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## Small planet in the vastness of space: Globalization and the proliferation of UFOs, aliens, and extraterrestrial threats to humanity

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# WZB

Berlin Social Science Center



John Boli

## **SMALL PLANET IN THE VASTNESS OF SPACE**

Globalization and the Proliferation of UFOs, Aliens,  
and Extraterrestrial Threats to Humanity

**Discussion Paper**

SP IV 2018–104

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Abstract

**SMALL PLANET IN THE VASTNESS OF SPACE:**

Globalization and the Proliferation of UFOs, Aliens and Extraterrestrial Threats to Humanity

By John Boli

Globalization entails conceiving the world as a single social unit whose boundary encompasses the entire globe. Beyond the boundary lies the Outside, which becomes the object of increasing attention as globalization intensifies. Since the late 19th century, and above all since the mid-20th century, numerous forms of cultural production have arisen to fill the great void of the Outside, including astronomy and astrophysics – which helped demarcate the boundary initially – and a wide variety of imaginative cultural spheres: observer reports of UFO sightings; crop circle formations attributed to extraterrestrials; tales of alien abductions; books, films, newspaper articles, video games, and doctoral dissertations about alien life and alien invasions. I use yearly data regarding these types of cultural production during the recent period of intensifying globalization (mostly since the 1940s) to test four hypotheses about globalization and the Outside: (1) that such cultural production increases with globalization, (2) that it declines during major disruptions in world society, (3) that some forms of such cultural production may be fads that decline even as globalization intensifies, and (4) based on a Durkheimian argument, that cultural production regarding the nature of aliens in close encounters strongly favors humanoid forms. The results generally support the hypotheses, with most cultural production forms according with the first two hypotheses and only crop circle production displaying a faddish form.

*Keywords: Globalization, UFOs, Extraterrestrial Threats*



## Zusammenfassung

### **EIN KLEINER PLANET IN DER WEITE DES WELTRAUMS:**

Globalisierung und die Proliferation von Ufos, Aliens und außerirdischer Gefahr für die Menschheit

Von John Boli

Das Konzept der Globalisierung beinhaltet das Verständnis der Welt als einzelne soziale Einheit, deren Grenzen den gesamten Globus umfassen. Hinter diesen Grenzen liegt das „Unbekannte“, welches mit voranschreitender Globalisierung immer mehr zum Objekt des Interesses wird. Spätestens seit dem späten 19. Jahrhundert, vor allem aber seit Mitte des 20. Jahrhunderts, sind zahlreiche kulturelle Produktionen entstanden, die es sich zur Aufgabe gemacht haben, die Leere des „Unbekannten“ zu füllen. Dazu gehören Astronomie und Astrophysik, die die ursprünglichen Grenzen aufzeigten, sowie eine Vielzahl anderer Bereiche: Beobachter berichten von Ufo-Sichtungen; Kornkreise, die mit Außerirdischen in Verbindung gebracht werden; Geschichten von Entführungen durch Aliens; Bücher; Filme, Zeitungsartikel, Videospiele und Dissertationen über außerirdisches Leben und Invasionen durch Aliens. Ich verwende Daten, die diese Arten kultureller Bereiche während der jüngsten Phase der Globalisierung (seit den 1940er Jahren) abbilden, um vier Hypothesen über Globalisierung und das „Unbekannte“ zu testen. (1) Die o.g. kulturellen Produktionen vermehren sich im Zuge der Globalisierung. (2) Sie schrumpfen während negativer Ereignisse in der Weltgesellschaft. (3) Manche der kulturellen Produktionen treten nur kurzzeitig auf und schrumpfen, obwohl sich der Globalisierungsprozess intensiviert. (4) Ausgehend von einem Durkheim'schen Argument, favorisieren kulturelle Produktionen, die sich mit der Natur von Aliens befassen, menschenähnliche Formen. Die Ergebnisse liefern empirische Unterstützung für die Hypothesen, wobei die meisten Formen kultureller Produktionen mit den ersten beiden Hypothesen übereinstimmen und lediglich die Ergebnisse zu Kornkreis-Produktionen schwankender sind.

*Schlüsselwörter: Globalisierung, Ufos, außerirdische Bedrohungen*

## **I. Introduction: Shrinking Earth, Expanding Universe**

In 1908, Henrietta Leavitt, a computer (human calculator) working at Harvard College Observatory, completed her initial analysis of cepheid variable stars in the Large and Small Magellanic Clouds, “nebulae” (clouds, mist) that were thought to be within the Milky Way Galaxy. Leavitt showed that cepheid brightness varied cyclically, and after further work she established that a cepheid’s brightness varies with the length of the cycle. She thereby provided astronomy with its first “standard candle” – a class of stars whose intrinsic brightness could be inferred, no matter how far from Earth. Knowing the brightness, astronomers could calculate the distance to very distant stars, a stubborn problem with which astronomers had long wrestled. Leavitt’s accomplishment laid the foundation for the work of Edwin Hubble and Milton Humason, who used the new 100-inch telescope on Mount Wilson in California to show that cepheid stars in the Andromeda nebula were much further away than the known diameter of the Milky Way. The conclusion was inescapable: Andromeda was a distinct galaxy outside our own. By 1929, Hubble had measured the distance to 24 extra-galactic nebulae, and the further inescapable conclusion rapidly emerged: the universe is much larger than anyone imagined, filled with galaxies in every direction. Not only that, it was expanding in every direction as well.

The Leavitt-Hubble-Humason breakthrough constituted an astonishing shift in humanity’s conception of the universe, but it was hardly the first. The meticulous astronomical observations of Tycho Brahe, the clever mathematics of Nicolaus Copernicus, the even better mathematics of Johannes Kepler (orbits are elliptical, not circular, even though the circle is a “perfect” form), and a dose of neo-Platonic fascination with the mystical energy of the sun helped occasion the shift to a heliocentric model of the solar system that even vigorous efforts by the Church could not suppress. The telescope, first turned skyward by Galileo Galilei in 1609 after he learned of the instrument produced by German-Dutch lensmaker Hans Lippershey, engendered a host of observations that showed that the fixed celestial spheres of Plato and Eudoxus – and of medieval Islamic and Christian philosophers alike, as well as Copernicus – were neither fixed nor nearby. The planets had moons that moved, the stars were at highly variable distances, and gradual improvements in the telescope revealed that

those distances were enormous, eventually to be measured in light-years, and no few light-years at that.

The cultural upshot, so revolutionary that we cannot truly comprehend it, was the realization that the Earth, a small body circling an ordinary star in the periphery of an ordinary (if rather large) galaxy, is surrounded by a gigantic “Outside” full of mystery and marvels. The quite plausible view emerged that the Earth itself is an ordinary planet, one of a huge number of similar planets scattered across our and other galaxies. It is not “special” in any astrophysical sense, it occupies no “special” place in the grand scheme, it has no “special” laws of chemistry or physics that distinguish it from other celestial bodies. What makes the Earth special, however, is that it is – and remains – the only place where life is known to exist. But why, a plausibly correlative view came to ask, should the Earth be “special” even in this sense? Why should there not be other forms of life on other planets? How, indeed, could there not be other forms of life on other planets, or even forms of life that were not planet-bound? If the Earth is not special in any sense, the universe probably teems with life; our galactic neighborhood may well harbor strange organisms bound up in distinct evolutionary processes that have led to intelligence, technologies, and civilizations that match or surpass our own.

