

# Why Are We So Lonely?

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## ***The Vastness of Space***

I remember the first time I truly appreciated the vastness of space. About ten years ago, the Hubble Space Telescope stared at a single small patch of sky for three weeks. The patch was no bigger than the head of a pin held at arm's length, yet the image contained 5500 galaxies, up to ten billion times fainter than the human eye can see. This projects to 170 billion galaxies across the entire sky. Light from the most distant of these galaxies had traveled 13 billion years to reach the Earth (Illingworth et al. 2013). As I scanned the magnified image on my computer, what had looked like faint, fuzzy blobs were revealed to be richly detailed galaxies – some blue-white, others yellowish, some spherical, others elongated, some wrapped in spiral arms, and others chaotic and disturbed. It was as if a cosmic collector had pinned these specimens to the dark velvet of night.

We now know that there is on average at least one planet per star in the Milky Way galaxy (Cassan et al. 2011). Moreover, about one in five Sun-like stars has an Earth-sized planet in the habitable zone (Petigura et al. 2013). That implies 300 million potentially habitable planets in the galaxy, which projects to a staggering 100 billion billion in the observable universe. As I stared at the deep image, I also knew that many of those Earth-like planets had formed billions of years before the Earth formed, so any forms of life on them would have had billions of years head start on us in terms of evolution. Looking at these distant galaxies, I couldn't resist the thought that perhaps someone or something was staring back at us across the universe.

## ***The Prospect of Companionship***

Astronomers are persuaded by the widespread availability of chemical ingredients for biology, and the abundance of habitable locations, that life in the universe is not limited to this planet. The raw numbers seem compelling. Biologists are not so sure. They see no inevitability in the progression from inert molecules to the first cell, and they see contingency in the evolution to sentient animals, a process that took four billion years (Powell 2020, Snyder-Beattie et al. 2020). Is the universe teeming with life or mostly sterile? Neither side in this debate has any evidence. Biologists do not have a generalized

theory of biology, or even a good operational definition of the boundary between life and non-life, let alone a definition of intelligence. Life on Earth might have been inevitable, but it might have been a fluke. Astronomers wield the Drake equation to estimate the number of intelligent, communicable civilizations in the galaxy, but it is a blunt tool, mostly useful for organizing our ignorance (Frank & Sullivan 2016). Speculation is entertaining though ultimately it is sterile. To know whether or not there is life beyond Earth, we have to do the experiment.

The search for life in the universe progresses along three paths. One is scrutiny of habitable locations in the Solar System, where proximity allow us to send probes and do experimental science. Mars is the “diva” in this arena, getting most of the attention and resources. It is now beyond doubt that Mars had surface bodies of water in the past, and very likely that water still exists in sub-surface aquifers. A future generation of rovers and sample return missions will test for traces of ancient biology (Westall et al. 2013). The outer Solar System is frigid, but there are sheltered locations with local heating where life could exist – Europa, Titan, and Enceladus are the prominent examples. It will take a decade to send life-sensing probes to those destinations. Meanwhile, galloping progress in exoplanet detection has yielded dozens of Earth-like planets close enough for telescopes to suppress the light of the parent star and make a spectrum of the reflected light from the exoplanet. This difficult observation can look for biomarkers, spectral signatures of the global alteration of the atmosphere by microbial life. Expect the first results, and possibly the first detection of life beyond Earth, within five years (Neveu et al. 2018).

Last, there is the side bet that intelligent aliens exist and are using their technology to beam radio or optical signals to us. SETI, the Search for Extraterrestrial Intelligence, vaults over the many uncertainties in the evolution of life towards intelligence and technology to posit that sentient creatures are actively communicating with us. SETI practitioners admit that they are looking for particular forms of technology, rather than intelligence per se, and they have been greeted with sixty years of what is called the “Great Silence” (Cirovic 2018). They are not deterred. They point out that our signaling and detection capabilities have been advancing exponentially. We will soon be able to detect analogs of our radio and optical technologies if they were being used on planets around the nearest hundred million stars. Failure now may be an indication that we are alone, or at least isolated in the vastness of space.

