternest critic.

Paul Brown, Ocean Shores, March 2026
http://paul-brown.art

nrcg *Northern Rivers Community Gallery & Ignite Studios*

Early Heaven Bagua
attributed to Fu Hsi, c1800 BCE

tao begets one
one begets two
two begets three
three begets the miriad creatures

mystery upon mystery
gateway of the manifold secrets

Lao Tzu
Tao-te Ching
c 600 BCE