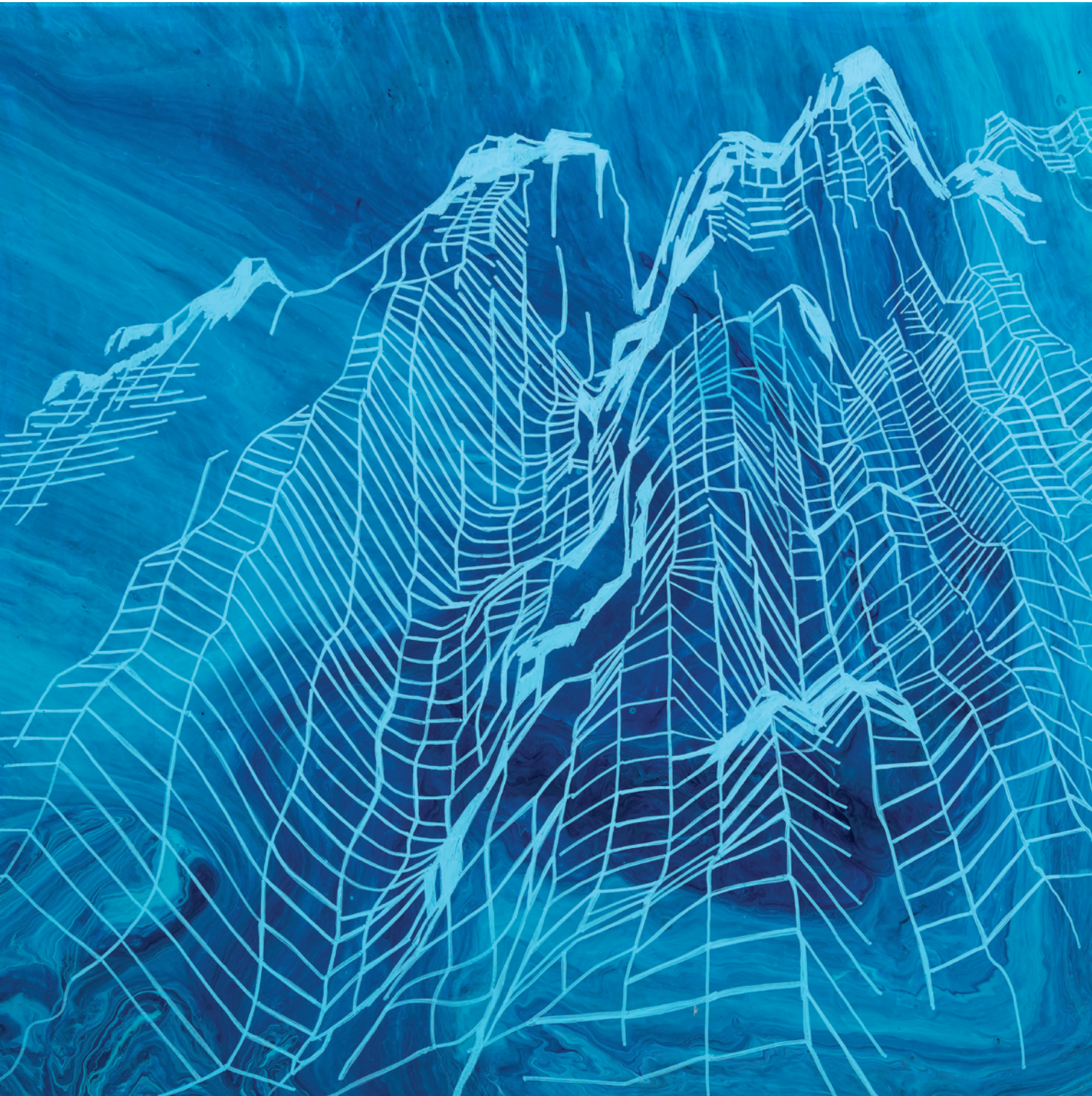


REBECCA RUTSTEIN

Galapagos Seamounts IV, 2018
Acrylic on Canvas, 18 x 18 in.