## ***The Anthropocentric Trap***

The debate that swirls around the existence and nature of life in the universe is heavily tainted by anthropocentric thinking. Reflexively, we interpret the world, and the larger universe, in terms of human values and experiences. SETI uses technologies that we have developed in the past half century; in another fifty years they may be rendered obsolete by more advanced technologies. SETI is an attempt at communication. Yet we cannot communicate with creatures on Earth like the great apes that share 95% of our DNA, so how confident can we be of communication with aliens of unknown function and form. Life on Earth is one thing. Fungi and ants and blue whales all share the same genetic code and the same mechanism for evolution. With only one example of biology to study, we struggle to imagine how strange biology might be in other settings, if it exists at all (Joyce 2012). Life on Earth uses water as the medium for building complexity, it relies on the information storage capability of carbon molecules, and it deploys cells as containers for chemical interactions and as the unit for evolving larger organisms. None of these may be true for the many potential biological experiments beyond Earth.

In 1950, the physicist Enrico Fermi posed the question “Where are they?” He knew that life’s ingredients were cosmically abundant, he anticipated our ability to leave the planet and travel through space, and he recognized that if intelligent aliens existed, we were unlikely to be the first to evolve or the most advanced. Fermi’s question is not formally a paradox, and it does not have any identifiable answer, but it is a well-posed question. Possible answers shine additional light on anthropocentric thinking (Webb 2002). Logically, microbial life will be more abundant than intelligent life. But the former might be very rare, and the latter might be vanishingly rare, in which case we are operationally alone. We cannot use our existence or the arc of evolution on Earth to draw any conclusions about events beyond Earth. Aliens might be unrecognizable and alien technology might be inscrutable. Even the best science fiction writers struggle to evade the anthropocentric trap and imagine how strange life elsewhere might be.

## ***The Aliens Among Us***

What if intelligent aliens are already here? These creatures parallel process information with a brain distributed in nine nodes. They change the color, pattern, and texture of their skin several times a second. They can use tools and they can pass through openings a

hundred times smaller than their full extent. They can regenerate damaged parts of their bodies. They can master three-dimensional labyrinths that would flummox a human. They diverged from us in the tree of life over three hundred million years ago. Meet the octopus. It is hazardous to infer intelligence in animals, but in the wild and in captivity, the octopus shows nuanced behavior (Richter et al. 2016). Marine mammals such as orcas and dolphins are highly social, have complex language, and they are also likely to have high levels of intelligence.

The capabilities of animals in a marine environment remind us that intelligence and technology need not to be correlated. These species lead rich lives, but they will never build telescopes or travel in space. When we imagine not only that intelligent aliens exist, but that they have used their technology to travel vast distances in space, we are making a series of assumptions that go beyond biology to culture. There are many branching points and contingencies along the road from prokaryotes to us. Not only do we risk falling into another anthropocentric trap, we also project a particular set of human values into the universe. This mode of thinking is pervasive in much science fiction (Peter 2013). The geopolitical rivalry that launched the space race (Cadbury 2006), and the economic motivations that are likely to drive it in the future (Impey 2016), are the products of Western culture. I speculate that if world culture was framed by Buddhism, we might never have gone to the Moon, and we would not be so focused on looking for aliens.

### ***A Conversation about UFOs***

Let's now turn to the idea that intelligent aliens have already visited. UFOs have deep roots in popular culture. Unexplained aerial phenomena have been documented for centuries. For example, in 1561, residents of Nuremberg in Germany reported a large, black triangular object and hundreds of other geometric shapes flying erratically overhead (Vallee & Aubeck 2010). Thousands of people reported seeing airships across the United States in 1897. The modern era of UFOs dates from 1947, with Kenneth Arnold's report of nine high-speed objects near Mount Rainier in Washington and the famous sighting of mysterious wreckage near an Army airfield in Roswell, New Mexico. It is interesting that UFOs take the appearance of frontier technology of the time, from dirigibles at the turn of the 20<sup>th</sup> century to sleek, shiny "flying saucers" fifty years later. In the United States, just over half of the population believes there is intelligent life and civilizations elsewhere. Close to half, 45%, of

adults believe UFOs represent intelligent aliens visiting us (Ipsos 2020). This is slightly less than the fraction of Americans who believe places can be haunted by spirits (Chapman University 2018), and slightly more than the fraction who have had psychic experiences (YouGov 2017).