Glimmers of this view showed up well before the Leavitt-Hubble-Humason work yielded its prodigiously expanded conception of the universe. Speculation about life on Mars was common enough by 1895 that H. G Wells could begin work on his stunning *The War of the Worlds*, serialized in magazines in the UK and USA in 1898. The Reverend Wladyslaw Somerville Lach-Szyrma (publishing as W. S. L. S.) had anticipated Wells in an 1874 book, *A Voice From Another World*, involving the visitor Aleriel from Venus, and in his 1883 sequel *Aleriel, or A Voyage to Other Worlds*, in which Aleriel takes the narrator to the Moon, Venus, Mars, Jupiter, and other places, encountering life everywhere. *Aleriel* is the first known publication to use the term “Martian” to indicate inhabitants of the red planet, and Lach-Szyrma took it as a matter of course that life was not only flourishing but intelligent in much of the solar system. He had Aleriel enlighten his earthly host thus:

As Earth is but a local development of matter so is man but a local development of spirit, but besides him there are millions of other species and genera

of developments, as besides this little earth there are billions and quadrillions of worlds . . . If there are other worlds (as Astronomy long ago has proved) there must be millions of other orders of rational beings beside man – some beings in a completed development, some of higher intellectual power, of more spirituality, of greater size, of greater control over the forces of nature than Man. (W. S. L. S. 1874: 27-8)

Lach-Szyrma's view was likely reinforced by the mistranslation of Giovanni Schiaparelli's observation in 1877 of "canali" (channels) on Mars; they became "canals" in English and were interpreted as indicators of an advanced civilization. This view was popularized almost obsessively by Percival Lowell, the wealthy Bostonian who, in 1894, financed the construction of an observatory in Flagstaff, Arizona, specifically to study the Earth's near neighbor.

We can go further back. In what is often described as the first work of science fiction, the same Johannes Kepler whose calculations in *Astronomia nova* of 1609 helped solidify the heliocentric view of the universe, completed the previous year the initial version of a fanciful work, *Somnium sive Astronomia lunaris Joannis Kepleri* (*The Dream or Lunar Astronomy by Johannes Kepler*).<sup>1</sup> The book is a dream – or is it? A "Daemon" transports an Icelandic boy to the "island of Levania," a barely disguised version of the Moon, making a four-hour voyage of "fifty thousand German miles," or roughly the estimated Earth-Moon distance at the time. Kepler's point with the book was to describe the Moon, Earth and the rest of the solar system as experienced by Moon-dwelling creatures, an indirect way of further undermining the geocentric model. Along the way he created a new intelligent species capable of traveling through what he clearly understood as the cold, hard vacuum of space. A near-contemporary tale, published posthumously in 1638 but probably written in the 1620s, was *Man in the Moone* by English bishop Francis Godwin. Godwin's narrator flies to the moon using the power of a flock of swans and finds there the Lunars, technically advanced Christian humans living in a paradisiacal society. The book was well known in the 17<sup>th</sup> century (Killheffer et al. 2017). An important non-fiction work that promoted the claim that all of the planets in the

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1. This work was not published until 1634, four years after Kepler's death.

solar system are inhabited was Bernard le Bovier de Fontenelle's *Entretiens sur la pluralité des mondes* (*Conversations on the Plurality of Worlds*), of 1686, one of the first popular science books – written, notably, in French rather than Latin.

A curiosity I happened to come across is a two-page story, handwritten in French sometime between 1825 and 1832, by Elijah Kent Hubbard, teenaged member of a prominent Connecticut family. In “Une visite faite à cette terre par un habitant de Mercure,” a central topic of discussion is human laughter, a puzzling human practice for the visitor from Mercury who calls it “cette bruit horrible.” This small example may well indicate something much broader: interest on the part of the literate public, by the early 19<sup>th</sup> century, in the possibility of life on other planets. Such interest was certainly piqued by the 1835 publication of a series of six articles in *The Sun*, a New York paper, that purported to report the astonishing observations of Englishman John Herschel, one of the preeminent astronomers of the day. The Moon had oceans and brilliant white beaches, gigantic amethyst pyramids, herds of exotic animals, palm and melon trees, and humanoid but winged inhabitants of evidently high intelligence. The hoax, put together by reporter Richard Adams Locke, did not come to light until several years later; Herschel was rather peeved by the considerable commotion they engendered. A similar hoax was perpetrated by Edgar Allan Poe in the same year. “Hans Pfaall – A Tale” (later renamed “The Unparalleled Adventure of One Hans Pfaall”) took an intrepid adventurer, by balloon, on a nineteen-day voyage to the Moon, where he spent five years among its inhabitants. Though Poe filled the tale with meticulous detail about the journey and its hazards for the adventurer, it is an obvious fiction, perhaps intended to draw attention to the new literary magazine for which he had been hired as a staff writer.

#### *Up, Up and Away: The Interplanetary Cannon*

Early tales found protagonists flying to the Moon by means of a Daemon, a balloon, or a swan-powered vehicle, but the fancifulness of such means was always evident. A more realistic method, a cultural shift that made interplanetary travel conceivable, came to the fore by a particular technological achievement: the large cannon. Jules Verne used a mammoth cannon to propel his adventurers in *From the Earth to the Moon* (1865). Wells did the same in *The First Men in the Moon* of 1901, and these two books inspired Georges Méliès to make the first science fiction film, *Le Voyage dans la Lune*, released in 1902, that also employed a can-

non to travel beyond the Earth. Kepler's voyagers of 1608 used an essentially magical means of transport but the narrator does remark, "First of all he experiences a strong pressure, not unlike an explosion of gunpowder, as he is hurled above the mountains and the seas" (Kepler 1634: 9), so some cannon-like device may be inferred. While the hot-air balloon made several forays to the Moon in the 19<sup>th</sup> century, the cannon displaced it as the technology of choice. No other means had entered the realm of possibility: the airplane had yet to be invented, the jet engine was not even conceived, and rockets were used only for entertainment (fireworks) and as crude war weapons. In the 19<sup>th</sup> century, the bore and barrel length of cannons increased rapidly, to the point that the Elswick BL 16.25 inch (412 mm) naval gun of 1885 had an effective range of eleven kilometers (Marriott and Forty 2017: 86). Even larger bores had appeared in mortars, up to the astonishing 914 mm of the "Mallet's Mortar," a British weapon intended for but never used in the Crimean War. What could be a more obvious choice of propulsion than the mechanical marvel that could hurl heavy objects so high and far that they disappeared from view?

#### *Aliens and Extraterrestrials Arise*

By the 19<sup>th</sup> century, the Outside beyond planet Earth was subject to extensive and systematic astronomical observation as well as extensive and unsystematic speculation about travel into space and the presence and nature of unearthly life forms, what we now typically refer to as "aliens." The first use of the term to signify a being from beyond Earth appears to have occurred in a letter written by Thomas Carlyle in 1820, expressing his sense of aimlessness as he was about to move to Edinburgh: "I am like a being thrown from another planet on this dark terrestrial ball, an alien, a pilgrim among its possessors" (Sanders 1972). This was but an incidental usage, however, and it was not until 1912 that Edgar Rice Burroughs used the term (in the serialized novel *Under the Moons of Mars*, published in book form as *A Princess of Mars* in 1917) in the context of a human encountering an extraterrestrial – in this case, when a Barsoomian (Martian) was referring to the human visitor to his planet. The next usage arrived in Jack Williamson's 1929 serialized novel, *The Alien Intelligence*, and a handful of science fiction writers picked up the term in the 1930s. Usage was uncommon in the 1940s but spread rapidly in the 1950s as the science fiction genre exploded in popularity.

