The Heart's Knowledge: Science and Empathy in the Art of Dario Robleto

For American artist Dario Robleto (b. 1972), artists and scientists share a common aspiration: to increase the sensitivity of their observations. Throughout the history of scientific invention, instruments like the cardiograph and the telescope have extended the reach of perception from the tiniest stirrings of the human body to the farthest reaches of space. In his prints, sculptures, and video and sound installations, Robleto contemplates the emotional significance of these technologies, bringing us closer to the latent traces of life buried in the scientific record.

The Heart's Knowledge concentrates on the most recent decade of Robleto's creative practice, a period of deepening engagement with histories of medicine, biomedical engineering, sound recording, and space exploration. The exhibition presents a series of multisensory encounters between art and science, organized in three thematic sections.

The first, “Heartbeats,” takes inspiration from 19th-century pioneers of cardiography, whose ingenious instruments graphically measured heart activity for the first time, leaving behind poignant records of human subjectivity. The second, “Wavelengths,” comprises two video installations exploring the resonances of wave phenomena, such as sung music and the electrical oscillations of the brain, as they move across boundaries of inner and outer space. In the third section, “Horizons,” Robleto evokes the stargazing spirit of the Hubble telescope and the search for extraterrestrial life, peering out at the boundaries of the observable universe.

The Heart’s Knowledge marks the culmination of Robleto’s five-year engagement as Artist-at-Large in Northwestern University’s McCormick School of Engineering and Applied Science. This exhibition reflects the spirit of that enterprise, expanding conversations around ethics and empathy in scientific fields and inviting us to look and listen with curiosity and compassion to the life that surrounds us.

Section 1

Heartbeats

The human pulse may be the most legible of all life signs; the flatline may be the most definitive image of death. Symbols of near-universal recognition today, the representations of the heart's pulse as a wave and of its inactivity as a flatline, were innovations of the 19th century, discoveries that Robleto describes as "not only medical but also poetic and philosophical in the long arc of human self-reflection."

In 1854, German doctor Karl von Vierordt preserved the first visual record of heart activity by tracing a pulse on a strip of candle-sooted paper using a stylus made from a single human hair. His invention, which he named the sphygmograph, was soon adopted and improved by others, such as French physiologist and inventor Étienne-Jules Marey. Their efforts led

to a frenzy of research and ultimately to the birth of modern cardiology.

The work in this section returns us to this thrilling moment in scientific discovery. Each of the pulse waves in these prints, sculptures, and sound installations has been recovered from medical journals and scientific papers dating back to the first decades of cardiography. Through intensive research and meticulous craft, Robleto excavates these fragile tracings and transforms them into objects of beauty and contemplation. While the names of the owners of these hearts are mostly forgotten to history, Robleto brings us closer to the thrum of life preserved in their delicate lines.

Large Print #1

The First Time, the Heart (A Portrait of Life 1854–1913)

2017

Mary and Leigh Block Museum of Art, Northwestern University, gift of Northwestern Engineering, 2018.6

Photolithography, hand-flamed and sooted paper, image lifted from soot with lithotine, fused with shellac and denatured alcohol

Each of the 50 prints in The First Time, the Heart is made through a painstaking technique inspired by early cardiographers. Robleto first prints each image in invisible ink on papers that are then hand-sooted with candle flames and fixed in a chemical bath. Robleto then used a fine-hair brush to reveal the contours of pulse waves and written text printed beneath the soot. This process is both practical and poetic: a delicate, receptive medium for inscription, soot also suggests an extinguished light, a near-universal metaphor for life and death. Robleto's elaborate, time-consuming process embodies an ethic of care, treating each pulse wave as a sacred relic of a heart that beat before our own.

