

- 1 Halley VI Research Station of British Antarctic Survey on the Brunt Ice Shelf
- 2 Concrete Rotunda at the Langen Foundation

Pink Noise

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I

A cacophony of chirps, whistles, and buzzing greets visitors to the Langen Foundation. Emanating from a tree at the centre of its exterior Rotunda, noise ricochets off the concrete semicircle, which forms an acoustic mirror for *As Above, so Below* (2024). Here, the sounds are readily associated with birds and insects of the kind one might expect in a pastoral landscape. But they are, in fact, acoustic signals from high atmosphere geomagnetic storms, recorded above Antarctica's Brunt Ice Shelf. As expectation gives way to estrangement, the work performs a sonic initiation, driving a wedge between our sensory and cognitive grasp on our environs.

Sensors and recording devices expand our awareness into domains previously out of reach and grant us omnipresence. Perched atop trees and icecaps, in outer space, and within bodies, these devices can run continuously and store vast amounts of data. Human senses are limited in comparison, and the mind an unreliable memory device. Yet for all of their technical power, digital systems do not yield a synthetic image of the world. Somewhere between human and more-than-human sensing, the outlines of a new sensorium are being negotiated. At a time of climate crisis and social instability attending technological change, *Pink Noise* underlines how a blurring of machine and human *sense-making* ushers in new worlds.

Pink Noise refers to an acoustic condition that contains all frequencies within the audible spectrum. The intensity of this noise diminishes where frequency increases (at a rate of three decibels per octave), making it sound *even* to the human ear. This phenomenon is heard in the gentle rush of waterfalls, heartbeats, and wind in trees. Easy on the ears, pink noise is used to tune concert sound systems and lull babies to sleep. It is a statistical signature of many natural systems, yet it is also recognisable in the hum of electronics and highway traffic. Aesthetic attunement to such patterns – and their critical disruption – forms the basis of environmental awareness. In this exhibition, Troika explores how our embodied perception is being recalibrated to digital media's frequencies and spectra. Their reflections oscillate between what has been *lost* in a world under the pressures of science and industry, and what is *coming into being*.

A series called *Evolutionary Composite* (2024) crystallises this tension, juxtaposing quartzite flints, of the sort crafted by our Neolithic ancestors into hand-axes, with silicon wafers used in the fabrication of integrated circuits. If the hand-axe symbolises the rudimentary beginnings of human tool-making and the gradual transformation of our environs, the silicon wafer announces the accelerated remodelling of reality enabled by digital media. The series invites reflections upon how the information revolution has enabled us to chop up our reality in new ways – into bits, bytes, fragmented memories and images – available for assembly into new recombinant forms.

In a series of works based on historical sculptures, Troika explores such digital chimerism. As digital tools slice the world up into granules of data, it is tempting to view each new arrangement as a totem. *Grenzgänger* (Crossers, 2024) are mythical beings that guard thresholds, gates, or borders. In this work, a collection of such enigmatic creatures – including fauns, sphinxes, phoenixes, and centaurs – populate a flooded landscape. They are born of an archive of digitised objects gathered from museum collections, fantastic animals that populate the bestiaries of medieval Europe and their classical antecedents, folk objects, and mythic figures from Japan and India. These digitised objects have been manipulated using a chain of 3D programs, sliced into parts, and then shuffled to create new configurations. *Buttercup (Canticle of Creatures)* (2024) draws on classical scenes of hunting and slaying animals, including the *Farnese Bull* (222–235), *Sansone e il Leone* (Samson and the Lion, 1604–1607), *Hercule combattant Acheloüs métamorphosé en serpent*



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- 1 A dwarfed lion with Samson by Cristoforo Stati (1604–1607)
- 2 Biface knapped from silicone
- 3 Metro-Goldwyn-Mayer's *Leo the Lion* at scale

(Hercules Fighting Achelous Transformed into a Serpent, 1824), and *Le Génie de la chasse* (The Spirit of Hunting, 1838). Troika has edited these monuments to the anthropocentric perspective to omit the human figure, bar arms and hands. Flipping the traditional subject-object relation of heroic tales, the human limbs suppressing the wild become incorporated as the extremities of a fantastical new being. These chimeras speak to the fate of cultural memory at a time when anything can be turned into data, manipulated, and redeployed.