"Extraterrestrial" as a designator for an unearthly creature was much slower to emerge and

is still not nearly as widely employed. The term was freely used as an adjective in the 19<sup>th</sup> century, at least as early as 1848, but almost always in a technical sense to signify planets, meteors, and the like in the Outside. What is now known as the “extraterrestrial hypothesis” – that life exists elsewhere and may take forms quite unlike life on Earth – was also commonly discussed, as indicated above, and even taken for granted in some circles. However, I have been able to locate only two or three instances of “extraterrestrial” used as a noun by 1950, and even in the 1950s and 1960s such usage was rare.

### *We Know They're Out There: UFOs Arrive*

The standard story in the voluminous literature on the history of UFOs begins in 1947 with Kenneth Arnold, owner of a company that sold fire-fighting equipment. While searching on June 24 for a missing plane near Mount Rainier, Washington, “He said he sighted nine saucer-like aircraft flying in formation at 3 p.m. yesterday, extremely bright – as if they were nickel plated – and flying at an immense rate of speed,” which he estimated at about 1200 miles per hour (nearly 2000 kph; *Eastern Oregonian* 1947: 1). The original headline was “Pilot Sees ‘Saucer-like Objects’ Flying at 1,200 m.p.h. in Oregon,” but when other newspapers picked up the story from the wire services, many used “Flying Saucer” in the headline. A rash of sightings ensued immediately, some people claiming to have seen the same or similar objects, others reporting quite different objects.

Arnold’s sighting was followed two weeks later (July 8) by what came to be the most infamous “incident” in UFO history, the supposed sighting and crash of a flying saucer in Roswell, New Mexico. The headline in the *Roswell Daily Record* (1947: 1) read, “RAAF Captures Flying Saucer on Ranch in Roswell Region,” and despite the mundane explanation issued the next day – that the sensational find was in fact debris from a weather balloon – the Roswell story prompted a rash of saucer sightings, not only in the USA but around the world. Numerous claims of other crashed discs popped up.

Arnold’s sighting was hardly the first on record. UFO enthusiasts have dredged up presumed sightings as far back as the first chapter of the book of Ezekiel, written about 593 BCE, the famous “chariot” vision of four creatures that moved by the aid of a “wheel in the middle of a wheel” such that “when those rose from the earth, the wheels rose along with them, for

the spirit of the living creatures was in the wheels.” Various UFO sighting databases list scores – even hundreds – of sightings before the 20<sup>th</sup> century, but they are scattered across the years, rarely involve more than one event in a given year, and usually are limited to peculiar lights in the sky; flying objects are rarely mentioned. The earliest photograph (in stereo) claiming to depict a UFO was taken in 1870 from the summit of Mt. Washington, New Hampshire. Sightings from the early 20<sup>th</sup> century are more regular and more likely to include claims about flying vehicles, but it was not until the 1940s that the unidentified flying object became a serious and widespread subject of interest – and controversy. A big boost to UFO popularity came with the first book on the topic, *Behind the Flying Saucers* (Scully 1950; newspaper and magazine articles had appeared earlier). Frank Scully, a writer for *Variety* magazine, encountered two men who convinced him that a saucer had crashed in the desert near Aztec, New Mexico. As he began investigating, he heard reports of three other crashes, the usual claim being that the saucer occupants were being held by the U. S. government. Scully’s book includes discussion of other notable UFO sightings, including Kenneth Arnold’s experience, and it was published with a colorful, sensationalistic cover. It sold more than 65,000 copies, a huge hit at the time.

#### *And They May Well Be Hostile*

In *War of the Worlds* (1898), Wells depicted not only intelligent, technologically advanced aliens; he made the Martians, for the first time, a superior, hostile, ruthless, and implacable enemy. Wells found danger closer to home as well, in *The First Men in the Moon* (1900), Earth’s nearest neighbor hosting a strange collective species that was also hostile and dangerous. But the practice of envisioning extraterrestrial beings as a threat to Earth has an uneven history. A handful of such novels appeared in the 1920s and the pulp novel industry picked up the theme with some vigor in the 1930s, prompting two of the earliest science fiction films, 1934’s *Buck Rogers in the 25th Century* (Earth threatened by the Tiger Men of Mars) and 1938’s *Mars Attacks the World* (Flash Gordon battling on Mars against Ming the Merciless of the planet Mongo). The theme was largely abandoned during World War II, however, and did not make a comeback until the 1950s (Stableford et al. 2017). The first video game may have had an alien invasion theme but it did not appear until 1978.



### *If Not Hostile, Certainly Mysterious*

Evidence of extraterrestrial visitors is often claimed for crop circles – patterns of flattened plants, almost always grains, that alien space ships incidentally leave behind after landing in fields or create deliberately using mysterious forces. The earliest widely discussed instance derives from a woodcut pamphlet, *The Mowing–Devil: or, Strange NEWS out of Hartfordshire* (Anonymous, 1678), which shows a field of oats that has been mowed (harvested) in an oval pattern such that the straw was placed “with that exactness that it would have taken up above an age, for any man to perform.” The mowing is attributed to the devil; no spaceship was imagined. Ceriologists (crop circle researchers) and “croppies” (enthusiasts who insist on the extraterrestrial origins of crop circles) appear to have been unable to find further cases until the 20<sup>th</sup> century, with only occasional instances in the first few decades. Unlike UFOs or aliens, crop circles have no standard history, and no single event is seen as seminal to the phenomenon. The most comprehensive database available lists a total of 106 circles from 1930 to 1960; only in the 1970s does the yearly count regularly exceed 20. The great majority of circle reports come from the UK (Wiltshire County is said to be the original location) and the USA, though a good many have shown up in Canada, France, Germany, and many other places. The phenomenon received a big boost starting in 1976, when English artists Doug Bower and Dave Chorley began making circles late on Friday nights after pub visits; by the time they went public with their crop circle artistry, in 1991, they had made more than 200. Croppies have gone to great lengths to argue that Bower and Chorley were only seeking notoriety when they made their “confession,” essentially arguing that the self-identified hoaxers were pulling off a reverse hoax.

Another mysterious aspect of the UFO phenomenon is the alien abduction. While abduction cases going back to at least 1828 have been identified, very few are said to have occurred before the 1950s; in the only available database on the matter, 11 cases are listed by that year. Although dozens of incidents date to the 1950s, many of them went unreported for decades. One of the most famous early cases was that of Brazilian farmer Antônio Vilas-Boas, whose four-hour abduction in 1957 included a sexual encounter with a very attractive humanoid woman. The first abduction in the USA that fired the public imagination was that of Betty and Barney Hill in 1961. They described a strange encounter after seeing a large, silent

aerial vehicle in the White Mountains of New Hampshire during a drive home to Portsmouth from Montreal, the result being a torn dress, a scraped shoe, and two hours of missing memories. After hypnosis in 1964, they claimed to remember the abduction, and Betty's lifelong engagement with UFO research made her internationally famous. No other incident appears to have gained as much notoriety as this one, but alien abduction reports mounted in the 1960s and 1970s to reach as many as 36 in one year.

### *Small Planet in the Vastness of Space*

What all this speculation and invention – this imaginative cultural production – indicates is increasing awareness of planet Earth as a unitary object, a single entity, a globe suspended in the void that is distinct from the Outside that encompasses it. In other words, in recent centuries, especially since the 19<sup>th</sup> century, and most particularly since the late 1940s, widespread consciousness of the bounded planet – a core dimension of globalization – was expanding and intensifying apace. In the next section I develop this interpretation of the many forms of cultural production reviewed above and derive several predictions regarding data related to those forms.