While Dario Robleto originally designed The First Time, the Heart to narrate the broad arc of a human life from birth to

death, the artist invites new collaborators to “resequence” the prints for each installation of the work. For this presentation, Robleto and exhibition curator Michael Metzger worked with Andy Wehmeyer and Nadiah Zamri, undergraduates in the McCormick School of Engineering’s Murphy Scholars program, and Dylan Brown, a PhD candidate in Chemical and Biological Engineering, to reimagine the work. These emerging scientists at Northwestern devised groupings that reflect the duality of these prints as both quantitative data and qualitative testimony. Classifying prints according to objective physical characteristics of waves such as amplitude and frequency, these layouts nonetheless create space for subjective and playful associations.

Combing through dozens of 19th-century medical journals, Robleto learned that representations of emotion and sensation were rare: most studies sought to picture disease, not the stirrings of the soul. Over the decades, physicians have developed terminology to describe the features of the

cardiogram, establishing connections between wave shapes and types of cardiac dysfunction, but no such vocabulary yet exists to describe the heart's expressions of faith, anger, or fear. In the language of modern electrocardiography, the waves in this set share ST elevations, seen in the sloping segments just to the right of each wave's peak. Medically, ST elevations are associated with heart attacks, pulmonary embolism, and pericarditis; these prints ask whether intense emotional states might shape the contours of the cardiogram in similar ways.

Large Print #2

The pulse Armed With a Pen (An Unknown History of the Human Heartbeat)

2014

Courtesy of the artist

28 custom-cut 5-inch vinyl records, audio recordings, archival digital prints (record sleeves, liner notes, labels, slides), three centuries of various human pulse and heartbeat tracings, glass slides, custom-bound book, oak, silk, engraved gold mirror, brass, headphones, and media players

Each of these 28 custom-cut vinyl records contains a different recording of heart or brain activity. Many of the recordings were transcribed graphically before the advent of acoustic playback in 1856. Working with sound historian Patrick Feaster, Robleto digitally resurrects these pulses, transforming abstract data into a sonic encounter. Like a stethoscope, the headphones put the listener in the intimate position of the physician, hearkening across decades to the moment when the pulse of life was recorded. The vinyl records, sleeve notes, and archival display underscore the rare and precious nature of these recordings.

Large Print #3

Methuselah in Her Cradle

2019

Courtesy of the artist

Earliest waveform recordings of blood flowing from the hearts of children, newborn to 10 years old (1886), rendered and 3D

printed in brass-plated stainless steel, ebonized mahogany, and 23k gold leaf

Large Print #4

Unknown and Solitary Seas (Dreams and Emotions of the 19th Century)

2018

Courtesy of the artist

Earliest waveform recordings of blood flowing from the heart and in the brain during sleep, dreaming, and various emotional states (1874–96), rendered and 3D printed in brass-plated stainless steel, lacquered maple, and 22k gold leaf

The invention of the cardiograph promised 19th-century physicians a window into the minds and bodies of patients. For the first time, pulse waves could objectively measure emotional states, proving that inner experiences arise through corporeal transformations. Unknown and Solitary Seas celebrates this breakthrough by casting pulse waves as objects with heft and

presence, as visceral as the arteries they document.
Showcasing heartbeats across a range of mental states from fear and anger to mental repose, the sculpture proposes a unity of mind and body, bridging 19th-century European science with contemporary “whole patient” philosophies of medicine.

Large Print #5

Sparrows Sing to an Indifferent Sea

2019

Courtesy of the artist

Earliest waveform recordings of inhalation and blood flowing from the heart during various auditory experiences (1874–96), rendered and 3D printed in brass-plated stainless steel, lacquered maple, and 23k gold leaf

The jewel-like form of these heartbeats reflects their rare and precious nature: while most early cardiographers were narrowly concerned with disease, researchers occasionally also sought answers to more subjective questions in the patterns of

the pulse. Out of Robleto's exhaustive research into hundreds of obscure case-studies, this sculpture gathers together cardiograms captured during sonic experiences. The resemblance between heartbeats and sound waves is more than visual: the fields of cardiography and psychoacoustics both emerged in 19th century Europe, transforming transitory vibrations into objects of scientific measurement and exposing the physiological mechanisms behind sound's emotional resonance.

