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OP-ED CONTRIBUTOR

The Mix Tape of the Gods

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THIRTY years ago today, the Voyager 1 space probe — a one-ton robotic craft whose long antennas make it look rather like a spider the size of a school bus — was launched from Cape Canaveral, Fla., on a mission to reconnoiter Jupiter and Saturn. To succeed, Voyager would have to survive five years in the vacuum of space, where it would encounter cosmic rays, solar flares, the hurtling rocks and sand of the asteroid belt, and Jupiter's intense radiation bands.

The probe did all that, transmitting back reams of scientific data and memorable color photos: of the sputtering red and yellow volcanoes of Jupiter's moon Io; of the shimmering blue ice that shrouds Io's fellow satellite Europa, beneath which a liquid ocean is suspected to dwell; of Saturn's myriad rings and the murky mysteries of its orange satellite, Titan, whose hazy atmosphere is thought to approximate that of the early Earth.

Having accomplished its mission, Voyager 1 might have quietly retired. Instead it remains active to this day, faithfully calling home from nearly 10 billion miles away — so great a distance that its radio signals, traveling at the speed of light, take more than 14 hours to reach Earth. From Voyager's perch, the Sun is just another star, south of Rigel in the constellation Orion, and the Sun's planets have faded to invisibility.

Like its twin, Voyager 2 — which dallied behind to examine the outer planets Uranus and Neptune and is departing the solar system on another trajectory — Voyager 1 is approaching the edge of the solar system. That limit is defined by a teardrop-shaped bubble called the heliosphere, where the solar wind (particles blown off the Sun's outer atmosphere) comes to a halt.

If all continues to go well, Voyager should pierce the heliosphere's outer skin by around 2015. It will then depart into the void of interstellar space, where it is destined to wander among the stars forever.

Mindful of this mind-boggling fact, the astronomers Carl Sagan and Frank Drake persuaded NASA to attach a gold-plated phonograph record to each of the Voyager spacecraft.

Containing photographs, natural sounds of Earth and 90 minutes of music from all over our world, the record was intended to preserve something of human culture beyond what an intelligent extraterrestrial, encountering the craft at some far-distant time and place, might infer from the spacecraft itself.

The information etched into the grooves of the Voyager record is expected to last at least one billion years. That's a long time: A billion years ago, life on Earth was first venturing forth from the seas.

Over the past three decades, the gold record has become an article of international curiosity. Spirited discussions continue about what we might do differently if we were making it today. (Having produced the record, I answer that I wouldn't change much.) At the time, though, the record almost didn't make it.

NASA officials, worried that Congress would ridicule the record as a waste of public money, had tried to play it down. Press-release photos of the spacecraft almost invariably showed the side opposite to where the record was bolted on, literally hiding it from view.

And after the record was completed, NASA rejected it on technical grounds. Late one night in a New York sound studio, when we'd finished cutting the master, I inscribed the words, "To the makers of music — all worlds, all times," in the "takeout grooves" next to the label. (The Voyager record is a metal version of the 33 1/3 vinyl records of the day, recorded at half-speed to double its data content. Etching an inscription between the takeout grooves was a trope I'd picked up from John Lennon.) A NASA quality-control officer checked the record against specifications and found that while the record's size, weight, composition and magnetic properties were all in order, its blueprints made no provision for an inscription.

So the record was rejected as a nonstandard part, and the space agency prepared to replace it with a blank disc. Sagan had to persuade the NASA administrator to sign a waiver before the record could fly.

Forty thousand years will elapse before Voyager 1, departing the realm of the Sun at a speed of 38,000 miles per hour, passes anywhere near another star. (It will drift within 1.7 light years of a dim bulb called AC+79 3888.) And 358,000 years

will elapse before Voyager 2 approaches the bright star Sirius.

Out there, our concepts of velocity become provincial. The stars are moving, too, in gigantic orbits around the center of the Milky Way galaxy. Voyager, a toy boat on this dark sea, will not so much approach Sirius as watch it sail by, bobbing in its mighty wake.

Contemplation of Voyager's billion-year future among the stars may make us feel small and the span of our history seem insignificant. Yet the very existence of the two spacecraft and the gold records they carry suggests that there is something in the human spirit able to confront vast sweeps of space and time that we can only dimly comprehend.

If some recoil from the brink of space, others find it liberating. Our perspective was aptly expressed by the 18th-century science writer Bernard de Fontenelle, in his fictional dialogue "A Plurality of Worlds." "You have made the universe so large that I know not where I am, or what will become of me," complains a lovely young marquise whom Fontenelle is tutoring. "I protest it is dreadful."

"Dreadful, Madam?" Fontenelle replies. "For my part, I am very easy about it."

Timothy Ferris is the writer and producer of "Seeing in the Dark," a PBS film based on his book of the same name.