## **II. Boundaries, Boundary Maintenance, and Scrutiny of the Outside**

The central theoretical idea underlying this paper is a simple one: a key element in the cultural construction of any social unit is delineation of the nature and location of the unit's boundary and investigation of what lies beyond it (Barth 1969, Conversi 1995, Hannan 1979). At issue here is the boundary of the largest social unit that is currently seen as encompassing human society. It goes by many names: the world, the planet, the globe, Earth, as physical descriptors; world society or global society, as designators of humanity's presence and social organization; global economy, world culture, global environment, world polity, and many more, as dimensions of world society. Correspondingly, the primary members of world society are designated as humans, humanity, homo sapiens, the human race . . . and their membership in world society is not infrequently designated world citizenship, contested though the concept may be.

An inside-outside binary distinction is central to the boundary definition of a social unit,

and the boundary is usually seen as both crucially important and highly problematic. Take, for example, the “country” or “nation,” whose geographical boundary has come to be quite precisely defined by means of international agreements, surveying instruments, satellite photos, ports of entry, road checkpoints, and, in places, fences or walls. The geographical boundary defines what territory and associated resources, people, artifacts, and so on, are “inside” the country; all else lies “outside.” But the country’s boundary is defined not solely geographically; it is also defined conceptually, in terms of jurisdiction, citizenship, property rights, and much more. These dimensions of boundary definition are primary concerns of the state that organizes the country as a polity, and they often rely on standardized procedures and constructs accepted, at least in principle, by all states. Thus, a citizen of a given country is in many senses still “inside” her country of citizenship even when traveling or living “abroad” (outside the geographical boundary), empowered by rights and constrained by duties associated with her citizenship.

A second example is the individual as a bounded social unit. The physical boundary of the individual is the body but the conceptual boundary is much larger and highly complex. It stretches far beyond the body to encompass the individual’s property and the many rights and obligations associated with property, a juridical boundary. It has a moral dimension based on the sanctity of the individual, concretized in prescriptions regarding the circumstances under which the individual’s boundary may be crossed and definitions of transgressions that cross the boundary: touch me only with my permission, strike me and you have committed assault and battery, steal my bicycle and you are guilty of theft. The individual has a corresponding reputational boundary in that malicious verbal or visual denigration of the individual is defined as offensive or illegal (libel). Evidently, the boundary of the individual is the focus of a great deal of social structure and activity aimed at protecting it from physical transgressions (policing), adjudicating disputes about where ownership lines are drawn (civil courts), and so on.

The boundary separates the inside from the outside. For a given country and its residents, the outside is export markets, imported goods, tourist destinations, exotic adventures, perhaps greener pastures or strange and marvelous people. For the sovereign state, the outside is allies and enemies, opportunities for cooperation and sources of conflict, competitors to

be manipulated and challengers whose manipulations are to be resisted. For the individual, the outside is “everyone and everything else,” though not in a simple way. The individual’s numerous identities bring many “others” at least partially inside: a person’s family, friends, ethnic or religious community, fellow citizens, and so on, are normally seen as “on the inside” with respect to some dimensions of social interaction. In every case, the outside is full of both opportunity and danger, and vigorously guarding the boundary around the social unit is a key concern.

Boundary definition and boundary maintenance are prominent themes in popular culture – in films, books, news articles, video games, television programs, advertising, and much more.

Films and books about immigrants often center on disputes about who is worthy of being “inside” the national boundary, whether as resident or citizen. Video games and action films obsessively focus on violent heroes battling invaders from the outside. Many forms of humor are based on actions that violate the individual’s “personal space,” the laughter reflecting the audience members’ discomfort when imagining themselves in such awkward situations.

One of the key features of globalization – perhaps, indeed, the central feature, though often not seen as such – was brought notably to the fore in Roland Robertson’s (1992) early essays. Globalization entails conceiving the entire world as a single social system, a comprehensive arena of action, an all-encompassing economy, a single (albeit complex) world polity; in Robertson’s (1992: 8) terms, the concept “refers both to the compression of the world and the intensification of consciousness of the world as a whole.” In other words, globalization rests on seeing the world as a social unit – the largest social unit – and orienting action, organization, ideology, and identity to that unit. Like all other social units, the global unit is bounded, but its boundary transcends those of all other social units, such as countries, geographic regions, religious or ethnic groups, transnational corporations, and so on. The boundary is implicit in the many universalistic social conceptions and institutions that have flourished in the age of globalization: notions of humanity and human rights, international law, technical standardization, mass schooling, world heritage, global health, environmental protection, and much more. Most such conceptions and institutions are limited to the globe:

they apply to all humans, and, perhaps, to animals or all living things, or even to the physical planet itself. Only a small subset of them – the natural sciences and related technological disciplines in engineering and the like – are presumed to transcend the global boundary, being applicable throughout the universe.

Awareness of the globe as a single entity is hardly new, of course; some such conception can be found in practically all ancient civilizations, in most religions, and in origin stories from all kinds of cultures stretching back through history. Until the age of globalization, however, the conceptions were diffuse, non-empirical, speculative, and essentially terrestrial. The gods that created the earth, the sky, living things, and humans concerned themselves mainly or exclusively with terrestrial affairs. They often interacted with humanity and shaped terrestrial events, and their struggles beyond the earthly domain typically took place in the sky (heavens). It is not too much to say that, for all practical purposes, there was no “Outside,” no boundary, no external arena. The Earth may not have been the sum total of existence – that the Sun, Moon, brighter planets, and stars were outside the Earth was commonly recognized – but little was known about these bodies, speculation about the Outside was rare, and the notion that some kind of non-godly Other could be found in the Outside was hardly thinkable.

As indicated in the introductory pages, the main initial impetus to conceiving a disenchant-ed Outside came from astronomy, sparked above all by the invention of the telescope in the early 17<sup>th</sup> century. Telescope advances came at a slow but steady pace, reaching a peak (for refractor technology) with the 40-inch (102 cm) Yerkes Observatory instrument of the 1890s. Observing capability increased dramatically thereafter as ever larger reflecting telescopes, beginning with the 60-inch (152 cm) device at Mt. Wilson (1908), came into use. With these enormously improved instruments, and undergirded by the rapid development of theory and experiment in physics in the 19<sup>th</sup> and 20<sup>th</sup> centuries, the Outside suddenly came into literal view as never before. Astronomers could identify, catalogue, and attempt to explain, as natural phenomena, a vast array of objects and processes far beyond Earth – moons and asteroids and comets, the chemical composition of stars, star formation and evolution, and so on. What they did not observe, however, was a playground for the gods, a battlefield of antagonistic deities, an Elysian field of pleasant repose. In a fundamental sense, what was

Outside was entirely consistent with what was inside the global boundary: the same chemical elements and processes, nuclear particles and forces, and scientific laws describing the behavior of matter, energy, and space-time.

If the Outside is essentially the same as the Inside, it could well be full of life; for many, it is indubitably full of life. As we shall see, eminent physicist Enrico Fermi's famous question of 1950 – "Where is everybody?"<sup>2</sup> – evoked an ever growing chorus of voices with one and the same response: "Right under your nose!" The imaginative tales of Kepler, Lach-Szyrma, Wells, Poe, and their many successors in the 20<sup>th</sup> century created conditions favorable for the construction of cultural niches turning imagination into reality: UFOs (often) carry alien visitors who sometimes abduct humans for their own purposes, who may well walk among us undetected, and whose machines leave marvelous patterns in wheat and barley fields.

