

HAVE ALIENS VISITED EARTH?

It is a question worthy of study, says physicist! About 5 percent of all UFO sightings cannot be easily explained by weather or human technology. A physicist, **Kevin Knuth**, University at Albany, State University of New York argues that there's compelling evidence to justify serious scientific study and that the skeptics should step aside – for the sake of humanity:

As a NASA research scientist and now a professor of physics, I attended the 2002 NASA Contact Conference, which focussed on serious speculation about extraterrestrials. During the meeting a concerned participant said loudly in a sinister tone, "You have absolutely no idea what is out there!" The silence was palpable as the truth of this statement sunk in. Humans are fearful of extraterrestrials visiting Earth. Perhaps fortunately, the distances between the stars are prohibitively vast. At least this is what we novices, who are just learning to travel into space, tell ourselves.

I have always been interested in UFOs. Of course, there was the excitement that there could be aliens and other living worlds. But more exciting to me was the possibility that interstellar travel was technologically achievable. In 1988, during my second week of graduate school at Montana State University, several students and I were discussing a recent cattle mutilation that was associated with UFOs. A physics professor joined the conversation and told us that he had colleagues working at Malmstrom Air Force Base in Great Falls, Montana, where they were having problems with UFOs shutting down nuclear missiles. At the time I thought this professor was talking nonsense. But 20 years later, I was stunned to see a recording of a press conference featuring several former U.S. Air Force personnel, with a couple from Malmstrom AFB, describing similar occurrences in the 1960s. Clearly there must be something to this.

With July 2 being World UFO Day, it is a good time for society to address the unsettling and refreshing fact we may not be alone. I believe we need to face the possibility that some of the strange flying objects that outperform the best aircraft in our inventory and defy explanation may indeed be visitors from afar – and there's plenty of evidence to support UFO sightings.

THE FERMI PARADOX

The nuclear physicist **Enrico Fermi** was famous for posing thought-provoking questions. In 1950, at Los Alamos National Laboratory after discussing UFOs over lunch, Fermi asked, "Where is everybody?" He estimated there were about 300 billion stars in the galaxy, many of them billions of years older than the Sun, with a large percentage of them likely to host habitable planets. Even if intelligent life developed on a very small percentage of these planets, then there should be a number of intelligent civilizations in the galaxy. Depending on the assumptions, one should expect anywhere from tens to tens of thousands of civilizations.

With the rocket-based technologies that we have developed for space travel, it would take between 5 and 50 million years for a civilization like ours to colonize our Milky Way galaxy. Since this should have happened several times already in the history of our galaxy, one should wonder where is the evidence of these civilizations? **This discrepancy between the expectation that there should be evidence of alien civilizations or visitations and the presumption that no visitations have been observed has been dubbed the Fermi Paradox.**



Cover of the October 1957 issue of pulp science fiction magazine *Amazing Stories*. This was a special edition devoted to "flying saucers," which became a national obsession after airline pilot Kenneth Arnold sighted a saucer-shaped flying object in 1947.

Carl Sagan correctly summarized the situation by saying that “extraordinary claims require extraordinary evidence.” The problem is that there has been no single well-documented UFO encounter that would alone qualify as the smoking gun. The situation is exacerbated by the fact that many governments around the world have covered up and classified information about such encounters. But there are enough scraps of evidence that suggest that the problem needs to be opened to scientific study.

When it comes to science, the scientific method requires hypotheses to be testable so that inferences can be verified. UFO encounters are neither controllable nor repeatable, which makes their study extremely challenging. **But the real problem, in my view, is that the UFO topic is taboo. While the general public has been fascinated with UFOs for decades, our governments, scientists and media have essentially declared that of all the UFO sightings are a result of weather phenomenon or human actions. None are actually extraterrestrial spacecraft. And no aliens have visited Earth. Essentially, we are told that the topic is nonsense.** The media amplifies the skepticism by publishing information about UFOs when it is exciting, but always with a mocking or whimsical tone and reassuring the public that it can't possibly be true. But there are credible witnesses and encounters.

I am often asked by friends and colleagues, “Why don't astronomers see UFOs?” The fact is that they do. In 1977, **Peter Sturrock**, a professor of space science and astrophysics at Stanford University, mailed 2,611 questionnaires about UFO sightings to members of the American Astronomical Society. He received 1,356 responses from which 62 astronomers – 4.6 percent – reported witnessing or recording inexplicable aerial phenomena. This rate is similar to the approximately five percent of UFO sightings that are never explained.