II

A green-hued image of a wildfire in the Mojave desert supplies a portrait of machine vision. As we approach *Programming Harmony Touching Clear Sky* (2024), the composition loses coherence, resolving into a grid of hand-painted squares with a limited colour palette of sixteen shades of red, green, and blue. The painting belongs to a series based on digital images of landscapes in distress recorded by CCTV cameras. In the inner galleries, *Forest Filled with Pines and Electronics* (2024) draws on the last moments captured by a surveillance camera of the wildfire detection network ALERTCalifornia – before the camera itself was consumed by fire. *Irma Watched Over by Machines* (2024) shows wind-battered palm trees during a category five hurricane that hit the Caribbean in 2017 – a storm whose destructive force was intensified by climate change. In both works, the pictorial yields to pixel. Up close, viewers are presented with both the construction of an image *as a digital system*, and – intellectually speaking – a diminished approximation of the real situation. Troika thus supplies a critical optic through which to read environmental media today.

The works in this series draw from the nineteenth-century movement within the French avant-garde known as Pointillism, which sought a new approach to representation informed by the science of optics. Eschewing the expressive brushwork associated with Impressionism, the Pointillists pursued a systematic, reductive, approach to hue and form, exploring the eye's ability to harmonise discrete points of colour and perceive them as a continuous gradient. Troika traces a connection between these historical discoveries and

the pixels of televisual and digital screens, which elicit similar perceptual effects through technical means. While the Pointillists sought to repress the artist's hand, close inspection of their canvases disclose its hangover: subtle variations in the size of colour points, material accident, and so on. The electronic pixel, by contrast, carries none of this surplus, ultimately bracketing the suggestion of authorship in favour of a 'mechanical objectivity'.¹ Troika's hand-painted marks reinscribe the ghost of chance within a screen-based optic. In doing so, they highlight human agency – and responsibility – in the design of systems that claim to look upon or 'capture' landscapes dispassionately.

The history of painting offers a record of how human perception changes in dialogue with scientific and technological developments. The philosopher Maurice Merleau-Ponty discerned in the paintings of Paul Cézanne an alternative departure from Impressionism informed by psychology and phenomenology. He attempted to paint the 'impression of an emerging order, an object in the act of appearing, organizing itself before our eyes.'² The lived experience of perception does not conform to what optics predicts, for sense impressions are ordered within the mind according to a different logic than that of a machine. Troika's paintings show the *object in the act of appearing* – not to *our* eyes, but to that of a digital camera. In so doing, the artists excavate the performative impact of digital-imaging devices upon human apprehension and comprehension. Are we coming to see the world through machine eyes? Do new operating systems render old ways of seeing obsolete? What becomes of the *Obsolete Landscapes* (2024) that grace the desktop screens of outdated operating systems?

The video installation *Terminal Beach* (2020) brings such questions into sharp relief by presenting us with a dramatic scene through three vantage points. In the midst of a desolate landscape, a furry robot swings an axe towards the trunk of a spindly tree. As if from a human perspective, one first observes the scene from a distance, under natural illumination. Later, the video shifts to the robot's point of view and the green-hued filter