#### *A Few Predictions*

The tale told here is in essence a simple one. Intensifying globalization in the 19<sup>th</sup> and 20<sup>th</sup> centuries entailed, among other things, the widespread conception of the world as a single social unit, the boundary of which is coincident with the planet Earth. The boundary and what lay beyond it thereby became objects of cultural concern. Thanks above all to technological advances that made high-powered astronomy possible, the nature and extent of the Outside beyond the planetary boundary was disenchanting, naturalized, and scrutinized sufficiently well to demonstrate that the Outside is in no way fundamentally different from the Inside. An unavoidable, albeit still uncertain, conclusion is that alien life is not only possible but probably common, and alien technology capable of interstellar (even intergalactic?) travel is within the realm of possibility. This expansion of human awareness to the great Outside opened the door to creative cultural endeavors across many domains, a virtual cornucopia of speculation and excitement about a practically unlimited variety of possible

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2. Alternatively, the question may have been, "Where are they?" Fermi was having lunch with several other physicists at Los Alamos when the subject of flying saucers came up; recollections of the exact words spoken vary. The "Fermi paradox" is the remarkable fact that, if the galaxy is replete with life, intelligent life, and technically advanced civilizations, aliens should have visited Earth, perhaps colonized Earth, or at least made their existence known – yet we have no irrefutable evidence, as yet, that anyone is out there or has been here.

forms of life, technology, cosmic history, and contact with Earth and humans. This cultural flowering includes books, comics, films, video games, songs, and the like; it also includes sightings of UFOs, reports of alien abductions, crop circles interpreted as having alien origins, fears of alien invasion, and much more. Less speculatively, it includes a relatively recent development, what is called planetary defense: scientific and engineering efforts to develop the technological capability to detect and deflect or destroy extraterrestrial bodies (asteroids and comets) on a collision course with Earth, so that humanity does not go the way of the dinosaurs.

This simple argument leads to

*Prediction 1 (Globalization Prediction). As globalization has intensified over the past two centuries, cultural production regarding the universe outside planet Earth has intensified accordingly.*

In other words, more globalization means more books and films about aliens, more crop circles, more UFO sightings and abduction reports. Given that globalization has not proceeded entirely smoothly or monotonically, however, the prediction is not quite as simple as it appears. We know that the world was greatly disrupted global structuration and globalizing processes (see Boli and Thomas 1999 regarding INGOs), so one can reasonably predict that cultural production about the Outside would be similarly disrupted. Declines, or at least much slower rates of increase, in alien films, UFO sightings, etc., should be apparent during major periods of turmoil in world society.

*Prediction 2 (Disruption Prediction). Major disruptions in world society entail disruptions in cultural production regarding the universe outside planet Earth.*

As the discussions above of the early history of science fiction, Martians and Lunarians, UFOs, aliens and extraterrestrials, indicate, very little cultural production about the Outside occurred before World War II. The interruptions of the world wars are thus not easily identified, and no such massive interruption of globalization has occurred since. On the other hand, a major disruption of world society that is still fresh in many people's minds is the Great Recession of the latter 2000s, which was most acute in 2008-2009. It did indeed interrupt world trade and international investment significantly. Another major global disruption was the 2001 al-Qaeda attack on the USA that destroyed the World Trade Center buildings. It provoked a massive cultural shift away from globalization, which had been the hot-

test intellectual topic at the time, to terrorism. For a time, interest in globalization faded almost to insignificance, while terrorism became the topic du jour to an extraordinary degree. Thus, it is reasonable to expect that cultural production about the Outside was disrupted by the al-Qaeda attack and its ensuing wars, and by the global financial crisis. As discussed below, other disruptions may be relevant as well.

One form of cultural production that boundary construction and maintenance normally generate is concern for threats from beyond the boundary. This process is wholly familiar with regard to nation-states, which view other states as potential disruptors or enemies; many flavors of patriotism and many a social movement reflect mobilization about concern for the strength and porosity of borders, particularly in unsettled times. Correspondingly, globalization should generate perceptions not simply of benign presences in the Outside but of significant or even existential threats to the planet. A considerable number of UFO abduction stories and alien conspiracy theories have that character; aliens have experimented on abductees to understand human vulnerabilities, they assume human form so they can live among humans and prepare the way for invasion, and so on. In the past couple of decades, action films have taken up this theme with a vengeance, in movies like *Independence Day*, *The Puppet Masters*, and *Pacific Rim* – not to mention the outburst of superhero films based on comic books.

It is reasonable to hypothesize that cultural production regarding external threats increases in direct relation to globalization's intensification, in line with the Globalization Prediction, but an additional wrinkle may be that major disruptions occasion greater, not lesser, concern for threats from the Outside – be that the Outside of a local or regional unit, a country, or the world as a whole. Disruptions heighten insecurities, increase suspiciousness regarding entities in the Outside, and intensify the search for threats that could undermine or destabilize society. In that light, threat production would increase.

*Prediction 2.1 (Threat Prediction). Major disruptions in world society entail increases in cultural production regarding threats from the universe to planet Earth.*

An alternative way of thinking about reports of UFO sightings, alien abductions, crop circles, and alien invasion films shifts the perspective: these phenomena are popular culture fads that are not systematically related to intensifying attention to and concern about the plane-



tary boundary. If that is the case, curves showing the yearly production of UFO news articles, alien films, and crop circles should have inverted-U shapes, with a small number of cases initially, a gradually rising number that accelerates rapidly, then a peak and a more or less rapid decline to a low level. Fads can make comebacks, of course, so one might find repeated inverted-U patterns, but a curve that rises monotonically for many decades up to the present could be consistent with the fad concept only if the fad has not yet reached its peak.

*Prediction 3 (Fad Prediction). Cultural production regarding the universe outside planet Earth involves fads whose extent and intensity are not a direct function of globalization.*

Though seemingly in contradiction to the Globalization Prediction, this prediction is nonetheless predicated on it in that globalization is a crucial condition for cultural production about the universe beyond Earth. However, if such cultural production is faddish, increasing intensity of globalization may not lead to increasing cultural production for any given form of cultural production. One might expect, instead, that one form of culture work about the Outside would be displaced by another, which in turn would be displaced by yet another, so that we would observe overlapping waves of cultural production but no steadily rising, monotonic trends.

A fourth issue worth exploring is the nature of the alien beings that are projected in popular culture. In his sociology of religion, Durkheim (1912) held that the gods (normally, beings in the Outside, though not necessarily on a material plane) are reflections of fundamental features of human society. Put concisely, and reversing the habitual causality of origin myths, humans make the gods in their own image. If Durkheimian thinking applies to the cultural construction of aliens, a sensible prediction is that reports about aliens in “close encounters of the third kind” would depict them primarily as humanoid – as having identifiable heads and bodies, arms and legs, eyes and mouths. They would not often resemble lizards, cockroaches, weasels, scorpions, or cockatoos; neither would they be shapeless blobs, inanimate vegetation, speaking rocks, glowing balls of gas, or other exotic forms.

*Prediction 4 (Humanoid Prediction). Cultural production regarding the nature of aliens in close encounters strongly favors humanoid forms.*

Five predictions in all, then: (1) globalization generates cultural production about the Outside; (2) disruptions in world society disrupt such cultural production; (2.1) disruptions in

world society increase one form of cultural production, that which depicts threats to planet Earth; (3) as a counter-prediction, cultural production about the Outside does not vary directly with globalization's intensity but occurs as a series of fads that rise and fall in series; and (4) the aliens reported in close encounters will be mostly of humanoid form.