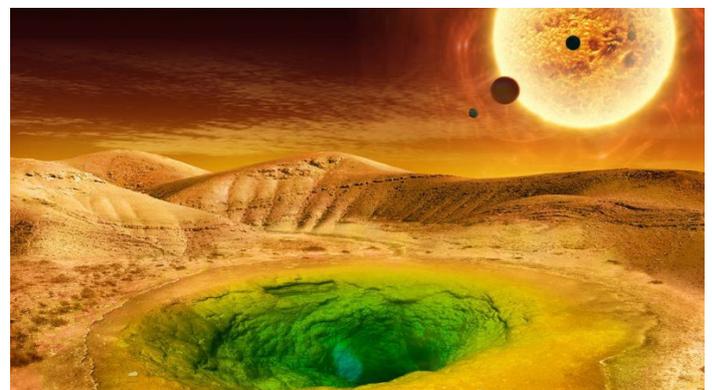
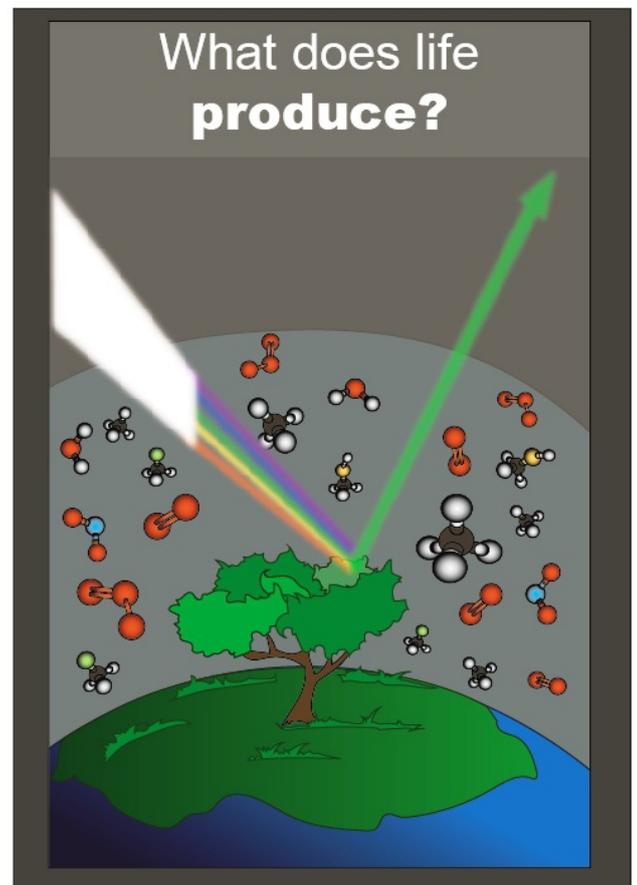
LOOKING AT IT ANOTHER WAY, WILL WE RECOGNIZE LIFE ON A DISTANT WORLD?

“We won't have a ‘yes’ or ‘no’ answer to finding life elsewhere. What we will have is a high level of confidence that a planet appears alive for reasons that can only be explained by the presence of life.”

Felicia Chou at NASA Headquarters, Washington, wrote on June 25, 2018: “In the last decade we have discovered thousands of planets outside our solar system and have learned that rocky, temperate worlds are numerous in our galaxy. Could some of these planets host life? And if so, will we be able to recognize it if we see it?”

A group of leading researchers in astronomy, biology and geology have come together under NASA's Nexus for Exoplanet System Science, or NExSS, to take stock of our knowledge in the search for life on distant planets. Exoplanet scientist **Martin Still** at NASA headquarters in

Washington, D.C., explained the group's function: “We're moving from theorizing about life elsewhere in our galaxy to a robust science that will eventually give us the answer we seek to that profound question: **Are we alone? What does life produce that scientists might be able to recognize from afar? Can we read the fingerprints of its presence in the atmosphere and on the surface of a planet?**”



Artist's concept of what life – in green – might look like on the surface of a distant exoplanet. Will we recognize it when we see it?

AK, with EarthSky and Wikipedia Notes