ARTICLE

VISITS to and FROM EXTRA-TERRESTRIALS

Why They Never Occurred, and Probably Never Will

BY MORTON TAVEL

We have recently been flooded with much excitement about the possibility of aliens traveling in UFOs (now labeled UAPs, Unidentified Aerial Phenomena), that may be visiting us from distant worlds. Much of skeptical attention, however, has focused on how we form beliefs and evaluate possible conspiracies rather than on considering the basic physical and biological requirements that may prevent us from believing such events are even possible. There are good reasons why alien visits from distant worlds are not—and likely never will be—a real possibility. Such myths seem more designed to titillate us for mundane, rather than celestial, reasons.

The public has long been, largely since religious visitations have seemed less believable, enamored by outer space as exemplified by the popularity of science fiction programs such as *Star Trek*, *Star Wars*, *E.T.*, and the like. The recent unmanned excursions to Earth's Moon and nearby planets have further whetted the public's appetite. That may also explain the recent increased interest in the possibility of aliens from distant worlds traveling in UAPs. Much of our attention, however, has focused on our chasing "weird" aerial phenomena rather than exploring the basic physical and biological limitations that prevent either aliens or us from meeting each other or reaching distant


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home. Although we have sought diligently over most of the past century to identify aerial phenomena and link them to distant worlds, all these attempts have resulted in abject failure. Such alleged "discoveries" can be explained by earth-bound phenomena[1, 2] such as mylar balloons, drones, foreign aircraft, space trash, distorted photos of flying insects and other objects, e.g., artillery shells. Although some of these phenomena remain unexplained, no substantive evidence of alien life or extraterrestrial vehicles has been uncovered. Because of facts to be noted, I contend that they never will. Why? Let's explore this issue from a purely scientific, biological perspective and begin by posing two questions:

1. Given our current or probable future technology, what is the possibility that we could reach (either with manned or unmanned spacecraft) planets in this or other galaxies?

2. What possible circumstances would allow those from other planets to reach us?

Us

A product of over three billion years of evolution, we have reached a level of intelligence that enabled us to build machines that can reach beyond our atmosphere, and into space. However, distance is a major barrier, and according to present information, the distance to Proxima Centauri b, the closest exoplanet to Earth, is 40,208,000,000,000 kilometers, or 4.2 light-years from our Sun. The maximum speed of our spacecraft (currently approximately 6.5 percent of the speed of light) is a related limitation. Although we cannot predict the maximum velocity of future spacecraft, according to Einstein's theory, the speed of light is a cosmic speed limit that cannot be surpassed, and radio waves are similarly limited. So, practically speaking, we should accept that faster-than-light travel is impossible, especially for any object with mass, such as a spacecraft.

If we assume there are no intelligent occupants on planets in our solar system, i.e., we need to search for intelligent life elsewhere, and given our present rocket technology, NASA estimates it would take approximately 73,000 years for a present spacecraft to reach Proxima Centauri b. We could postulate higher velocities, but thus far, humans haven't figured out how to even approach such rates, further raising the question of whether we, or any other advanced culture, could accomplish this task. Can we hope to overcome these limitations in the future? Possibly, but at present, humans can conceivably only travel to any of the known planets or moons within our own solar system, and not to any destinations beyond. Just to reach Neptune (the most distant planet in the solar system) would require 12 years one-way. Manned space travel to another star system, at least with the technology we have today, is still only a dream. Given our limited lifespan, it would be virtually impossible to send a manned spacecraft to any such destination, let alone to expect a return voyage. Even with a craft that could achieve the unlikely speed of about 50 percent of the speed of light, this would require at least nine years one-way, to reach the nearest galaxy… Other potentially hospitable planets would likely be far more, and prohibitively, distant. In short, any voyage from Earth to distant, habitable planets, is clearly beyond our reach, both now and, very likely, in the foreseeable future. Sending unmanned craft would require radio waves to control or at least track them, requiring impractically large time delays.

We could conceivably take human beings only to any of the known planets or moons within our Solar System, but not to any objects beyond this gravitational sphere. If we extend our present laws of physics to their limits, travel might extend further into the universe, but even if we were to reach such unlikely huge distances, our current lifespan would preclude occupied travel. This means that distant planets outside our solar system would continue to be physically unreachable. Any attempt at long-distance human space travel would create another major problem: humans are evolutionarily adapted to gravity, which means that prolonged weightlessness is harmful in many ways, among which are atrophy of muscle (including the heart!) and bone tissue. Under the influence of gravity, fluid—which makes up about 60 percent of the human body weight—tends to accumulate in the lower part of the body. Through the course of evolution, we have developed systems balancing blood flow to the heart and the brain. In the absence of gravity, these systems cause fluid to accumulate in the upper body. This change in fluid distribution is also reflected in problems with keeping balance, as well as upper body swelling and a loss of sense of taste

and smell. Such adaptations may result in dangerous consequences following return to Earth. One of them is "orthostatic intolerance," which is the inability to stand for 10 or more minutes without fainting. To overcome such problems, bodily exercises with artificially created gravity have been proposed, but the long-term effects of this measure cannot be predicted. In short, these, and other unknown factors, render us physically unequipped for prolonged space travel.

Them

The question of whether Earth could be reached by occupants from different galaxies is more speculative. It would require the presence of intelligent life elsewhere, combined with the need to overcome the barriers just depicted for us.

