Strange sounds in deep water

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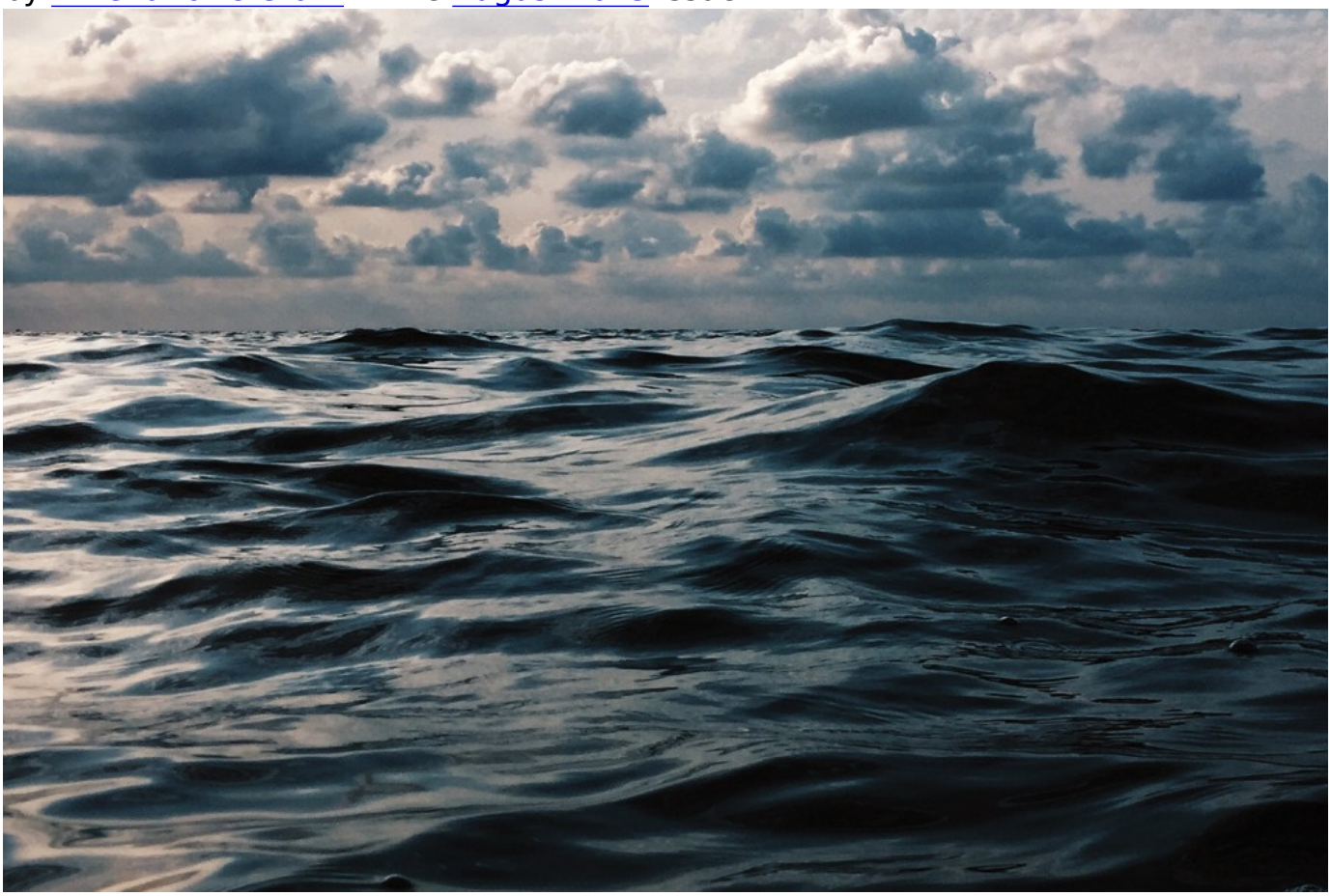
by Liz Charlotte Grant in the August 2023 issue



(Giga Khurtsilava on Unsplash)

Everything depends upon the voice. Call it whatever: still and small, the crackling thunder in the cloud, the donkey's intelligible haw, the pause in the center of a hurricane gale. The voice needs no invitation; it will always seek out first contact, whether I welcome it or not.

I have felt that treble resonance within my body. If I had to guess, I'd say the voice resides somewhere deeper than my lungs. Wherever the antenna tuned to divine

speech lives, it occasionally wakes me up at night, as if my seven-year-old had silently wandered into the room and clicked on the light.

In 1958, navy sonar engineer Frank Watlington was listening for the telltale sounds of USSR submarines when he stumbled onto an alien world. During the Cold War, the US Navy had commissioned a secret base off the coast of Bermuda to map the sonic landscape of the ocean. Frank and his research colleagues perfected an underwater microphone called a hydrophone, which could act as audible radar to track the movements of the deep through sound waves, including anything human-made. The navy hoped no underwater presence (read: no bad guys) would go undetected. (I'm drawing details of Frank's story from a 2014 *60 Minutes* special and the website SOFAR Bermuda.)

A photo from the 1960s shows Frank aboard a research sailboat, on the way to drop a hydrophone 1,500 feet into the ocean, and he's shirtless and grinning. His coworkers liked him, admiring how he tinkered with the lab's electronics with his own hands.