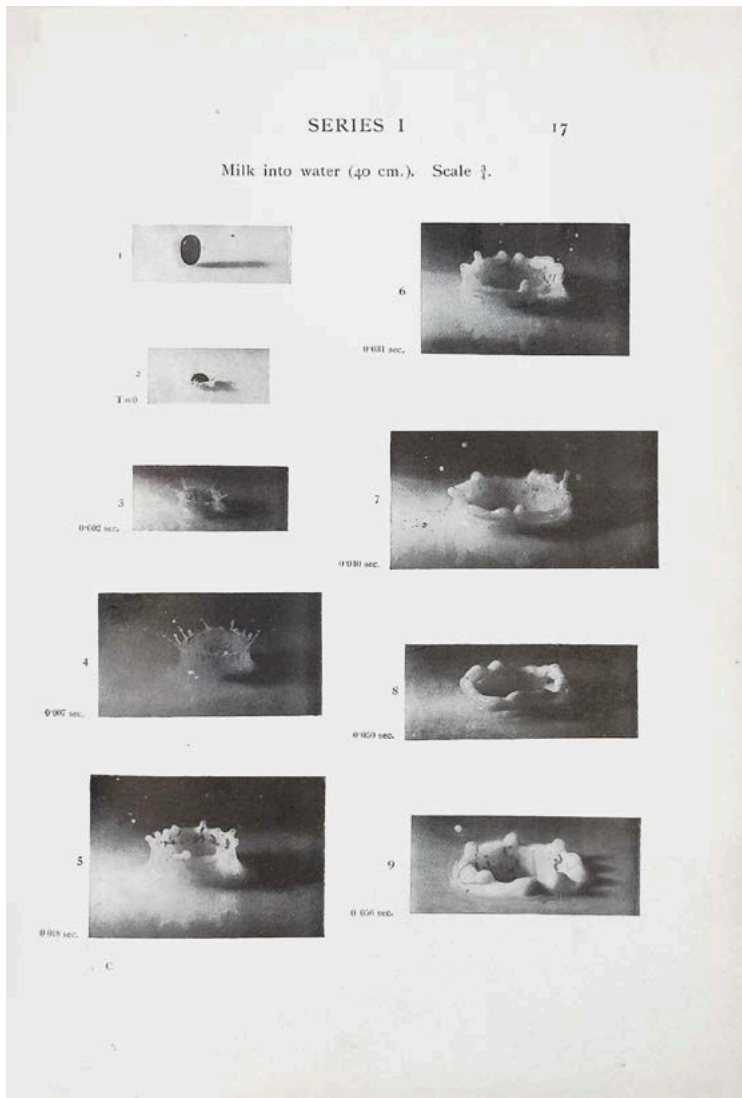
1 See Lorraine Daston & Peter Galison, *Objectivity* (New York: Zone Books, 2007), pp. 115–190.

2 Maurice Merleau-Ponty, 'Cézanne's Doubt', in *Sense and Non-Sense*, trans. Hubert & Patricia Dreyfus (Evanston: Northwestern University Press, 1964), p. 11.

of digital vision, familiar from Troika's *Irma* paintings, overlays the repetitive motion. Finally, switching to the tree's perspective, the scene appears through a fuchsia-tinted filter, approximating how plants sense light. The looping video casts a glow through the gallery, inviting us into the imagined subjective experience of an industrial robot as it chops down the last tree on Earth. The pathos of this narrative overflows the cold logic of technological surveillance – as images of our own burning world also should. Enticement to comprehend the phenomenology of machine vision gives way to questions of empathetic identification. What is a landscape to a machine? A machine to a plant? Stone to an algorithm? Myth to animal?

III

Natural light filters through red, green, and blue window treatments on the Langen Foundation's subterranean levels, casting the installations within hues that approximate the Bayer Filter of digital images. In this strange light, mounds of silicon rocks glisten, while a metallic hum saturates the air. Emerging from this stony terrain, clusters of thistles exhibit strange animacy – for plants, that is – their spiky leaves and flowers curling and dancing under low-hanging grow lights. In fact, they are vibrating rapidly, thanks to a hidden motor. In a similar manner to a flip book, *Anima Atman* (2024) exploits the rapid flickering of Light Emitting Diodes (LEDs) to *subtract* microseconds from the continuous flow of what viewers can see – a strobe effect which operates at the threshold of perception. The result is uncanny, for just as the mind blends discrete units of colour, here it smooths the transition between discontinuous flashes, such that the thistles appear to stir, in a slow, deliberate fashion. Plants *do* move all the time, even without external help, indeed far more than we tend to think. By reconstituting this natural fact through a mechanical illusion, Troika's installation calls attention to our embodied capacity to recognise other modes of being, along with our proclivity to interpret their agency narrowly. In particular, it exploits an inclination to view animation in plants as expressing purposeful behaviour, analogous to human intention. Anthropocentric projection attended the inception of time-lapse film, in particular Charles Urban's *The Birth of a Flower*, a sensation when it debuted in



