

Glenn Kaino

This Book
Is A
Memory

PROMISE 04

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MEMORY

Introduction

Changing Course

David Gruber

The vibration of the hum, the larynx shivering. Mm-other, Mm-adre, Mm-oeder. Air extending outward through the lungs. Four hundred million years ago, the lungfish or Sarcopterygians took their first breaths outside of the ocean. These aquatic relatives endowed us our paired limbs, arms and legs, as we took our first hesitant steps out of the sea.

It was once thought that the oceans were a silent world, "*Le Monde du Silence*,"¹ but ancient songs have reverberated beneath the waves from long before we ever considered evolving to stand upright. Our human ears now have the capacity to hear resonating sea urchin skeletons orchestrating coastal ensembles,² to listen to millions of lanternfish moving their jaws to "evening choruses" deep among submarine canyons.³ We now know that eager audiences even consist of fish larvae, which have finely tuned hearing to listen for the "homeward sound" of their acoustical homes.⁴ Our collective thoughts and knowledge have shifted to recognize the beat that has been.

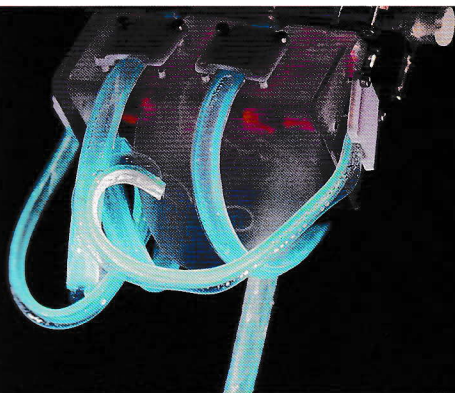
Nicolaus Copernicus had few of his mortal breaths remaining in 1473, when he exhaled his idea that the earth is not the center of the universe and that we revolve around a dwarf star that we call our sun. His text titled *De revolutionibus orbium coelestium*, or "On the Revolutions of the Celestial Spheres," was not widely discussed at the time. This idea took centuries to ignite into a hypothesis with ever-mounting clarity and evidence, a heretical revolution of celestial capacity.

I sometimes look up at our dwarf star with squinted eyes. She does not appear dwarf to me, she is our everything-orb, floating high in the sky eighty million miles away. Burning like an inferno; millions of hydrogen bombs igniting and gently providing the nourishment to the green leaf beside me. Plants have the machinery to catch and consume her gentle nourishing photonic magic. It took time for me to accept the duality of the sun's emitted particles, being both particles and waves at the same time. I've studied this time and time again, like analyzing the magic tricks of Harry Houdini (aka Erik Weisz), how he might unshackle after diving into the depths. I've come to understand how the plant embraces and harnesses Lilliputian waves, waves that measure less than a millionth of a meter, not dissimilar to the meter-high ocean waves I joyously played in as a child. James Maxwell deciphered the wave particle dualism wizardry in 1865.

In equations, he explained how electric and magnetic fields travel through space as waves and move at the speed of light. Like $E=MC^2$, a natural law that has yet to be disavowed.

Breathe in. Breathe out. Out of our mouths come water and carbon dioxide. In simple terms, plants use carbon dioxide and water to produce sugar and oxygen. Our thoughts and bodies are energized by this sugar and oxygen and we exhale carbon dioxide and water. Once returned to the air, this is eventually taken up by a plant once again. Our star, our plants, our bodies. The cycle, the revolution continues. The sun burns bright until, someday, it doesn't.

Stephen Hawking predicted in 2014 that the full development of artificial intelligence, combined with robotics and other technologies, "could spell the end of the human race."⁵ Why would we continue down a path that leads to the demise of our own species? Why not invent the most gentle and connective technology in the world—for example, robots that can embrace a jellyfish without harm?⁶ Why end our human cycle prematurely? Going backward is not an option on our mortal timescales. We cannot return to the sea in our lifetimes, in the way that marine mammals have slowly done. Our noses gradually becoming blowholes; our ears becoming more acute than our eyes; our heartbeats



Ultra-gentle soft robot with "linguini fingers" that can interact with fragile life, such as jellyfish, using less force than our eyelids exert while resting on the eyeballs. Engineered by Dr. Nina Sinatra of the Harvard Microrobotics Laboratory. Photo: David Gruber

slowed down; and with the ability to conserve oxygen for prolonged breath-hold dives. We cannot leave the past behind, unexamined. We need a new way forward; one that reckons with how we got here.