Large Print #6

Tear Stains on Ocean Waves

2019

Courtesy of the artist

Earliest flatline recordings of the cessation of blood flowing from the heart (1870–86), rendered and 3D printed in brass-plated stainless steel, ebonized mahogany, and 23k gold leaf

Large Print #7

Love, Before There Was Love

2018

Courtesy of the artist

Earliest waveform recordings of blood flowing through the heart both before and during an emotional state (1870), rendered and 3D printed in brass-plated stainless steel, brushed steel, and glass

These two waveforms, recorded by Paul Lorain in 1870 with the aid of a sphygmograph, illustrate an unnamed subject's heartbeat "before and during emotion." The stark visual contrast between the two cardiac states exemplifies what sphygmograph pioneer Étienne-Jules Marey called the "graphic method," which saw new technologies as surpassing language by allowing nature to represent itself directly. One of many 19th-century European scientists to adopt Marey's method, Lorain captured in simple lines what poets have labored to express for centuries: the mercurial nature of our emotions.

Rendered in weighty steel, Robleto's sculpture transforms this pulse-quickening moment of discovery into a monument.

Section 2

Wavelengths

From the brain waves measured by the EEG (electroencephalogram), to the pulses of hearts traced by the cardiograph, to sonic fluctuations captured in the grooves of a vinyl record, Robleto contemplates the technologies that detect and preserve the ineffable waves that surround and emanate from us.

The ability to record and replay sound is relatively new, a world-historical event whose shock waves still reverberate today. Robleto has recently embraced the medium of digital video to create works that narrate transformational episodes in the recording and study of wave phenomena. In The Aorta of an Archivist, Robleto investigates three breakthroughs in the

history of recording: the first recording of a choral performance made with an Edison wax cylinder, the first heartbeat captured while listening to music, and the first effort to transcribe the brain wave activity of a dreaming subject.

From these coordinates, Robleto charts an unpredictable and thrilling course, zooming from microscopic life to the edges of the observable universe. With a sense of formal discovery that mirrors their subject matter, Robleto combines cutting-edge techniques of digital video and sound design (realized in collaboration with Bill Haddad and Skye Ashbrook) with deliberately anachronistic analog textures, creating a hybrid of avant-garde film and illustrated scientific lecture.

Large Print #8

The Aorta of an Archivist

2020–2021

Commissioned by the Spencer Museum of Art, Lawrence, Kansas

UHD video, 5.1 surround sound installation; 53:00 min; looped

Written, researched, directed, and narrated by Dario Robleto

Production design: Dario Robleto, S. Ashbrook, and Bill Haddad

Visual effects and editing: S. Ashbrook, Bill Haddad, and Wylie Earnhart

Original score: S. Ashbrook / beat.imprint

Sound design and editing: Bill Haddad, S. Ashbrook, Patrick Feaster, and Dario Robleto

Section 3

Horizons

Can artistic and scientific instruments allow us to communicate across the distances that separate species on Earth, to forge

connections with extraterrestrial civilizations, or to glimpse beyond the reach of light in an expanding universe? Robleto draws on his interests in exobiology and astronomy to reflect on these and other speculative questions that probe the limits of empathy between species. Like cardiograms, the prints and sculptures in this section invite us to rethink what constitutes "signs of life" while eliciting curiosity, wonder, and humility in the face of the vastness and mystery of the cosmos.

Inspired by his time as an artist-in-residence at the SETI (Search for Extraterrestrial Intelligence) Institute, Robleto has crafted a series of "gifts for extraterrestrials." These sculptural works, featuring intricate shell arrangements, negotiate differing contemporary views on the best way to begin a dialogue with alien intelligences. Meanwhile, works like The Sky, Once Choked With Stars, Will Slowly Darken temper this optimism, offering melancholy speculation on the ultimate fate of the universe.