UFOs have experienced a resurgence in the past couple of years, with the release of videos from the U.S. Navy and admissions that the U.S. Government continues to investigate what it prefers to call Unidentified Aerial Phenomena (UAP). Exchanging one anodyne acronym for another seems inconsequential but recognizes that the term UFO has baggage attached due to decades of wild-eyed conspiracy theories and accounts of alien abduction (Robertson 2016). There has been a recent claim of a large alien artifact entering our Solar System (Loeb 2021). The bulk of UFO sightings are mundane. The great majority can be accounted for by weather balloons, lenticular clouds, fireballs, meteors, and the planet Venus (Giaino 2016, Ridpath 2021). That does not prove that all sightings are astronomical or meteorological, but it does establish a baseline where evidence of alien spacecraft must rule out alternative explanations. Adjudicating UFO claims is a thankless task which most scientists prefer to avoid, a game of “whack a mole” where new claims emerge even as old claims are rebutted (Horgan 2020, Mack 2020). The release of Navy videos has energized the community of “believers,” although the Government states that their status is still “unidentified” (Department of Defense 2020). Meanwhile, there is a large body of UFO data containing items that stubbornly resist simple explanation (UFO Data 2020). The situation is more stand-off than conversation, where two sides talk past each other.

I had an immersion into this world when I wrote about UFOs for an online magazine (Impey 2020). The article gave credence to the premise behind intelligent aliens but took a skeptical stance on much of the evidence. I was unprepared for the deluge of comments that I received. The Conversation has articles written by academics on many topics, and I have written eight, where a dozen comments is the norm. This article had 350,000 readers and over 400 comments. More than half took me to task for ignoring the “obvious” evidence of alien visitations. I was peppered with links to web sites and videos, many of which I’d already encountered in my research. Two things intrigued me about the community I tapped into. One was the vehemence of their convictions, and their charge that scientists were betraying their profession by ignoring the evidence or dismissing it. The other was the conspiracy theory tenor of many of the posts. The military knows but they’re

keeping it secret. Governments know but are afraid of spreading panic. Scientists reject UFOs because don't want to lose their jobs and reputations. There is a circular and self-fulfilling logic to these arguments. Into this hermetic world, no light is admitted.

### ***Salvation or Damnation***

The UFO phenomenon has many of the attributes of a modern religion (Pasulka 2019). There is belief in external agents with supernatural powers, a rich iconography, a complex web of signs from beyond that can be interpreted for meaning, a powerful sense of community, and the sense of persecution from authority figures and alienation from non-believers. We all face the central tension of existence as sentient beings: the inevitability of our death. Science offers no comfort. Beyond that there is only the cipher of nonexistence, it tells us. Into that void flows a complex web of religious and spiritual beliefs. Mainstream religions address the conundrum of finite existence directly and provide practitioners with assurance of an afterlife. In the Abrahamic tradition, divine judgement is made based on actions and beliefs during a lifetime. UFO religions share some of these premises. The most prominent UFO religions, where aliens play a central role in the belief system, are Nation of Islam, Scientology, and Falun Gong (Partridge 2003). Some are cults organized around a single person's alleged contact (Korff 1995).

The religious trappings of belief in aliens is a peculiarly American phenomenon (Zeller 2014), and it suffuses the popular culture. It manifests in the movies of Steven Spielberg, whose E.T. presents a literal retelling of the Christ story, and whose Close Encounters of the Third Kind has Richard Dreyfuss being led into the Mother Ship in a crucifix position (Bearden 2017). In the claims of alien abduction, we can even see the myth of holy communion (Kelley-Romano 2010). Arthur C. Clarke said that "any sufficiently advanced technology is indistinguishable from magic" (Clarke 2000). Aliens are the repository into which we pour our hopes and longings, our fears and dreams (Partridge 2004). They are either vehicles for salvation or for damnation.

### ***Why I am an Agnostic***

"He believed in the primacy of doubt, not as a blemish on our ability to know, but as the essence of knowing." This is how author James Gleick described physicist Richard Feynman's singular quality as a scientist (Gleick 1993). My tribe, professional astronomers, is mostly agnostic about UAPs or UFOs. They think that nothing is known about intelligent

aliens. A 1997 survey found that 53% thought the subject deserved serious study; only 20% were against studying it. Young scientists were more receptive than older scientists to a serious scientific study. Just 3% believed that UFOs represent alien devices (Sturrock 1994). And when astronomers examined purported evidence of alien visits, they were unpersuaded but open to considering future evidence, since they knew that science often advances by focusing on unexplained observations (Sturrock et al. 1997). I also try to keep an open mind about UFOs, but I keep coming back to the primacy, and the paucity, of physical evidence.