COURTESY BRIDGETTE MAYER GALLERY

PHYLLIS L. THOMPSON

Everything Moves

Some lessons from the Pacific
Ocean about life on Earth

The lagoon is dark. This afternoon, Captain Ken and I wrestled *La Cuna* out of a Pacific gale, through a frenzy of gulls and whales feeding in a tidal rip, into the sweet protection of this Baja Mexico bay. *La Cuna* means “the cradle” in Spanish and, until a moment ago, she had rocked us peacefully in one corner of a shallow watery maze that includes nurseries for gray whales.

We were drifting toward sleep when we heard the rising sound of a long-drawn *shshshshsh-hiss*, then *thump-thump-thump*—soft things hitting our hull. *Something hit us!* We jump up and scramble through the forehatch. We scan the night. Ken walks around the whole wide deck. We see nothing but *La Cuna* riding easily and twinkles of light in the fluid dark.

In the past on such nights, we have taken a five-gallon bucket and filled it with water. Often, the water in the bucket sparkles and the sides drip iridescent points of light. When we pour the water out, the stream glows with a milky galaxy of stars. Then the sea is black again but glimmering, like a moonless sky.

These night lights are called bioluminescence by scientists, which means “living light.” Years ago, walking on wet sand, I saw in my footprints glowing blue dots. This was how I learned that microscopic plants and animals can shine when jostled. Sailing the Pacific from Oregon to Mexico, Ken and I found that bioluminescence is common in the ocean, anywhere organized light does not overpower it.

Offshore, we see tumbling whitecaps glow pure white, and the wake of a freighter shines brighter than its cabin lights. Once, in a small bay in California, the nearby town lost power as we rowed home late to *La Cuna*. Every time we dipped our oars, sparkling nebulae bloomed around them and swirled into black water. The wake pushed aside by our prow was so bright, we could read a magazine by the bio-light. Now we have sailed beyond cities into a realm of oil-lamp villages and scattered Mexican research stations. We live in places where bioluminescence is routine—though never boring.

When we drop an extra anchor at night, a comet tail streams after it. Fish startle like silent fireworks. Once, dolphins charged into the anchorage, pumping their tails and spiraling water in tumbling tubes of light. For some time

after they passed, the underwater eel grass continued to sway, stroking invisible plankton into twinkles.

Tonight, the anchor chain at *La Cuna's* bow rocks through a misty angle, turning a soft shaft of living dark into light. Wispy wind blows wavelets against the hull, where they rebound as short arcs of pure white. Fish moving nearby are blurred torpedoes flickering at the surface, then gone.

Suddenly we hear the *shshshshsh-hiss* again. A long, uneven blue-white line rushes toward us from the beach, fastfast, crazy tumble of light closercloser, waterfall rogue wave, nothing we can do—*thump thump!* Some things small and soft slam against the hull. Four or five milky torpedoes rebound toward shore.

We look at one another in wonder and pick up the bucket. The water we dip into it does not sparkle—it glows. Blobs of light drip from the bucket and plop like oil paint into the midnight sea. We fling the water out—a sheet of white flame, glowing light molten, flies out, then gone.

We dip up bucket after bucket from the dark lagoon. We send sheets and ribbons and streamers in every direction. Our faces are radiant, lit by shining life flashing over the sea.

* * *

Five years before this extraordinary bioluminescence, I had stepped onto *La Cuna* unknowing. I was a college writing teacher and Captain Ken was my student—a mechanical engineer who worked weekends fixing up an old steel-hulled yawl at a floating dock on the Willamette River in Portland, Oregon. He enrolled in my evening class, he said, so he could write about his adventures when he sailed single-handed around the world like the famous mariner Joshua Slocum.