PINK NOISE

1 *A Study of Splashes* (1908) by A M Worthington
 2 Film still from *Birth of a Flower* (1910)

London's La Scala cinema in 1911. The filmmaker described the action on screen as capturing 'the struggles and the aspirations' of the plants, an imaginative fantasy that viewers at Langen Foundation may also indulge.

Below ground, in a flooded gallery, water droplets appear to rise upwards in mid-air, moving to the rhythm of subdued metallic clicks and dripping noises. Ripples spread across the pool below, scattering waves of light onto the darkened gallery's concrete walls – confirming that, despite appearances, the hanging droplets *do* obey gravity. Here, in *Limits of a Known Territory* (2015, 2024), the strange perceptual affordance of LED light is exploited to further effect. The installation recalls an episode in the history of science that is representative of the broader epistemic rupture wrought by the incorporation of photography into scientific observation. In 1875, the British physicist Arthur Worthington began a series of splash tests, designed to enable him to observe and precisely describe the behaviour of droplets of fluid. 'He lit his laboratory with a powerful millisecond flash – poring over every stage of the impact of a liquid drop, using the latent image pressed into his retina to create a freeze-frame "historical" sequence of images a few thousandths of a second apart.'³ Over the next two decades, Worthington produced an exquisite atlas of forms assumed by droplets upon contact with solid and liquid surfaces, all, like the crystalline geometries of snowflakes, perfectly symmetrical. 'Then, in spring 1894, he finally succeeded in stopping the droplet's splash with a photograph. Symmetry shattered.'⁴ The shock of what the camera revealed – a panoply of irregular forms – forced many scientists of this era to confront a mismatch between reality and the idealisations that had previously been imposed upon it by the mind's eye. In retrospect, those deviations had always been there. However, only now could they be *noticed*, thanks to the camera. At issue was not only the psychological gestalt shift experienced by many individuals, but the social standing of their disciplines, indeed the very foundations of trust in the senses.

In art, as in science, new technologies of image making drive changes in how our minds organise the impressions to which our bodies are sensitive. They drive us to seek out

3 Daston & Galison, *Objectivity*, p. 11.

4 Ibid. p. 13.

some sensations and ignore others, to *listen for* input that confirms our assumptions (confirmation bias) or *filter out* things we don't want to be aware of (selective ignorance). Change happens inexorably, often without our even noticing – thanks in no small part to the 'intuitive' design of new imaging devices, such as the digital cameras most of us have carried on our persons since the early two-thousands. Rather than allowing it to go unremarked, Troika amplifies the cognitive dissonance caused by subtle changes in systems of sensing, imaging and communications today. Specifically, they do so by operating on how wavelengths of energy within – and at the edges of – the visible and audible spectrum are processed by our sensory-cognitive apparatus.