### **III. Data and Analysis**

A surprising number of databases on the topics of this paper have been compiled by enthusiasts around the world. Most of the sources used are English-language only, and most of them are based in the USA. Whether this limitation introduces biases or misleading patterns in the data is impossible to say; my search for databases in other languages (French, Spanish, German, and Scandinavian languages) failed to turn up comparable non-English databases except for one UFO database described below. Note, however, that the databases that deal with events (such as UFO sightings) contain information reported from many or almost all countries and parts of the world, even though they are dominated by the richer Western countries, the USA above all.

#### *UFOs*

Above I mentioned that the answer, for many, to Fermi's question, "Where is everybody?" is self-evident: they are here, in great numbers, zipping around in spaceships that we observe as UFOs. Happily, these observations have been compiled in several UFO databases. The databases have variable amounts of information, ranging from the date and place to the type of object, object movement, accompanying sounds, presence of other observers, and so on. The primary information I use is the number of sightings per year. The several databases include:

- (1) Ufo-Scepticisme, Forum d'étude pragmatique du phénomène ovni (et phénomènes connexes) (UFO-Skepticism, Forum for the Pragmatic Study of the Phenomenon of UFOs (and related phenomena)). This database derives from the \*U\* UFO Database of well-known American UFO researcher Larry Hatch, who made a concerted effort to weed out hoaxes and easily explained natural phenomena. Its first sighting is from 593 BCE ("Ezekiel's wheel," discussed earlier),

the last from 2003. More than 81% of the 18,122 incidents occurred since 1950.

- (2) UFO Hunters. I have been unable to gain access to this database but the web site has a graph that gives the number of sightings per year. The graph has 189,856 sightings, more than ten times those in the Hatch data, starting in 1950 and extending to the present. Due to lack of response from individuals associated with the site, I do not know whether the database includes earlier reports.
- (3) The National UFO Reporting Center. NUFORC bills itself as “The web's most comprehensive and up to date UFO information source provided by America's foremost UFO Reporting Agency in continuous operation since 1974.” It contains about 115,000 reported sightings, the first in the year 1318, with 242 sightings before 1950.
- (4) UFO-DB.COM. This German site combines data from four sources: DEGUFO, Deutschsprachige Gesellschaft für Forschung EV; GEP e.V., Gesellschaft zur Erforschung des UFO-Phänomens; MUFON-CES, the Central European Section of the Mutual UFO Network (below); and, by far the largest, UFO-Datenbank, Deutsche und globale Sichtungsdatenbank. Many incidents show up in multiple reports for different observers present at the time; such duplication appears to be less common in other databases. I have not had the resources to sift out the actual number of incidents. I compiled yearly data only since 1850, a total of 137,823 reports through 2017; the database has a good many earlier cases as well.
- (5) Water UFO Database of Reports by Carl Feindt, a specialized site listing only events on water, reported by all sorts of sailors – a few ancient, some from the 18th to early 20<sup>th</sup> centuries, most from the 1940s onward. The database has a total of 1651 sightings plus thirteen that are undated.<sup>3</sup>

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3. What is it that UFO sighters are seeing? The Mutual UFO Network (MUFON) kindly shared with me a detailed analysis by Winslet (2017) for all sightings, 2001-17, in the MUFON database. It reports the results of investigations by a great many UFO-interested parties, believers and skeptics alike, who have tried to determine the nature of the reported sightings. As the table below shows, many cases were not resolved or the investigator decided that in-

I located one additional database, the Mutual UFO Network (MUFON), but the interface it provides is extremely laborious to use. I generated data for the years 1940-67 and found that it correlates at  $r=0.983$  with the NUFORC data but has only about sixty percent as many reports. Thus, it likely would be redundant with the NUFORC data and I did not pursue it further.

I tried to communicate with individuals associated with all of these databases to inquire about how the data are collected, efforts to eliminate hoaxes and natural phenomena, and so on, but received no replies. I believe that the Larry Hatch data, relatively sparse though they may be, are likely of higher quality than data from other sources. Hatch ran a one-man operation, though, and he appears to have focused his efforts on the early period of UFO sightings (1940s through 1960s), so his coverage of later times is clearly inadequate.

### *Alien Abductions*

The only data I can find regarding alien abductions comes from the Larry Hatch \*U\* UFO Da-

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formation was insufficient to make a judgment. Removing such cases, about 9% of sightings were deemed hoaxes, 23% flying objects of known (human) provenance, 7% natural phenomena (usually light-related). Almost half (49%) remained as unidentified objects, origin unknown, origin likely never to be known.

This is the only such data I have been able to obtain.

2001-17 UFOs by Type of Resolution, MUFON Database (2017)

Source: Winslet

| Hoax  | Identified Flying Object | Natural Phenomenon | UFO    | Not Resolved | Insufficient Data | Total   |
|-------|--------------------------|--------------------|--------|--------------|-------------------|---------|
| 2537  | 8942                     | 2682               | 13744  | 1506         | 9148              | 38559   |
| 6.58% | 23.19%                   | 6.96%              | 35.64% | 3.94%        | 23.72%            | 100.00% |

Percentages With Definite Resolution

|       |        |       |        |  |  |       |
|-------|--------|-------|--------|--|--|-------|
| 2537  | 8942   | 2682  | 13744  |  |  | 27905 |
| 9.09% | 32.04% | 9.61% | 49.25% |  |  | 100%  |

tabase, part of the elaborate amount of information that Hatch recorded. The data include 405 abductions between 1950 and 1999; eleven abductions are given before 1950, the earliest in 1828, with a total of three in the 19<sup>th</sup> century and eight from 1909 to 1945.

### *Nature of UFO Aliens*

This data also comes from the Larry Hatch database. One of the items Hatch coded for is the type of being or creature reported in, on, or around the UFO spacecraft. About 8.5% of the sightings involved a being, a total of 1,511 in all. Hatch grouped the alien descriptions into 57 categories; I have collapsed them into the following seven: humanoid, pseudo-human, figure (indefinite shape), robot, monster, giant, and man-in-black.<sup>4</sup> Note that Hatch's exhaustive categories include only two that are decidedly non-humanoid, robot and monster.

### *Aliens and Extraterrestrials*

I generated numerous cultural indicators regarding alien life forms and more general concern about the extraterrestrial Outside. Yearly counts of books, dissertations, and journal articles came from WorldCat; news items came from Nexis Uni; two databases (IMDb and The Movie DB) yielded information about feature films; video game data came from The Games DB, Moby Games, and IGDB (Internet Games Data Base). I start here with books and dissertations.

*WorldCat* claims to be the world's largest book catalog, consisting as it does of a consortium of many of the world's great libraries. The vast majority of items are in English, though many other languages are also represented. I used search terms to identify items that relate to cultural production regarding the Outside, compiling counts for the number of books published and dissertations completed per year.

*Keywords "alien" AND "extraterrestrial."* I used these keywords to produce yearly counts of print books and dissertations that deal with life beyond Earth. The keyword "alien" alone

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4. The man-in-black term comes not from the lively movie of 1997 but from UFO devotees of the 1950s, some of whom claimed that government agents dressed in black paid them visits to warn them not to investigate UFO sightings or crash reports.

produces far too many false positives, since “alien” was for many decades the standard word used to indicate foreigners. Conjoining it with “extraterrestrial” eliminates most false positives, though some still remain. I used a Worldcat feature that is supposed to eliminate duplicates (many libraries hold the same book) but discovered that not all duplicates were in fact dropped. Due to the voluminous amount of data involved, and the format in which Worldcat displays the data, I was not able to eliminate remaining duplicates, though I believe they are a small percentage of the total. Most of the books are fictional, the first from 1938; the first dissertation came in 1992. A total of 4,624 books and 28 dissertations resulted.