I was attracted by his lanky courage and, on a rainy hike after the class was finished, he said his sailing voyage didn't have to be solo. He asked if I'd like to join him on his first leg north to British Columbia, toward the green fjords and passing orcas of the Queen Charlotte Islands. I grew up in a Navy family, never living anywhere more than three years, and kept that habit. My teaching jobs were mostly part-time. I was ready for a nature adventure, so I said yes. My bones knew nothing of what it would mean to balance day and night on the skin of moving waters in the palm of all weathers—but I soon found out.

When I stepped aboard *La Cuna*, the cradle rocked. You know how Heraclitus wrote, "All is flux, nothing stays still"? On boats this is no metaphor. Water moves. I trained to sail on the river, a live, three-dimensional creature sheltering otters and sunken snags. Air moves. I struggled with a thirty-five-foot yawl, which rose, exposed, above a surface where nothing softened shifting winds. My body strained against the fall of anchors, the pull of flapping sails, the cranky resistance of muddy rope. I discovered I have muscles that get sore all along each finger. Everything moved and was being moved. Literally, it was chaos.

Chaos is what scientists in the 1960s called their field when they decided to study complex change. Chaotic systems, they said, are nonlinear (like the sea). They are collections of many forces with no central control (like weather). And they respond to feedback, adapting sensitively to changing conditions (like sand under waves). At a physical level, the universe accepts what comes, adapts, and moves on. I understood this abstractly, but I had never had to deal with its consequences on a daily basis.

I was a North American child of prediction and planning, protected by masses of construction that walled out constant change. I traveled roads to avoid inconvenient fluctuations. Bridges lifted me over troubled waters. But on *La Cuna*, aiming for some harbor, I had to hold her bellied sail on a moving edge between full and luffing while wind shifted and water slid. I had to adjust muddy ropes and flapping sails to accommodate changing conditions. Adaptively balancing rudder against current so that turbulence pushed us in the right direction became crucial, otherwise—*oh, no!* We ran aground. When I complained that turbulent powers were putting our lives and *La Cuna* at risk, Captain Ken got excited.

"That's the challenge of it!" he crowed. "Let's look at some ways to get out of this mud."

How had Ken made peace with constant change? I was used to planning carefully to avoid problems like this. I designed classes for a ten-week term, looked at five-day weather forecasts. Increasingly I doubted my ability to cope with a fluid world, yet I was raised to keep promises. I had signed on for some vague adventure. Would green harbors and flashing orcas be worth it?

Acknowledging my fear, Ken built as many layers of protection into the boat as we could afford. I packed as

much food and medical supplies into jars and bags and buckets as *La Cuna* could hold. The river flowed to the sea. We quit our jobs, wrote our wills, and took *La Cuna* to the mouth of the Columbia.

Sailing into the Pacific Ocean, aiming for Canada, we tacked northwest into wind coming unobstructed from Alaska. *La Cuna's* bowsprit dove into seas coming every five seconds, every twelve seconds, hour after hour. I was seasick. We tacked back toward land, trying to squeeze northward inches out of any hanging pause. Captain Ken at the wheel was coated with salt spray. Finally, we came in sight of the Cape Disappointment light at the mouth of the Columbia River and saw we had not traveled north at all.

We tacked back into Alaskan winds, seas lifting and twisting us every five seconds, every twelve seconds. The combined chaos toppled our mizzen mast. Ken cut it free. A line that tied our big anchor alongside the bow worked loose. The anchor rose and fell, every five seconds, every twelve seconds, banging against the steel drum hull. As I huddled in the pilot berth, fear fingered into my brain like fog. Surely the anchor would pound a hole in the hull. The freezing sea would pour in. Our shaken bodies would sink into the abyss, our last bubbling breaths rasping, "Mayday! Mayday!" into the Void.

The hatch slid open and wind whipped down.

"Shall we turn south?" Ken yelled.

"Yes," I breathed.

The next morning, we wound through fog into the marina at Newport, Oregon, and learned we were not alone.