Large Print #9

The Sky, Once Choked With Stars, Will Slowly Darken

2011

Courtesy of the artist

Suite of 8 archival digital prints on Epson Somerset Velvet 255gsm paper

A collection of stage lights from album covers of live performances of now-deceased musicians

Johnny Cash, Live at San Quentin

John Coltrane, The Paris Concert

Jimi Hendrix, In Concert

Marvin Gaye, Live at the London Palladium

Rick Nelson, In Concert

Lightnin' Hopkins, The King of the Blues

Sun Ra, Live at the Ann Arbor Blues and Jazz Festival 1973

John Coltrane/Archie Shepp, New Thing at Newport

Large Print #10

Sisyphus' Archivists

2018

Private collection

Cut paper, various cut and polished seashells, green and white tusks, squilla claws, spirula shell, colored powder pigments, colored crushed glass and glitter, plastic domes, prints on paper, basswood, foam core, glue, and frame

This cut-paper and mixed-media assemblage pays tribute to the figures who inspired the 1984 founding of the SETI Institute. Portraits of Ann Druyan, Carl Sagan, and "Father of SETI" Frank Drake are framed by phrases that acknowledge the vastness of space and the infinitesimal odds of making contact with other lifeforms. Like Sisyphus, the Greek mythological figure condemned to the endless toil of repeatedly rolling a boulder up a mountain, these seekers of extraterrestrial life persist in the face of futility. Drawing on the visual tradition of the

memorial plaque, Robleto suggests that it is our responsibility to bear witness and to preserve the memory of this task.

Large Print #11

American Seabed

2014

Courtesy of the artist

Fossilized prehistoric whale ear bones salvaged from the sea (1 to 10 million years), various butterflies, butterfly antennae made from stretched and pulled audiotape recordings of Bob Dylan's "Desolation Row," concrete, ocean water, pigments, coral, brass, steel, and Plexiglas

Many of Dario Robleto's sculptures adapt the display techniques of naturalist collections and 17th- and 18th-century "cabinets of curiosity" towards philosophical ends. In American Seabed, prehistoric fossilized whale earbones act as pedestals for butterflies, whose antennae Robleto has delicately fashioned from audiotape. Like a riddle, the work dramatizes

the challenges of interspecies communication across boundaries of epoch, habitat, and bodily sensation: Is proximity enough to facilitate communication between species? How do our organs and instruments of perception facilitate but also inhibit our understanding?

Large Print #12

Survival Does Not Lie in the Heavens

2012

Private collection

Digital inkjet print mounted on Sintra

A collection of stage lights taken from the album covers of live performances of now-deceased Gospel, Blues, and Jazz musicians

At first glance, this triptych appears to present Hubble telescope photographs of deep space. But this is a subtle work of collage: each apparent galaxy is in fact a stage light drawn

from live album covers by deceased musicians. Astronomy and recorded music, the work suggests, both deal in afterimages: just as Hubble's images capture light reaching us eons after the stars themselves may have gone dim, these albums present "liveness" at a mournful remove. While elegiac, this work also offers space for speculation: can we imagine the enduring impact of musicians in terms of light-years rather than Earth years?

Large Print #13

Small Crafts on Sisyphean Seas

2018

Courtesy of the artist

Cut and polished nautilus shells, various cut and polished seashells, various sea urchin spines and teeth, mushroom coral, green and white tusks, squilla claws, butterfly wings, colored pigments and beads, colored crushed glass and glitter, dyed mica flakes, pearlescent paint, cut paper, acrylic domes, brass rods, colored mirrored Plexiglas, glue, and maple

The “small crafts” of this sculpture’s title may refer to the delicate shells of marine organisms like the nautilus, whose name derives from the Greek word for “sailor,” or to the UFO-like structures into which Robleto arranges them. From a distance, planets like Earth, adrift in search of fellow travelers in the infinite vastness of space, might also appear like small crafts. The spirals of the nautilus shell invite us to contemplate questions of scale and of alien life: their logarithmic shape represents a universal mathematical function, which scientists at the SETI Institute believe might one day aid human communication with extraterrestrials.