*Keyword or title word “extraterrestrial.”* I conducted a broader search on both keyword and title word, and including articles as well as print books and dissertations. It yielded many non-fiction items, most of which are scientific articles. The totals are 23,107 articles, 12,900 print books, and 483 dissertations. The oldest is from 1508, a work by the Italian astronomer Camillo Leonardi, and almost all of the few items before the 20<sup>th</sup> century deal with astronomy. Only 21 items date from before 1925; 38 more appeared by 1950. The first fiction book in the catalog is from 1909, *Thro' Space*, by James Rock, a forgotten tale of travel to the Moon and Venus.

*Keyword “alien invasion.”* This search produced 379 print books and eight dissertations, the first appearing in 1962. This obviously omits the 1898 original edition of Wells’s *The War of the Worlds*, which has been reissued many times; I am unable to determine whether it omits other early alien invasion books as well. Some items are books with chapters about an alien invasion, or short story collections with one or more such stories. In the past two decades, manga and graphic novels account for a good many of the publications.

The *Nexis Uni* database (formerly Lexis-Nexis Academic Universe) compiles articles from more than 15,000 sources in many countries, though mostly in English. Nexis Uni does not give specific information about the number of newspapers it covers or its coverage years.

*Keyword “extraterrestrial AND alien,”* for yearly counts of news items in Nexis Uni. As with WorldCat, I used the option that is supposed to eliminate duplicates but found that it did not do so entirely, though I believe that, again, duplicates are a small proportion of the results. The search produced a total of 39,593 items. The first item appeared in 1975 but I suspect that earlier items are not represented due to limitations in the database’s coverage. Only 25

items appeared before 1980.

Turning to *films*, I obtained yearly counts on feature films as follows:

*Keyword “alien.”* Two sources are available here, The Movie DB with 570 films and IMDb with 944 films; I present data for IMDb only because it has many more items. *A Trip to the Moon* by the visionary Georges Méliès led the way in 1902, followed by *A Message from Mars* in 1913 and *Parema, Creature from the Starworld* in 1922. Only two other films, both Flash Gordon epics starring Buster Crabbe, were released before 1950 (in 1936 and 1938).

*Keyword “alien invasion.”* IMDb yielded 438 films using this keyword. The first was in 1934, *Buck Rogers in the 25<sup>th</sup> Century*; only one other such film appeared by 1950.

*Video games* are a relatively recent invention, the first simple games appearing in the 1950s. I combined information from The Games DB, Moby Games, and IGDB, eliminating duplicates to produce the most comprehensive data possible.

*Keyword “alien.”* The combined data consist of 346 games, starting with the 1978 *Space Invaders* by Tomohiro Nishikado, followed the next year by *Heiankyo Alien* (another Japanese game) and, in 1980, *Galaxian II* (also known as *Alien Rain*) and *Alien Invaders Plus*, a Magnavox imitation of *Space Invaders*. Neither of the keywords “alien invasion” nor “extraterrestrial” produced enough results to be useful.

### *Crop Circles*

*Cropcirclecenter.com* claims to be the world's largest database of crop circles, though the web site includes very little information other than the data. It has 6,753 cases, starting in 1930 and running through 2017, from many countries in all parts of the world.

*International Crop Circle Researchers' Association*, a site that has data for crop circles in the USA only. Its first case is from 1883 but only a handful of cases are recorded before 1950. The most recent case is from 2012 and the database has very few cases after 2005, which suggests that the compilers ceased their work some years ago. The database has a total of 569 circles since 1920. As with UFOs, I was unable to learn anything about the data gathering process, known hoaxes, or any other data-quality checks.

### *Planetary Defense and Near-Earth Objects*

The notion that human technology might be capable of deflecting or destroying objects likely to collide with Earth is hardly new, but as an active space engineering topic it is by far the youngest of the cultural forms considered here.

*Keyword “planetary defense.”* I used Elsevier’s Scopus database, which compiles data on tens of thousands of scholarly journals, to produce yearly counts of articles described by this term. The first came in 1995 and only 224 articles are listed. They were published in bunches due to conferences on the topic, the first a UN meeting in 1995 followed by a larger INGO-sponsored space conference in 1996; the next large conference, in 2004, had planetary defense as its sole concern.

A second source using the “*planetary defense*” keyword is Google Scholar, which I accessed using *Harzing’s Publish or Perish* software. This source produced 2,286 items, mostly articles. The earliest item is a novel that appeared in 1986; the first non-fiction item, in 1989, is a book chapter called “Creativity and Human Survival” by psychologist Howard E. Gruber. The great majority of items are scientific, technical, and engineering articles.

*Keyword “near-Earth objects.”* The Scopus data includes 995 items dealing with searching for asteroids and comets, diverting or destroying them, estimating potential damage to Earth, and so on. I excluded items concerned only with exploring or mining NEOs. The first item was published in 1983; it was not until 1996 that more than four items appeared in a single year, and a large increase at that time was due to the first UN Conference on NEOs held in New York in 1995.

Google Scholar items on NEOs are again much more numerous, a total of 10,487, with the earliest from 1945 (long before the NEO term came into regular usage). Due to the complexity of the data, I am unable to sort out items dealing with asteroid exploration and mining. The first item that uses the term “near Earth objects” was published in 1973. The yearly count first reached ten items only in 1990, after which the count rose exponentially.

Data sources for a few other aspects of the data presented below are given where presented and included in the list at the end of the paper.



#### **IV. Results: The Cultural Landscape Regarding the Universe Beyond Earth**

##### *UFOs*

Figures 1, 2, and 3 (pp.42-44) show the geographic distribution of sightings. The first figure uses Larry Hatch's relatively small but detailed data set whose last case came in 2003. Figures 2 and 3 are based on the largest UFO database, that of the National UFO Reporting Center (NUFORC).<sup>5</sup> The figures agree about several major features: first, the USA has by far the largest number of sightings; second, sightings are concentrated in wealthy, highly developed countries, with western Europe and the English-speaking world (Canada, Australia, New Zealand, South Africa) reporting sightings more than other areas; third, many regions with large rural populations in relatively clear, dark skies – much of Africa, Asia, and Latin America – report few sightings. The heavy prominence of the USA, which also has, by far, the highest sighting rate with 2,500 per 10 million people (the global median is about 10 per 10 million), is partly artifactual: American enthusiasts have gathered the data, their language abilities are probably narrow, and they have not been equally diligent about identifying sightings in non-English speaking countries. That Americans are so dedicated to data-gathering about UFOs is, on the other hand, a telling indicator of the prevalence of interest in the phenomenon there.

The next four figures, based on Hatch's database and the German UFO-DB.com database, can be summarized rather easily: from very low levels before the 1940s, UFO sightings spiked suddenly in 1947 and then increased rapidly in the 1950s, the key decade of the "Rocket Age," but fell in the 1970s or 1980s and never again rose to previous heights. Figure 5 (p.46) (Hatch) is a detailed look at the Figure 4 data (p.45), showing the peak period as the mid-1950s; the peaks in 1967, 1973, and 1995 were much lower. Figure 6 (UFO-DB.com) (p.47) has sightings peaking in 1967, far above any other point; Figure 7 (p.48) is a detailed look at the period since 1940, showing only one "revival" with a peak in 2008. Water UFO sightings (Figure 8, p.49) are similar, expanding rapidly in the 1950s, peaking in the 1970s, and falling

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5. UFO Hunters also displays a world map for its more than 190,000 reported sightings. It looks extremely similar to the map from NUFORC.

like a rock thereafter.