Mariner-novelist Joseph Conrad observed in Lord Jim that,

There is such a magnificent vagueness in the expectations that had driven each of us to sea, such a glorious indefiniteness, such a beautiful greed of adventures that are their own and only reward! What we get—well we won't talk of that. [. . .] In no other kind of life is the illusion more wide of reality—in no other is the beginning *all* illusion—the disenchantment more swift—the subjugation more complete.

What Conrad means is that every first-time mariner prepares for sailing based on their experience. The reality is that no one raised on solid ground can imagine the

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infinite nonlinearity of constantly moving seas, unpredictable storms and calm, the randomness of motor and wire, buoys and rocks. The idea that I might be able to plan in a chaotic universe was a grand illusion.

In Newport, we met others who had been forced to turn south by wind and wave. They shared recipes and tips on crabbing with us. Fishermen told us where to land our dinghy. I studied waves and weather while Ken repaired and strengthened *La Cuna*. Eventually we set out again to discover the other reality of life on the edge between stability and turbulence: when you have no idea what will happen, over half of the possibilities are good.

* * *

The morning after our exaltation by molten light, Ken and I row to the mariculture research station for this lagoon and explain what we saw to Dr. Bernal.

"What do you think it was?"

"I do not know. Normally, we think of a diatom bloom, where many small creatures divide very fast. But usually

Continuing south, Ken and I stopped for weeks or months or years in harbors along the California coast.

the water looks muddy then—‘the red tide,’ I think in English? But we have no red water this week. I will ask if my colleagues can explain it.”

The next day the research motor launch nudges alongside *La Cuna*. Dr. Bernal balances in the open boat to hand us a scientific paper.

“We are going into the bay to take samples,” he says. “We wonder if this is what you saw.” The article describes a one-celled animal that lives in bioluminescent silica boxes.

“When the creature divides, the silica box splits and each creature builds a new home,” the doctor explains. “The boxes remain luminescent for several hours, so there can be many of them in the sea at one time. I do not know if that is what you had. Every bay is so rich in mystery.”

Excited, we tell other sailors in the lagoon about the shining lights. We discuss the lines of fish that torpedoed our boat and guess they were schools blindly fleeing some night predator. After dark, everyone gathers on *La Cuna* to lift water in buckets. But clouds cover the sky and the sea is slate. Not a single star shines in the ocean universe, neither above nor below. Mystery has moved on.

* * *

Everything moves. I understood from the moment I stepped aboard *La Cuna* that the cosmos of ocean and air, molecules and moon, gravity, temperature, and spin is multiple moving systems whose relations are so interwoven that lines of force are nearly impossible to isolate. But only

by balancing for years within the fluid sphere of sea and sky did my bones recognize that these movements are not random. Together they always shift toward balance. *Cosmos* means “harmonious system.” Chaos keeps accepting whatever comes, then sensitively adjusts and balances the whole. Balance is not a noun, but a verb.

After three weeks in Newport, Ken and I sailed our survival pod again into the ever-moving sphere. The next day, *La Cuna*’s rudder cable broke. Ken squatted in the engine compartment below the wheel, pulling the rudder quadrant left and right for several hours as I used a chart to call out instructions that got us into a sheltering cove. We were exhausted but alive—and again, we were not alone.

In the cove were two cruising sailboats, one of which had been knocked down by waves; no one hurt, but all their possessions had been tossed and soaked. We worked together for several days, putting our boats to rights, catching fish and smoking them on the beach, being scouted by pelicans. Sharing stories and laughter, balancing amid constant change.

Continuing south, Ken and I stopped for weeks or months or years in harbors along the California coast. We were becalmed off St. George Reef and barely staggered into Crescent City harbor with a dying transmission. Engines can be brought back to balance. A passing gull slept one foggy night on our front deck at sea. We invited boat neighbors to share homemade potato chips. We anchored in turquoise bays and collected bird bones tossed and bleached to purest white, moving from life to art, from art to mineral.

