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The Loneliest Planet

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By ALAN HIRSHFELD

Aliens invaded my life one Sunday night in 1957 when I was 6 years old. As I pulled close to watch Walt Disney's "Wonderful World of Color," the screen of our old black-and-white Admiral TV seemed to bleed into rainbow hues. Disney introduced the evening's program: "Mars and Beyond," a meditation—in retrospect, an entertainment—on the possibility of life on other worlds. "Will we find planets with only a low form of vegetable life?" Disney wondered, then nodded genially toward his towering, metallic co-host. "Or will there be mechanical robots controlled by super-intelligent beings?" To my juvenile mind, these questions were an invitation to a living-room ride into outer space.

The program featured a wry, animated history of ideas about otherworldly beings, interrupted by scientific testimony from dark-suited experts like Wernher von Braun. With the rush of a Disneyland roller coaster, it launched full-tilt into speculation about alien life forms. I sat riveted by a succession of Dalí-esque landscapes, overrun by writhing, python-thick vines and nightmarish carnivorous creatures, all waging the brutal business of survival to an eerie electronic score. The import of these scenes was clear, at least to a callow 6-year-old: There must be life out there; we must find it.



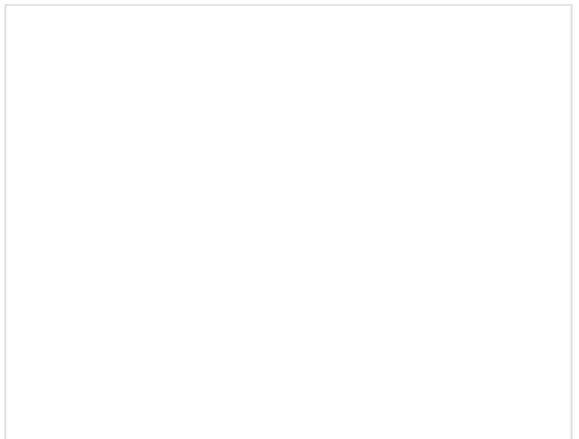
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The earth as seen from the moon during the Apollo 11 mission.

The hothouse of 1960s space exploration whetted my taste for all things extraterrestrial. I read a book called "Intelligent Life in the Universe" (1966), written by Russian astronomer Iosif Shklovsky and expanded upon by a rising planetary scientist from Harvard named Carl Sagan. Gustav Holst's "The Planets" became the theme song of my adolescence. Like Walter Cronkite, whose muted narration betrayed his own disappointment, I was crushed by the grainy photos of the desolate, utterly lifeless surface of Mars sent back by Mariner 4 after a flyby in 1965.

Alone in the Universe: Why Our Planet Is Unique

By John Gribbin
Wiley, 219 pages, \$25.95

Gradually my youthful certitude about the imminent discovery of life on other worlds tempered. New information corralled the broader reaches of speculation. Martian landers found no sign of microbes in the soil, while probes to Venus crisped in that planet's sulfurous hothouse. Radio telescopes, which have now spent decades on the lookout for transmissions bearing the telltale



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signature of an advanced civilization, have received not a single one.

Recent discoveries might seem to boost the likelihood of life elsewhere in the galaxy. We have confirmed the stunning ubiquity of extrasolar planets in other star systems, the latest a possible Earth-analog orbiting right in the habitable sweet spot—not too close, not too far—from its central sun. Biologists have encountered bacteria underneath a mile of Antarctic ice and nestled within rocks in a Yellowstone geyser; it's only a modest stretch to imagine that the next generation of robotic spacecraft might find simple biota in equally hostile havens on Mars or on one of Jupiter's moons.

But as John Gribbin points out in his grimly plausible book, "Alone in the Universe," there is a world of difference between *habitable* planets and *inhabited* planets. Mr. Gribbin's narrative reduces the vision of Disney's documentary into the counterfactual fever-dream it really is. The author's conclusion: Earth is the sole abode of intelligent life in the galaxy, the product of a profoundly improbable sequence of cosmic, geologic and climatic events—some thoroughly documented, some inferable from fragmentary evidence—that allowed our planet to become a unique refuge where life could develop to its full potential.

Chief among these, paradoxically, was a near-cataclysmic planetary collision during Earth's infancy, which gave birth to the moon. Such encounters were relatively common in the harum-scarum chaos of an early solar system that teemed with veering planets and asteroids. In its suicidal blow against our world, the Mars-size impactor generated enough heat to liquefy both itself and Earth's exterior. Its dense, metallic core plunged inward to join our planet's existing metallic center, while the rest swept up part of the fiery terrestrial shell to form the moon.

One consequence of Earth's tumultuous youth was the thinning of its rocky crust. This has provided the planet with a lively tectonic existence, complete with vapor-spewing volcanoes, continents that divide and drift, and an ecologically advantageous global-temperature-regulation system. Earth's swollen metallic core remained liquid; its constant churning gives rise to electrical currents that generate a far-flung magnetic cocoon that shields us from dangerous solar particles. (The creation of Eden is far more complex than one might have heard.)

Another fortuitous coincidence on Mr. Gribbin's checklist is the moon's large size relative to Earth, a ratio unique in the solar system. Without such a gravitational partner to restrain the disrupting tugs of the sun and Jupiter, our planet might suffer paroxysms of axis-tilting. (Try to run a civilization when your once-temperate hemisphere suddenly heels over to an Arctic orientation.) Mr. Gribbin outlines how a series of climate-altering Ice Ages and tectonic shifts benefited human ancestors roaming the grasslands of East Africa.

