(In)Visible Structures: Curatorial Essay

By Heather Moqtaderi, Interim Director of Environmental Art, 2025

Through her environmentally-focused artistic practice, Rebecca Rutstein creates mesmerizing compositions inspired by the phenomenal structures and processes that mediate our complex ecosystem. Rutstein's oeuvre ranges from small-scale paintings to murals and immersive multimedia installations. *(In)Visible Structures* brings together paintings from her established series based on oceanographic research expeditions along with recent paintings that mark the beginning of new projects. These works are united by Rutstein's synthesis of micro and macro–exploring and expanding fractal patterns found in nature, from microorganisms to landscape mappings of the ocean floor.

In *Shape Shifter*, Rutstein portrays a layered, networked pattern that visually crackles and pulsates in shades of blue ranging from midnight to cerulean to electric turquoise. The fractal pattern seemingly extends past the edges of the canvas, suggesting that we are glimpsing a portion of a vast network. The dizzying circuit-like linework brings to mind algorithmic neural networks used in computerized machine learning, but the inspiration behind this work is prehistoric. *Shape Shifter* was inspired by the underground fungal networks called mycorrhiza that form a symbiotic relationship with plants. Mycorrhiza are a fundamental component of forests, connecting the roots of trees and providing nutrients, and played a crucial role in the evolution of land plants from their aquatic origins 460 million years ago. Rutstein instills *Shape Shifter* with a tension between prehistoric and futuristic, the underlying mark-making evoking time-worn hieroglyphs while the crisp fractal patterns at the surface suggest futuristic circuitry. *Shape Shifter* visually conveys the dynamism of this fungal network that enabled terrestrial plant life, and reminds us of the awesome wisdom of nature.

Contrasting the crackling energy of *Shape Shifter's* fractal network, *Brine Forest* conveys a sense of tranquility. The composition centers on vertical strips of violet and blue that resemble the texture of tree bark, rippling against a loosely brushed turquoise background. The cool hues are reminiscent of the aurora borealis visible in Arctic regions, which is meaningful given Rutstein's inspiration for this piece. *Brine Forest* is based on Rutstein's recent collaboration with a team of scientists and artists exploring the microbiology of Arctic sea ice. Rutstein is focused on the internal passageways, known as brine channels, that provide habitat for microbial life. These microorganisms, surviving in the most inhospitable of conditions, become the basis of the food web as they recycle nutrients to algae which grow at the base of the ice and in turn feed entire communities in the ocean. *Brine Forest* considers the fluctuating conditions of these life-filled brine channels as sea ice diminishes with rising temperatures due to seasonal shifts as well as climate change. Considering the ecological context, there is a paradoxical feeling of movement-within-stillness in *Brine Forest*, lending a sense of wonder to this hidden world.

The looped linework in Rutstein's *Progenitor Series* is reminiscent of the Automatic Surrealist drawings of early 20th century European modernists, a technique in which artists allowed their hand to draw without the control of the rational mind. And yet there is a delicacy and care in these meandering compositions that suggests that they are representational. Indeed, the *Progenitor Series* is drawn from bacteria derived from an ocean expedition in the Guaymas Basin in the Gulf of California. Rutstein

accompanied scientists on an oceanographic voyage exploring the ocean floor in this unique location, at the juncture of tectonic plates, where water heated by magma is forced out of undersea openings in the earth's crust. Akin to the microbial worlds living in the frozen Arctic ice, there are hidden worlds of microorganisms living on these hydrothermal vents that supply an important foundational source of nutrients to the ecosystem food chain. Rutstein visualizes these microscopic organisms on massive canvases, reinforcing the magnitude of their significance. Through this loving representation in gorgeous linework, Rutstein signifies the beauty of the foundational life in this unique environment at the bottom of the ocean.

Rutstein's *Kama'ehuakanaloa* Series was painted on a research vessel off the coast of Hawaii. In this series she juxtaposes modalities of painting, blending the spontaneity of poured paint with expressive geometric mark-making and linework inspired by elements ranging in scale from undersea mapping to microbial networks. The palettes in this series were inspired by the colors of the deep sea environment and unique geology of the undersea volcano Kama'ehuakanaloa. In this space, water draws iron oxide out of the volcanic rock, or basalt, allowing microbes to feed off and metabolize these chemicals. The colors in this series draw from Rutstein's observations from the voyage's submersible vessel: the black of basalt, the reddish-orange of the blanket-like networks of iron-saturated microbes, the pink and gray from coloration of pillow lava, and the blues of the sea.

Rustein's work sparks amazement for the hidden systems that connect everything in our ecosystem, as well as implications for understanding extraterrestrial worlds. In her artistic research for *Mars II*, Rutstein examined a tiny fragment of a meteorite that originated on Mars through a petrographic microscope. Her maze-like rendering of the fragment's crystalline structure reads as circuitry, a reminder that many forms of man-made technology emulate systems from nature. Rutstein's artistic practice makes environmental structures–from fungal networks to microbes to meteorites–visible through her painting, enhancing the work of scientists and fostering greater understanding and stewardship of the natural world. The wonder of her subjects comes through in vibrantly painted compositions that balance intuition and spontaneity with virtuosity of technique, creating a visceral aesthetic experience.