Sometimes, I gathered our treasures, drilled holes with a yarn needle, and linked bones, driftwood, and colored shells with fishline. The mobiles swung and clicked with the motion of our boat, and I watched each element shift in and out of balance every moment, responding to constantly changing conditions in every dimension.

We saw how we are part of infinite shift. Barnacles settled on our hull and rode along, combing their dinners from living water. We gathered fish, redwood sorrel, clams, ripe blackberries bursting in our mouths. Rain washed the deck two feet above my face. A young pelican tried to wrap webbed feet around our lifeline. I stopped trying to plan.

On night watch in the cockpit, balancing in boots on damp wood, I stand at the center of the only human thing

in view. My body rides warm inside layers of gear while moist air chills my nose and cheeks. Temperature and pressure lift and lower. The masthead light floats yellow above, rails curve like parentheses on both sides. A red light in the compass protects my night vision. After three hours, my eyes see as much as they are able, and I look over chaos, wet and heaving.

At sea, the night is never completely dark. Above, a luminous moon might be diffused by clouds, starlight might rain down. Below, fishy luminescence flashes or foam shines. These night lights are muted—organic, chemical, mineral. They do not disturb my ability to see whatever comes.

This is not always comfortable, not always safe. Sometimes, common dolphins stripe the water or strange shapes of flotsam float by. Sailing south thirty miles out, *La Cuna* moves on glassy seas that roll away like sleek seals. To the east, the moon rises red orange through smog. To the west, two giant bulbous buoys emerge from the satin water, like yellow ships from an alien world. They are not on our charts and are marked only with the universal symbol for toxic waste. No curtains. No walls. We are surrounded by powers, passing.

Born of mystery, not made, life blinks on within a universe of forces that are not life and balances for all it is worth. Each of us—every person, every virus—surfs a moving edge between chaos and stability, snatching and transforming what we need out of pollution and plowed earth. Whether we flap or drift or set sails to stay alive, at sea there is no doubt: With everything we move, like white foam hissing on a wave. With everything we move toward nothing, like waves washing toward the shore. With everything, we belong.

* * *

A week after arriving, we are invited deeper into the Baja bay’s maze by musicians on a shallow-draft oyster boat modified for cruising. The lagoon is gray, the night filled with moon-luminous mist and the breathing of whales. Six of us lie along the decks, listening.

“Can you hear the differences?” one musician whispers. “There—there’s an A with a higher A just behind it. Now. Hear it? That mother’s E. The baby’s E-flat.”

We lie on mist-damp decks, listening to the slow musical sighing of whales.

The night turns. The moon sinks, the mist dissolves. We lie under a clear sky washed with starlight that slides up from the dark shoulders of dunes.

“Look!” someone whispers. “The spouts are phosphorescent.”

The whales’ whistling breaths are filled with shining life.

On an oyster boat modified for cruising, six humans float at the center of a curving universe, watching light move.

Meteors flash across the sky, trailing dust into air. Air scatters dust as the earth spins out weather. Soon, sunlight and wind will lift water. Lifted water condenses around dust and falls, splitting light into rainbows, showering all life. Clouds charge up lightning that burns life to ash. Ash supports plants that become earth that washes into streams that run to the sea. Minerals dissolved from earth feed luminous creatures in an ocean that buoys up mothers and carries shining life into their maws to nourish babies born into water, who breathe air in and breathe it out glowing.

We float within sea and sky watching, listening, knowing how we are all shining life—each of us a place where mysteries meet and move on.

Phyllis L. Thompson has written about sailing through mud and meeting odd creatures for *Cruising World* and *Oceans* magazines. Ever-moving herself, she edited the book *Dear Alice: Letters Home from American Teachers Learning to Live in China* (Berkeley, California, 1998), which includes her own experience in Hunan. “Everything Moves” collects bits from an emerging memoir about six years at sea, *Sailing between Sea and Sky: What I Learned from the Ocean about Life on Earth*. Please visit www.phyllisthompson.net