It seems likely that intelligence and advanced culture would stem from evolution on a planet able to support some form of life. Such life could be constructed from carbon atoms and possess DNA, but this may not be the case. Out of the thousands of exoplanets in other galaxies, a few possess conditions that are favorable for life as we know it, i.e., moderate temperatures, water, sunlight, etc. However, meeting such requirements is extremely daunting.[3] From our experience on Earth, the progression from the earliest life forms, such as microorganisms, to the presence of humans required approximately three to four billion years, but the component required for space travel only appeared in the last 100 years. While it is possible that this process has occurred on one or more of the many distant planets, evolution requires multiple and successive life cycles in which mutations or physical changes allow for successive adaptations, each more favorable for survival. As this dynamic process proceeds, new generations replace prior ones, with the latter dying off. Although our telescopes have identified thousands of planets around neighboring stars, some of which might be capable of supporting life, and by implication many astronomers extrapolate this to conclude that there are very likely trillions of planets in the cosmos, which means that no matter how improbable it is that any one of them could support life, the law of large numbers suggests that some will. After all, relatively intelligent beings, represented by dinosaurs, existed on Earth for about 200 million years, but none had intelligence that approached our own.

But let's assume intelligent aliens did exist and had spacecraft that could achieve a very high velocity. If an alien entity were to attain even 30–50 percent of the speed of light, reaching the necessary distances would still require a prohibitively long time, as exemplified by our reaching a neighboring galaxy, cited above. Given our current state of knowledge, it's likely that no living forms, however advanced, could reach even a fraction of this speed with an occupied vehicle. If superior technology were developed to allow for travel closer to light speed, travel of any kind might extend further into the universe, but any biological organism would be limited by a finite lifespan. This also means that any living alien beings are likely subject to similar laws of evolution, and this fact alone would render any such visits highly unlikely.

Could occupants of a distant planet even reach us with an unoccupied spacecraft or one carrying robots? That is a possibility, but that effort would be subject to the same limitations we would encounter in our attempt to reach distant worlds. There is little reason to believe that a distant life form would correctly identify the presence of life on this planet, and from the huge distances separating us, they would have little incentive to capitalize on this knowledge, other than merely satisfying curiosity. And even informative radio signals would require inordinate return times to provide useful data or even to direct the control of such distant vehicles or robots.

If there were highly intelligent life on distant planets, we might postulate that they might attempt to contact us through radio signals, also sometimes called "Fast Radio Bursts" (FRBS). Prior to 2020, weak signals, billions of light years away, had been observed outside our galaxy. Interestingly, on April 28, 2020, two ground-based radio telescopes detected an intense pulse of radio waves.[4] It only lasted a mere millisecond but, for astonished astronomers, it was a major discovery, representing the first time such a radio burst had ever been detected from Earth. It was believed to have originated an estimated 30,000 light-years from a planet within the Milky Way. Rather than originating from life forms, however, observational evidence suggests that the origin of such signals is very likely a magnetar, a type of young neutron star born from the embers of supernovas with a magnetic field 5,000 trillion times more powerful than Earth's, thereby making them the universe's most powerful magnets. By no means is this evidence of alien life!

Us and Them

Exploring the flip side, what efforts are we expending to help alien cultures detect our presence and composition? At present, we are sending out both radio signals and spacecraft into space. A strenuous effort was made in 1974, when a team of scientists, including astronomers Frank Drake and Carl Sagan, transmitted a radio message from the Arecibo Observatory in Puerto Rico toward Messier 13, a cluster of stars about 25,000 light-years away.[5] This image, sent in binary code, depicted a human stick figure, a double-helix DNA structure, a model of a carbon atom, and a diagram of a telescope. The message attempts to provide a snapshot of who we are as human beings in the language of math and science. Yet it is, quite literally, a shot in the dark. It will take around 25,000 light-years to reach Messier 13. Hypothetical aliens might still be able to detect the signal as it whizzes past—it has 10 million times the intensity of radio signals from our sun. But who around here in subsequent centuries would even be able to recognize such an achievement?

We have also launched two rockets, Voyagers 1 and 2, into deep space, each carrying 12-inch (30cm) golden phonograph records that contain pictures and sounds of Earth, symbolic directions on the cover for playing the record, and data detailing the location of Earth. The record is intended as a combination time capsule and an interstellar message to any civilization, alien, or future human, that may recover either of the Voyagers. Here too, the likelihood of any recognizable response seems very slim.

The idea that aliens could reach us—with or without occupied vehicles—is based upon several speculative assumptions, none of which are presently realistic. Given our current technology, there is no real likelihood that we could reach distant worlds outside the solar system, even with unoccupied spacecraft. If we were able to employ highly advanced robots, the time required to reach distant galaxies employing radio guidance and similar responses would be impractically excessive, given our present limited lifespan. Theoretically, a civilization lasting for tens of millions of years might have spread throughout the galaxy, but no confirmed signs of civilizations or intelligent life elsewhere have been found, either in our galaxy or in the observable universe of two trillion galaxies.[6, 7, 8]

All that said, our tendency to explore any and all available territory seems to be a universal trait of humans, and one must applaud all efforts aimed at such discoveries, even if only to satisfy our curiosity. Such knowledge, e.g., by analogy to electricity, could lead to things of practical value here on Earth. In the meantime, our preoccupation with UFOs or UAPs simply represents science fiction. Or are we metaphorically chasing "the stuff that dreams are made of"? S

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