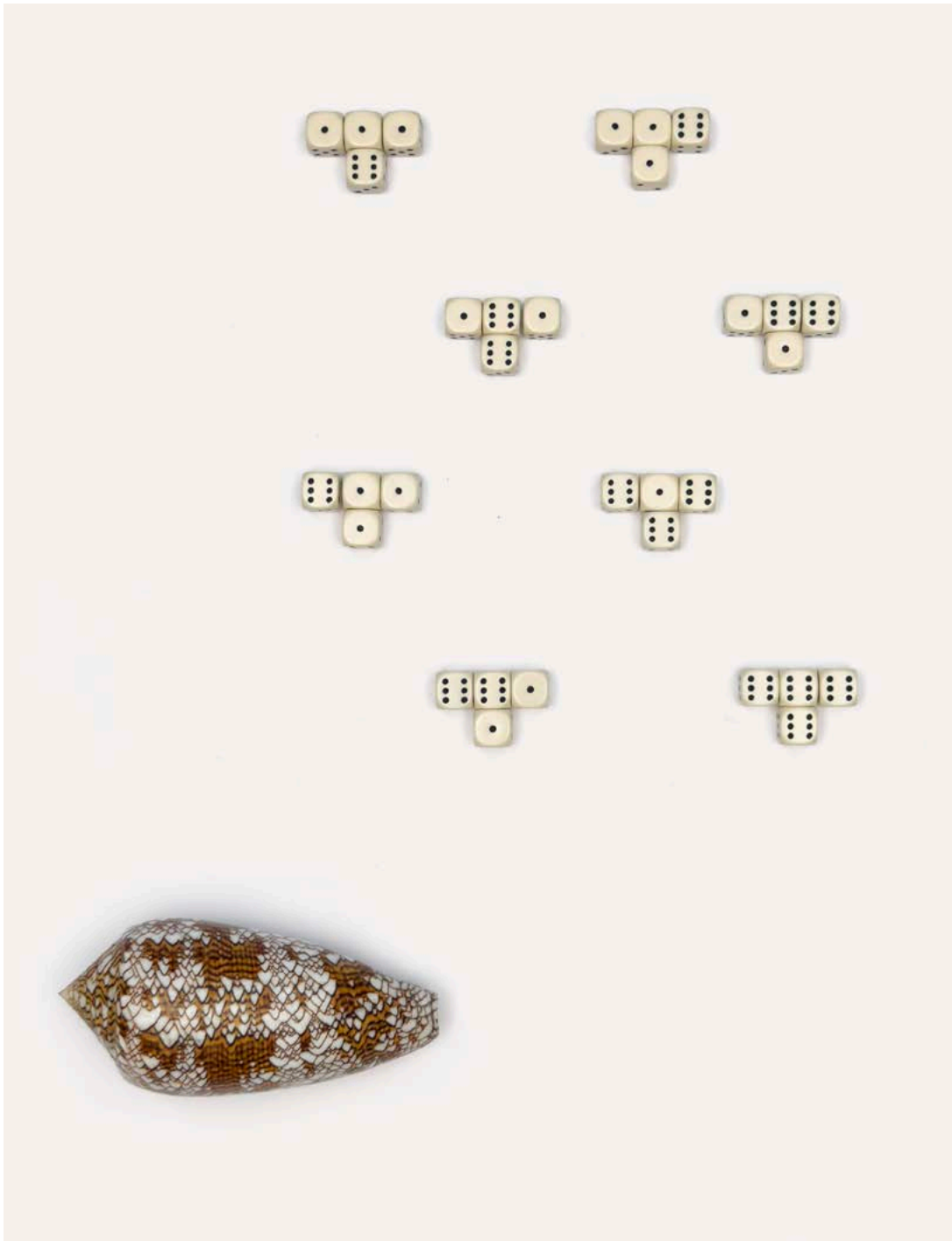
Today, it is abundantly clear that the world contains more than our embodied senses can perceive. Drawing our attention to an accumulating surplus, the site-specific installation *Electroprobe Installation #5* (2014, 2024), sonifies electromagnetic signals emitted by various consumer electronics arrayed in a circle on the gallery floor like a comedic chorus. Rather than operating through a logic of subtraction, as in the case of *Anima Atman* and *Limits of a Known Territory*, *Electroprobe Installation #5* seeks a reverse aesthetic polarity through amplification. Old printers, radios, fax machines, and other devices, likely to irritate our ears on their own, together create an eerily comfortable soundscape.