Frank was good at his job. Yet he could not crack its mysteries. Come March of each year, the soundscape shifted and the drum recorder—a time-stamped, heat-sensitive paper that reacted according to the intensity of any sonic vibration collected by the hydrophones—danced across the paper rhythmically, recording frequencies too low and too unfamiliar to be identified. The navy assumed that the Soviets had created a world-ending weapon for which they had no answer, and posthaste they assigned the problem to Frank's team, calling it "project BLIP" and the low frequencies "interference." But Frank had noticed the patterns of those frequencies—their seasonality, the particular tones and rhythms too deep to be heard with their speaker systems—and felt convinced the Soviets could not be responsible. These were natural noises, but they couldn't find the responsible party.

No problem—as long as it wasn't the Soviets, it didn't matter. Except that the problem turned personal for Frank one night when he stayed late to install a new set of bass speakers. He'd run out of the lab for a second when, as a coworker of Frank's told *CQ VHF* magazine in 2010, "all of a sudden there were ghostly noises from the recording room. Moans of the most unearthly type were permeating the entire station." Any noise in the bunker was amplified across the concrete floors, the cinder block walls, and the austere IBM data processors that made up the Bermuda laboratory. But this noise unnerved Frank.

He picked up a 15-inch-long microphone near his desk—an improvised weapon, in case he needed to defend himself from whatever intruder was making the racket—and crept along, searching for the source. Which is when he discovered that the noise was emanating from the new bass speakers he'd just installed: they were blasting those seasonal bumps, the mystery frequencies Frank and his colleagues had never identified. Before that night, the frequencies had been too low for any human to perceive, but the new speakers changed that.

Those surprise sounds—clicks and whines and groans—sounded like nails on a chalkboard to many of Frank's coworkers, who found his determined interest to keep tuning in annoying, as each morning they were subjected to the soundtrack on repeat. Whenever Frank arrived in the lab for his half-day shift, he would turn on the speakers, listening and mapping the soundscape for hours at a time. He found that the frequencies ranged from three octaves beneath middle C to four octaves above.

Frank made his own recording—one *not* classified by the government as top secret—and he played it for anyone who would listen: family, friends, neighbors, kids at the pool, and finally, a group of local fishermen. The fishermen gave Frank his break: "Oh, that's whales," they told him, recognizing the noise immediately. Frank was the first person ever to record the fin whale's voice.

Roger Payne, the marine biologist who made whale song famous in the 1970s, was one of the first scientists with whom Frank shared the solo whale noise recording. In *The Cultural Lives of Whales and Dolphins*, Hal Whitehead and Luke Rendell quote Payne's description of his first listening experience: "It was . . . the first time I had ever heard the abyss. Normally you don't hear the size of the ocean when you are listening, but I heard it that night. . . . That's what whales do; they give the ocean its voice, and the voice they give is ethereal and unearthly."

We cannot say, for certain, *how* whales sing. The mechanics puzzle scientists. Humans have vocal cords that open and close like lips between our esophagus and airway, tuned by our breathing. Whales do not. Whale song more closely resembles the bellowing of human body cavities, and so scientists hypothesize that whale song occurs entirely inside their bodies. A whale's music comes from its guts. Still, the particularities of how a song is made and its emotional resonance are not the same thing.

When the whale sings, I am reminded of the mournful whine of a clarinet from my days in the high school marching band: the scrape of reed against taut lips, saliva, breath entering and exiting the instrument via the muscular punch of the diaphragm. I'm reminded of a bagpipe releasing its air. The trembling bass of Johnny Cash. The orchestra tuning before the concert begins. The relief and confusion of meeting my child's eyes for the first time after I expelled her from my own throbbing body.

Sound travels as a wave. Human perception of sound, from eardrum to nerve to brain stem, arrives faster than our eyes perceive light. Though light and sound might occur simultaneously, humans will always hear an event before we see it. In Genesis, everything originates from the Spirit's speech. The Deity projects its voice clearly enough to conceive all that is. This is more of a poem than a scientific accounting—the author seems to have left out any sense of dimension, so that the details don't line up straight. For example, how and for how long does the voice unfurl the cosmos? A week? A minute? A million centuries? From this wave comes solar systems and species by the millions, every created bit of matter individuated from every other bit of matter—continent from cloud, ant from cockroach, eye from lash. The God with no throat speaks the universe into existence. The being without shape produces every shape.

The role of sound in creation is not unique to Judaism; it comes up in other ancient Near Eastern religious traditions as well. In a myth from the Book of the Dead, an ancient Egyptian mortuary text composed by hundreds of Egyptian priests between 2400 and 1550 BCE and inscribed on the walls of tombs to point the occupant's way to the underworld, a cosmic goose laid an egg that contained the entire universe, including a creator deity and the primordial landscape. The authors named the origin of all else "the Great Honker," and its "strident cry was the first sound," writes Geraldine Pinch in *Egyptian Mythology*.

Since the day of our creation, humanity has been knocking at the sky. That might explain why we shot the Golden Record skyward in 1977, strapped to the side of the Voyager spacecraft. In its grooves, we recorded every greeting our planet could offer, including whale song, in search of someone to hear us.

Carl Sagan described the mission like this: "If Voyager should sometime in its distant future encounter beings from some other civilization in space, it bears a message. . .

. A gift across the cosmic ocean from one island of civilization to another.” But why do we think we’d understand the noises of distant galaxies or that they’d understand ours? The greatest wonder to come from the Golden Record may not be that we hear a word in response to ours but that we will be a bit like Frank Watlington, listening to the voice of the abyss and wondering, *What is this*?