Nikki Giovanni's 2010 poem, "Quilting the Black-Eyed Pea (We're Going to Mars)," comes to mind:

*When the rocket red glares the
astronauts will be able to see
themselves pull away from Earth...
as the ship goes deeper
they will see a sparkle of blue...
and then one day not only will
they not see Earth...
they won't know which way to look...
and that is why NASA needs to
call Black America
They need to ask: How did you calm
your fears...
How were you able to decide you
were human even when everything
said you were not...⁷*

While we can go to Mars, are we ready to go to Mars? Are we ready to relinquish our training wheels of intraspecies and interspecies dialogue here on earth? As Glenn Kaino states in *In the Light of a Shadow*, it is more evident than ever that we must fight "to dismantle the repressive frameworks of power that have shaped our relationship to our planet, and each other."⁸

Have we considered the vitreous fluids in our eyes and how they will respond to life in space? How the change in gravity will affect the ebb and flow of the cerebrospinal fluid in our brains and spinal cords?⁹ I find hopeful essences embedded in life's symbioses. The meandering relationship to a plus/plus (+, +) stands as an example of beauty and magnificence. Examples of this include the coral and *Symbiodinium* dinoflagellate union that leads to reef structures that can be seen from space, arising from nutrient-poor oligotrophic watery deserts; the cellulose-consuming microscopic gut community that allows wood to power termites' and insects' engines, a process so powerful it changed biogeochemical cycles and climate; and the plastid inside plants who trace their ancestry back to a union between a cyanobacteria and a protozoa. Or perhaps we don't even have to look far—just inside each of us—to honor the mitochondria inside our cells, these energy factories with their separate mitochondrial DNA having their roots as purple non-sulphur bacteria.

No other species in the history of life on earth has revolved around the conscious situation in which we now find ourselves. How do we move forward collectively toward a bright future? How do we dismantle the repressive frameworks of power that have shaped our relationship to our planet, and each other? We need more

than magic to lift the chains on the box that imprisons Schrödinger's cat. As the sun sets, I find hope in the rays of light, composed of particles and waves; in the duality of natural processes; in the prospect of equity and the inevitability of evolution.

Tomorrow is a new day; another possibility to find the light of the shadow.

¹ Jacques-Yves Cousteau and Louis Malle, *Le Monde Du Silence*, 1956, 86 mins.

² Craig A. Radford, et al, "Resonating sea urchin skeletons create coastal choruses," in *Marine Ecology Progress Series* (June 2008), 362, pp. 37–43.

³ Robert D. McCauley and Douglas H. Cato, "Evening choruses in the Perth Canyon and their potential link with *Myctophidae* fishes," in *Journal of the Acoustical Society of America* (2016), 140(4), pp. 2384–2398.

⁴ Stephen D. Simpson, et al, "Homeward Sound," in *Science* (2105), 308, p. 221.

⁵ Rory Cellan-Jones, "Stephen Hawking warns artificial intelligence could end mankind," December 2, 2014, www.bbc.com/news/technology-30290540.

⁶ Michael Tessler, et al, "Ultra-gentle soft robotic fingers induce minimal transcriptomic response in a fragile marine animal," *Current Biology* (2020), 30(4), pp. 157–158.

⁷ From Nikki Giovanni, *Quilting the Black Eyed Pea: Poems and Not Quite Poems* (William Morrow, 2010).

⁸ From Kaino's proposal text for this MASS MoCA exhibition, 2020.

⁹ Vincent Koppelmans, et al, "Brain structural plasticity with spaceflight," *npj Microgravity* 2 (2016).