Why am I a UFO agnostic? Not because I disagree with the underlying premise; I think it likely that there is advanced life with technological capabilities somewhere in the universe, and maybe in our galaxy. But the way UFOs present themselves doesn't pass the smell test. It beggars belief that aliens with advanced technology would travel trillions of miles just to press down our wheat (Irving and Brookesmith 2009). It's only slightly less incredible that they would make thousands of visits to Earth each year and leave behind almost no physical evidence. And the prevalence of the "flying saucer" morphology is suspiciously quaint. The nature and level of engagement of the aliens with humanity seems like a projection. It's a pure conceit that they would be benevolent or malevolent. They are much more likely to be ineffable, inscrutable, indifferent. The conspiracy theories that lace this subject are essentially anti-scientific since they assert "hidden facts" rather than attempting to explain accepted facts. To say all UAP sightings are errors of perception or phenomena with conventional interpretations might be throwing a very important baby out with the bathwater, but it's also the most parsimonious explanation for the data.

### ***Feathers in the Air***

"To believe that God created a plurality of worlds, at least as numerous as what we call stars, renders the Christian system of faith at once little and ridiculous; and scatters it in the mind like feathers in the air." These words from American patriot Thomas Paine in 1794 were part of a scathing critique of organized religion (Paine 2010). At first glance, it seems that Contact would have a disruptive effect on any religion that posits a special relationship between humans and their Creator. However, one survey found that this was mostly the position of non-religious people; religious people were much more sanguine (Peters 2011). Historically, religions have proved adept at adapting to evolving cultural norms and being

theologically supple (Ambrosino 2016). Buddhism would have the least trouble adapting to Contact, since its philosophy has always accommodated “many worlds” and the existence of sentient beings throughout the universe.

Paine’s comment is far more likely to apply to the Academy. Scholars are rewarded for their expertise in small niches of knowledge, and they are employed by universities whose silos are famously resistant to change (Gannon-Cook & Ley 2020). In science, the strong trend toward large teams of researchers acts to squash innovation and novel ideas (Fortunato 2018). If we encounter intelligent aliens, it will hit a reset on the entire field of biology, since the story of life will no longer be the story of evolution on one planet. We will find out how strange biology is. Contact with aliens would similarly scramble neuroscience and all fields in social science. The Humanities would have to make room for wildly unfamiliar ideas. Many scholars will be taken so far out of their comfort zones that they find other work or retreat into familiar cocoons. But a nimble breed of thinkers will embrace the disruption and forge new paths of scholarship. The most fruitful ideas will likely emerge from outside the Academy. Meanwhile, until Contact happens, scientists must be bravely open to new ideas, while remaining fiercely skeptical and true to their principles.

### **Coda**

For a moment, let’s take all the UFO evidence at face value. Let’s be credulous and accept the tens of thousands of sightings, the smattering of physical evidence, and toss in the hundreds of claimed abductions and psychic channelings. What has been learned about aliens so advanced that compared to us they should be sublime, miraculous, magical? What has been divined about their biology, their technology, or their values? Essentially, nothing. I contend that Contact has not yet occurred. Contact is not inevitable, soon or ever. It is a multi-layered hypothetical with unknown probability attached. Perhaps we should be asking ourselves why we care so much. Why are we so lonely?

### **References**

Ambrosino, B. (2016). *If We Made Contact with Aliens, How Would Religions React?* BBC, [www.bbc.com/future/article/20161215-if-we-made-contact-with-aliens-how-would-religions-react](http://www.bbc.com/future/article/20161215-if-we-made-contact-with-aliens-how-would-religions-react).

Bearden, W. (2017). *Steven Spielberg's Cinema of the Sublime*, Christ and Pop Culture, [christandpopculture.com/steven-spielbergs-cinema-sublime/](http://christandpopculture.com/steven-spielbergs-cinema-sublime/).

Cadbury, D. (2006). *Space Race: The Epic Battle Between America and the Soviet Union for Dominion of Space*, New York, New York: HarperCollins.

Cassan, A. et al. (2011). One or More Bound Planets per Milky Way Star from Microlensing Observations. *Nature*, 481, 167-169.