Large Print #14

Elegies of Proxima b

2019

Courtesy of the artist

Various cut and polished seashells, sea urchin spines, green tusks, squilla claws, butterfly wings, cut paper, colored powder

pigments, colored plastic beads, acrylic domes, brass rod, colored mirrored Plexiglas, glue, and acrylic on wood

The 2016 discovery of a potentially Earth-like planet in the habitable zone of Proxima Centauri, the Sun's closest stellar neighbor, was widely celebrated. This sculpture's title, however, hints at a more ambivalent response. While its bubblegum hues appear otherworldly, they are inspired by recent theories about some of Earth's earliest life-forms, cyanobacteria, which may have produced pink pigments over one billion years ago. Merging exoplanetary and terrestrial discoveries, Elegies proposes we look to newfound planets less as potential hosts and more as celestial mirrors reflecting the unique, miraculous, and precarious nature of the planet we already inhabit.

Large Print #15

Study for Moon Flowers

2016

Courtesy of the artist

Various cut and polished seashells, sea urchin spines, green tusks, squilla claws, butterfly wings, feathers, cut paper, colored powder pigments, colored plastic beads and glitter, pearlescent paint, plastic domes, print on paper, brass rod, glue, mirrored Plexiglas, glue, and painted wood

The shapes and colors of this sculpture refer to Ipomoea alba, a variety of night-blooming perennial known as “moonflowers.” The work also incorporates a family portrait left by astronaut Charles Duke on the surface of the moon during the 1972 Apollo 16 mission. Like the footprint reflected in the sculpture’s mirror, the snapshot may remain undisturbed in the lunar soil forever, a trace of an individual life and an artifact of a moment when many Americans hoped that the NASA space program might sow the seeds of a new, interplanetary era of human exploration.

Large Print #16

The Computer of Jupiter

2019

Courtesy of the artist

Various cut and polished seashells, sea urchin spines, cut and quilled paper, squilla claws, colored powder pigments, colored plastic beads, acrylic domes, brass rod, colored mirrored Plexiglas, glue, and acrylic on wood

Alsdorf Gallery

Wavelengths

From the brain waves measured by the EEG (electroencephalogram), to the pulses of hearts traced by the cardiograph, to sonic fluctuations captured in the grooves of a vinyl record, Dario Robleto contemplates the technologies that detect and preserve the ineffable waves that surround and emanate from us.

The ability to record and replay sound is relatively new, a world-historical event whose shockwaves still reverberate today. Robleto has recently embraced the medium of digital video to create works that narrate transformational episodes in the recording and study of wave phenomena. The Boundary of Life Is Quietly Crossed takes inspiration from the Voyager Golden Record, a gold-plated phonographic disc launched into space onboard the Voyager I and II space probes in 1977. The record, curated under the supervision of famed astronomer Carl Sagan, was designed to introduce distant alien civilizations to Earth's sonic lifeworld.

Among the variety of musical selections and natural sounds on the record, it was project contributor Ann Druyan's heartbeats and brain waves that impacted Robleto the most profoundly. The Boundary of Life Is Quietly Crossed meditates on the personal and cosmic significance of Druyan's recording, weaving together interviews, archival research, and arresting abstract imagery. Robleto situates the Voyager probe alongside

inventions such as the cardiogram and the artificial heart, asking how these technologies challenge the boundaries of life and death, inner and outer space.

Large Print #17

The Boundary of Life Is Quietly Crossed

2019

Commissioned by the Contemporary Austin, Austin, Texas

Two-channel 4K video, color, 5.1 surround sound installation; 51:00 min; looped

Written, directed, and narrated by Dario Robleto

Production design: Dario Robleto, S. Ashbrook, and Bill Haddad

Video editing and visual effects: S. Ashbrook and Bill Haddad

Sound design and editing: Dario Robleto, S. Ashbrook, Bill Haddad, Patrick Feaster, and Justin Boyd