Pink Noise.

IV

At the far end of the last gallery, a large black mass floats in space – an enigmatic form that seems to swallow the light around it. *Dark Matter* (2014) does not readily give away its geometry. Rather, it draws one towards it in the hope of discerning whether it is flat or three-dimensional, concave or convex. From different perspectives, it appears as a circle, a square, or a hexagon, whose planes combine into a single shape. As the exhibition shifts into greyscale, Troika's exploration of visibility takes on new focus. *Dark Matter* punctuates the stark juxtaposition of sensuous materiality with mathematical form.

Triangulated on the floor surrounding *Dark Matter*, a trio of conical sculptures exhibit a fundamental property of the raw materials: salt, quartzite, and purified silicon. Varying in



1 Dice laid out according to cellular automata rules
a conus shell displaying related patterns

texture and colour, as well as the shapes of the bases upon which they rest, what ultimately distinguishes these artworks is each material's distinctive 'angle of repose'. The sculptures were not built but, rather, poured. As grains accumulate on top of one another, the material flows and collects, until each granule comes to a halt at an angle dictated by its chemical composition: salt at 32 degrees, quartzite at 35, and silicon at 40. Macroscopic arrangements are governed by an inner logic that operates at the micro-scale, a function of the shape of the grains, friction, and electrostatic charges between them. Once attuned to its logic, viewers can recognise it at work on the slopes of sand dunes and industrial stockpiles, hourglasses and avalanches. In their elegance and simplicity, the forms seem to imply a reader – an intelligence capable of comprehending their elemental behaviour. Reversing the exhibition's concern with disorientation and illusion heretofore, this ensemble relaxes demands on perception; if anything, tilting in the direction of Minimalism and its insistent privation of the senses. Does one even need a body to comprehend this world of geometric forms?

Hanging above the scene, a woven grid of thousands of white dice presents an abstract pattern formed by their small black dots. This motif is the result of applying an algorithm whose rules dictate whether the face of a particular die should display either six or one, depending on preceding conditions. Playing out sequentially, from top to bottom, the artists' only input was the first line – the command. *Life and Death of an Algorithm* (2024) is partly inspired by the Jacquard loom's role in the birth of early computing. Additionally, the algorithm employed derives from research by John Von Neumann, a physicist responsible for some of modern computing's foundational electronic architecture. During World War II, while working on the Manhattan Project, he also explored the mathematical modelling of systems capable of self-replication and computation. *Life and Death of an Algorithm* captures the point where one such system fails and comes to an end. By visually depicting the moment of failure in a self-governing process, this work prompts reflections upon the cultural tendency to ascribe 'life' to complex generative processes. Today, a growing strain of techno-mysticism associated with powerful AI imagines a moment where a sufficiently sophisticated mechanism crosses a threshold into a higher mode of being.

What are the chances? Should we roll the dice?

This final constellation of works highlights a Pythagorean aesthetic operative within Troika's oeuvre, as they seek to expose the mathematical relations that underlie the order of nature and our technological world alike. According to philosophical tradition, the numerological domain is accessible primarily through the 'mind's ear' (rather than the eye). Numerical mysticism found more concrete expression in the ratios governing musical harmony, later understood as the effect of wave interference patterns caused by vibrations. Thus, a cosmic harmony was imagined to attend the regular movements of the heavenly bodies, the 'music of the spheres'. Today, the order of nature is increasingly disturbed by human activities, not least by our raucous emissions within the electromagnetic spectrum. It is tempting to hold on to ancient metaphysical assumptions about the latent order of the universe – and to project them into new architectures and intelligences of our own creation. And yet, an inherent faith in order must not blind us to the limits and tipping points at which earthly and cosmic systems break down, or begin to behave differently. These moments may well be *felt* before they can become intelligible. *Pink Noise* conditions us to attend this possibility with all eyes and ears – ultimately, with a more-than-human sensorium.