Chapman University (2018). *Paranormal America 2018*, [blogs.chapman.edu/wilkinson/2018/10/16/paranormal-america-2018/](http://blogs.chapman.edu/wilkinson/2018/10/16/paranormal-america-2018/).

Cirovic, M., (2018). *The Great Silence: The Science and Philosophy of Fermi's Paradox*, Oxford, England: Oxford University Press.

Clarke, A.C. (2000). *Profiles of the Future: An Inquiry into the Limits of the Possible*, New York, New York: Orion.

Department of Defense (2020). *Statement by the Department of Defense on the Release of Historical Navy Videos*, [www.defense.gov/Newsroom/Releases/Release/Article/2165713/statement-by-the-department-of-defense-on-the-release-of-historical-navy-videos/](http://www.defense.gov/Newsroom/Releases/Release/Article/2165713/statement-by-the-department-of-defense-on-the-release-of-historical-navy-videos/).

Fortunato, S., et al. (2018). Science of Science, *Science*, 359, 1007-1013.

Frank, A. & Sullivan, W.T. (2016). A New Empirical Constraint on the Prevalence of Technological Species in the Universe, *Astrobiology*, 16, 359-362.

Gannon-Cook, R. & Ley, K. (2020). *Breaking Down Academic Silos*, In *Engaging Learners with Semiotics*, Chapter 8, Leiden, Netherlands: Brill.

Gaiimo, C. (2016). *How One Man Has Explained Almost Every Internet UFO Theory*. [www.atlasobscura.com/articles/how-one-man-has-explained-almost-every-internet-ufo-theory](http://www.atlasobscura.com/articles/how-one-man-has-explained-almost-every-internet-ufo-theory).

Gleick, J. (1993). *Genius: The Life and Science of Richard Feynman*, New York, New York: Vintage.

Horgan, J. (2020). *Should Scientists Take UFOs and Ghosts More Seriously?* *Scientific American*. [blogs.scientificamerican.com/cross-check/should-scientists-take-ufos-and-ghosts-more-seriously/](http://blogs.scientificamerican.com/cross-check/should-scientists-take-ufos-and-ghosts-more-seriously/).

Illingworth, G.D., Magee, D., Oesch, P.A., Bouwens, R.J., Labbe, I., Stiavalli, M., van Dokkum, P.G., Franx, M., Trenti, M. & Carollo, C.R. (2013). The HST Extreme Deep Field (XDF). *The Astrophysical Journal Supplement Series*, 209, 6-19.

Impey, C.D. (2016). *Beyond: Our Future in Space*. New York, New York: W.W. Norton and Company.

Impey, C.D. (2020). *I'm an astronomer and I think aliens may be out there—but UFO sightings aren't persuasive*, *The Conversation*, [theconversation.com/im-an-astronomer-and-i-think-aliens-may-be-out-there-but-ufo-sightings-arent-persuasive-150498](https://theconversation.com/im-an-astronomer-and-i-think-aliens-may-be-out-there-but-ufo-sightings-arent-persuasive-150498).

Ipsos (2020). *Most Americans See Aliens as a Likelihood*. [www.ipsos.com/en-us/americans-believe-in-ufos-aliens](https://www.ipsos.com/en-us/americans-believe-in-ufos-aliens).

Irving, R. & Brookesmith, P. (2009). *Crop Circles: The Art of the Hoax*. Smithsonian Magazine. [www.smithsonianmag.com/arts-culture/crop-circles-the-art-of-the-hoax-2524283/](https://www.smithsonianmag.com/arts-culture/crop-circles-the-art-of-the-hoax-2524283/).

Joyce, G.F. (2012). Toward Alternative Biology, *Science*, 336, 307-308.

Kelley-Romano, S. (2010). Mythmaking in Alien Abduction Narratives. *Communication Quarterly*, 54, 383-406.

Korff, K.K. (1995). *Spaceships of the Pleiades*, Lanham, Maryland: Prometheus.

Loeb, A. (2021). *Extraterrestrial: The First Sign of Intelligent Life Beyond Earth*, New York, New York: Houghton Mifflin Harcourt.

Mack, K. (2020). *A Word About Those UFO Videos*. [blogs.scientificamerican.com/observations/a-word-about-those-ufo-videos/](https://blogs.scientificamerican.com/observations/a-word-about-those-ufo-videos/).