These events are real; the conclusions are speculative, but plausible. But speculation is part of the fascination (and the fun) of the extraterrestrial-life debate and part of the reason it has percolated since antiquity. The Greek philosopher Epicurus, in the fourth century B.C., envisioned a plurality of worlds, some of which, he claimed, harbored living beings. Plato demurred, holding that a unique Creator would form a unique cosmos; thus, the central Earth must be the sole harbor of life. Early Christian scholars, including Thomas Aquinas, tended toward this view. (After all, what God would deliver Earthlings from sin yet abandon his creations elsewhere?) But the issue intensified in 1277, when Étienne Tempier, Bishop of Paris, condemned arguments that seemed to restrict God's ability to seed the cosmos with life, if he so chose. Why would God be so profligate with cosmic habitations yet so miserly with occupants?

The prevailing "lonely Earth" outlook eventually encountered fierce opposition from a tract titled "Of Learned Ignorance" (1440), published by Nicholas of Cusa. Here readers discovered that among the numerous inhabited worlds in the cosmos are our own moon and sun. In 1543, Nicholas Copernicus recast Earth as a common planet, circling but one of a vast population of much more distant suns, and from then onward a stream of planetary-voyage fantasies and broader speculative works emerged.

Readers eagerly flung off life's sober reality and flirted with far wilder prospects of imagination. In a best-selling 1686 confection, "Conversations on the Plurality of Worlds," French fabulist Bernard le Bovier Fontenelle describes Venusians as "little black people, scorched with the Sun, witty, full of Fire, very Amorous," while their glum counterparts on

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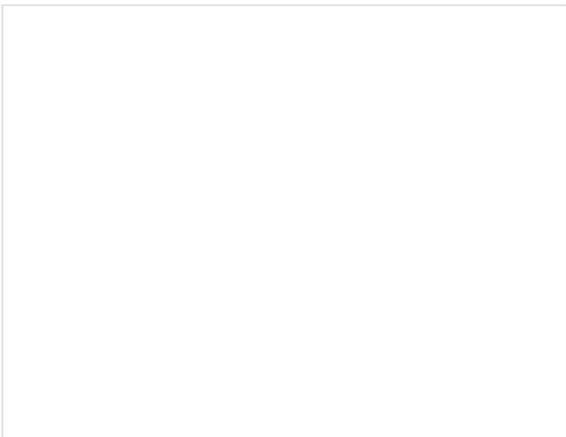
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Jupiter "are so very grave, that were Cato living among 'em, they would think him a merry Andrew."

The line between science and speculation has long been muddled. As late as 1800, William Herschel—the same man who discovered the planet Uranus and mapped the boundaries of our galaxy—charted vast forests on the lunar surface and claimed sunspots to be windows into a temperate solar interior. By the time the New York Sun perpetrated its Great Moon Hoax in 1835, the public was primed to believe fictitious news reports of telescopic sightings of otherworldly creatures—as it would be a century later when H.G. Wells's murderous Martians invaded New Jersey via the radio.

Mr. Gribbin admits the possibility—even probability—that elementary life forms have arisen elsewhere in the galaxy. But the object of his scientific and statistical scrutiny is *intelligent* extraterrestrial life. While he cannot prove a galaxy-wide absence of other civilizations, he presents an array of modern, research-based evidence that renders that conclusion eminently reasonable. He even suggests a decades-long survey of infrared emissions around stars (possibly arising from planetary atmospheres, even water vapor). This would yield the true number of "wet-Earth" planets in the galaxy—in his estimation, zero.

One leg of Mr. Gribbin's argument rests on the theorized life expectancy of advanced civilizations, which he claims is much more fleeting, on a cosmic timescale, than we care to admit. Our species has inhabited this planet for about one hundred-thousandth the age of the galaxy, and it was merely a century ago that we began to transmit radio waves. If technological civilizations did arise before ours, they might have succumbed to war or environmental degradation well before our primate ancestors stood upright.

The rosy alternative—a long-surviving society—seems even less plausible. With millions of years of technological advancement, why haven't they migrated throughout the galaxy by now? Or why haven't we picked up the least shred of their radio-wave chatter? Of course, Mr. Gribbin dismisses such questions: These purported civilizations never existed.

Our civilization's own halting steps into outer space so far suggests an uncertain future for the exploration or colonization of extrasolar worlds. The idea that we—or our robotic avatars—might be the first species to traverse the galaxy presumes a fundamental change in space propulsion, which at present (except in Hollywood) is unsuited to cosmic distances. Looming environmental disaster might yet provide the impetus to send aloft a select segment of the population in a one-way space ark. But an escape-pod scenario is a far cry from true interstellar migration.

Which brings us back to Mr. Gribbin's essential point. Given the 13 billion years or so that our galaxy has existed, whatever fate will befall us here has already befallen "them" out there. In this, the extraterrestrial-life question has always been a mirror of humanity, a reflection of our own limits and dreams as a species.

One needn't sign on to Mr. Gribbin's conclusions to appreciate his logic. Humans are a miracle of blood, bone, and brain, a volatile mixture of compassion and brutality whose most enduring accomplishment—besides self-propagation—is the acquisition of knowledge about our world. We occupy, according to Mr. Gribbin, a unique position in the cosmic scheme of things. Having crowned humanity as the apex of galactic intelligence, Mr. Gribbin warns that there is no second chance: If we destroy ourselves, we will have done a grave injustice to the universe, removing perhaps the only means it has to ponder itself.

—Mr. Hirshfeld is the author of "Eureka Man: The Life and Legacy of Archimedes."

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