Neveu, M., Hays, L.E., Voytek, M.A., New, M.H. & Schulte, M.D. (2018). The Ladder of Life Detection, *Astrobiology*, 18, 1375-1402.

Paine, T. (2010). *The Age of Reason*, Gearhart, Oregon: Watchmaker Publishing.

Partridge, C.H. (2003). *UFO Religions*, London, England: Routledge.

Partridge, C.H. 2004. Alien Demonology: the Christian Roots of the Malevolent Extraterrestrial in UFO Religions and Abduction Spiritualities, *Religion*, 34, 163-189.

Pasulka, D.W. (2019). *American Cosmic: UFOs, Religion, Technology*, Oxford, England: Oxford University Press.

Peter (2013). *Science Fiction and the Future of Human Beings: Imagination, Evolution, and the Anthropocentric Myths*, *h+ Magazine*, [hplusmagazine.com/2013/03/04/science-fiction-and-the-future-of-human-beings-imagination-evolution-and-the-anthropocentric-myths/](http://hplusmagazine.com/2013/03/04/science-fiction-and-the-future-of-human-beings-imagination-evolution-and-the-anthropocentric-myths/).

Peters, T. (2011). *Will ETI Contact Put an End to Our World's Religions?* 2011 MUFON Symposium, ET Contact: Implications for Science and Society, [tedstimelytake.com/wp-content/uploads/2013/03/ETIContactReligions.pdf](http://tedstimelytake.com/wp-content/uploads/2013/03/ETIContactReligions.pdf).

Petigura, E.A., Howard, A.W. & Marcy, G.W. (2013). Prevalence of Earth-sized Planets Orbiting Sun-like Stars. *Proceedings of the National Academy of Sciences*, 110, 19273-19278.

Powell, R. (2020). *Contingency and Convergence: Toward a Cosmic Biology of Body and Mind*, Cambridge, Massachusetts: MIT Press.

Richter, J.N., Hochner, B. & Kuba, M.J. (2016). Push or Pull? Octopuses Solve a Puzzle Problem, *PLoS One*, 13, e0152048.

Ridpath, I. (2021). *Astronomical Causes of UFOs*. [www.ianridpath.com/ufo/astroufo1.html](http://www.ianridpath.com/ufo/astroufo1.html).

Robertson, D.G. (2016). *UFOs, Conspiracy Theories, and the New Age: Millennial Conspiracism*, New York, New York: Bloomsbury.

Snyder-Beattie, A.E., Sandberg, A., Drexler, K.E. & Bonsall, M.B. (2020) The Timing of Evolutionary Transitions Suggests Intelligent Life is Rare, *Astrobiology*, 21, 1-14.

Sturrock, P.A. (1994). Report on a Survey of the Membership of the American Astronomical Society Concerning the UFO Problem: Part 1, *Journal of Scientific Investigation*, 8, 1-45.

Sturrock, P.A. et al. (1997). Physical Evidence Related to UFO Reports: The Proceedings of a Workshop Held at the Pocatino Conference Center, Tarrytown, New York, September 29 – October 4, 1997, *Journal of Scientific Exploration*, 12, 179-229.

UFO Data (2020). *UFO Data, UFO Detection and Tracking*, [www.ufodata.net/scientific.html](http://www.ufodata.net/scientific.html).

Vallee, J. & Aubeck, C. (2010). *Wonders in the Sky: Unexplained Aerial Objects from Antiquity to Modern Times*, New York, New York: Tarcher.

Webb, S. (200). *Where is Everybody? Fifty Solutions to the Fermi Paradox and the Problem of Extraterrestrial Life*, Gottingen, Germany: Copernicus.

Westall, F., Loizeau, D., Foucher, F., Bost, N., Bertrand, M., Vago, J., & Kminek, G. (2013). Habitability on Mars from a Microbial Point of View, *Astrobiology*, 13, 887-897.

YouGov (2017). *Psychic and Mediums Survey*,  
[today.yougov.com/topics/entertainment/articles-reports/2017/10/31/1-3-americans-feel-they-have-experienced-psychic-m](http://today.yougov.com/topics/entertainment/articles-reports/2017/10/31/1-3-americans-feel-they-have-experienced-psychic-m).

Zeller, B.E. (2014). *Heaven's Gate: America's UFO Religion*, New York, New York: New York University Press.