On the whole, these figures do not support the Globalization Prediction; in a period of intensifying globalization, UFO sightings reached a climax in the early years, the 1950s and 1960s, and fell off to very low levels thereafter. What do they say about the Disruption Prediction – that major disruptions in world society decrease cultural production about the Outside? Considering the period after UFO sightings became a widespread cultural practice (the 1950s), one might deem the turmoil of 1968 as a major world disruption, with its many student and worker revolts, anti-war protests, assassinations, invasion of Czechoslovakia, and so on. A second candidate is the oil shock of the 1970s, beginning with the 1973 oil embargo and followed by the 1979 price jump.<sup>6</sup> Adding these to the 2001 attack and 2008-9 global financial crisis, do the figures show effects of world-society disruptions? Figure 5 has peaks in 1967 (a year too early) and 1973 (the OPEC embargo), along with a mysterious peak in 1995. Figure 7 has the same two peaks of 1967 and 1973 and a much lower peak in 2008. Figure 8, for water UFOs, has an anomalous 1965 peak but two oil-crisis peaks, 1973 and 1978. In other words, the figures directly contradict the Disruption Prediction: if anything, major disruptions have boosted UFO sightings, not diminished them. This conclusion must be considered tentative, given that the 1967 peak preceded the 1968 turmoil and the 2008 peak preceded the depth of the financial crisis in 2009, but the close coincidence is not to be ignored.

The Fad Prediction holds that, while cultural production about the Outside is intimately related to globalization, any given cultural form is likely to operate as a fad, with an inverted-U curve. While the yearly count curves are far from smooth or regular, they all show typical fad shapes, peaking in the 1970s and petering out thereafter, with a bit of revival later on (1995 in the Hatch data, 2008 in the UFO-DB,com data, but no revival in the water UFO figure).

Initially, then, the data show the following:

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6. The collapse of Communism in 1989-92 might also be a candidate, but that complex process did not disrupt the world economy; neither did it constitute a crisis for most of the world.

*Globalization Prediction: More globalization implies more UFOs: not supported*

*Disruption Prediction: Major disruptions in world society lead to disruptions in UFO sightings: contradicted*

*Fad Prediction: UFO sightings are a fad: supported*

Before accepting these conclusions, some considerations about the databases in Figures 4 through 7 are in order. The Larry Hatch \*U\* UFO Database has fewer than 18,000 sightings and ends in 2003. Because it seems likely that Hatch focused his attention on the early UFO years, the decline after the 1970s is suspicious. The UFO-DB.com database has more than 133,000 sightings, but the database has an unknown but very large number of cases involving multiple reports for the same incident; for some cases, it has ten or more such duplicate reports. Its total number of distinct sightings is thus much smaller than 133,000. Unable to obtain replies to my queries to UFO-DB.com's compilers, I do not know the full magnitude of this problem but it is likely very substantial. In short, neither the Hatch nor the UFO-DB database may be adequate for the task at hand.

Two UFO databases remain, in Figures 9 and 10 (pp.50-51), and their patterns look very different from those above. These are large databases, with more than 115,000 and 190,000 sightings respectively, and unlike UFO-DB.com, they appear to have very few duplicate reports for one and the same incident.<sup>7</sup> The UFO Hunters data in Figure 9 show an explosion of UFO sightings in the past 25 years; so do the NUFORC data in Figure 10. Further, they both show almost monotonic increases throughout the 1950-2017 period, with very steep curves in the 1990s and 2000s. Both curves drop sharply after 2014 but this is almost certainly an artifact of the data-gathering process – considerable time must pass before the full complement of incidents in a given year is recorded. The conclusion here, then, is strikingly different: in a period of rapid and intense globalization, UFO reports rose accordingly.

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7. They do have a good deal of overlap, with many of the NUFORC sightings showing up in the UFO Hunters data but not vice versa. On the other hand, many NUFORC incidents are not captured by UFO Hunters. The two databases' yearly totals correlate with one another at 0.97 but are moderately negatively correlated with the Hatch and UFO-DB.com data.

Figures 9 and 10 also belie the findings in earlier figures regarding world-society disruptions. With detail for the 1930-1990 period in Figure 11 (NUFORC data, p.52), these databases signal modest declines in UFO sightings at times of global disruption: 1968 (global unrest and revolt), 1974 and 1978 (the oil crisis), 2008/2009 (world financial crisis). They also show a peak-decline episode in 1995, as noted above, and the NUFORC data have a similar episode in 2004. Neither of the latter episodes is clearly related to a global disruption, but the three major disruptions do indeed follow the expected pattern.

Unless the declines after 2014 are genuine, rather than an artifact of the data-gathering process, Figures 9 and 10 do not fit the mode of faddish behavior. As with many dimensions of globalization, UFO sightings have increased with only minor backsliding throughout the post-war period. This form of cultural production has been on the upswing for many years.

My revised conclusions about the three predictions are therefore as follows:

*Globalization Prediction:* More globalization implies more UFO sightings: supported

*Disruption Prediction:* Major disruptions in world society lead to disruptions in UFO sightings: largely supported

*Fad Prediction:* UFO sightings are a fad: not supported

### *Aliens and Extraterrestrials*

UFO sightings involve individuals or groups claiming to have experienced actual events. The forms of cultural production taken up in this section mostly involve fictional narratives: books about aliens or extraterrestrial beings, films and television shows about UFO visitations or alien abductions, video games with an extraterrestrial character or invasion. Some of these items are purportedly non-fictional, in the extensive literature about UFO sightings, documentary films asserting the “truth” about alien visitors or abductions, and the like, and some of the data cover news items, but much of this body is “pure” cultural production.

Table 1 (p.53) displays the years of the first instances of many forms of cultural production, according to the databases I have examined. These do not include the extremely rare early examples mentioned in the first part of the paper, such as Kepler’s “Daemon” who took the narrator to the Moon or Poe’s tale of Hans Pfaall’s five years among lunar beings. What dis-

tinguishes a book like Wells's *The War of the Worlds*, or the *Space Invaders* video game, is that it became a widely known cultural artifact reaching large, enthusiastic audiences. It was not until Wells's work, indeed, that any cultural product regarding the Outside became a part of popular culture.

Of greatest importance in Table 1 is the column on the left side. Wells's book and George Méliès's film come first, in 1898 and 1902 – in the midst of the first great modern wave of globalization. Two additional “firsts” arrived much later, in a period of severe world-society disruption: an “alien abduction” book in 1929 and an “alien and extraterrestrial” book in 1938 (recall that both search terms are needed to eliminate books about aliens as foreigners). The Rocket Age began in the 1940s; after the Kenneth Arnold UFO sighting and the infamous Roswell UFO incident in 1947, the floodgates opened. In the 1950s: the first flying saucer books, first book with “UFO” in the title, first alien and UFO television episodes, first UFO feature film and television show and documentary film, first alien abduction feature film, and first alien invasion television episode. Only a handful of “firsts” came later. One of them, the video game, had to await the technological strides of the 1960s and 1970s, and most of the others, regarding crop circles, had to await the entry of that phenomenon into general consciousness (as I show below, crop circles were few and far between until the 1980s). I display some of the more amusing titles of books about aliens or alien invasions in Table 2 (p.54), to give a sense of the variety of narratives these themes have engendered.

To further evaluate my predictions, I begin here with news items taken from Nexis uni, which go back only to 1975.<sup>8</sup> The search term “extraterrestrial AND alien” eliminates items about foreigners but the category is nonetheless broad, with stories about meteorites, science fiction books, astronauts, UFO sightings, films, and many other topics. Figure 12 (p.55) has 97,690 items from an unknown number of news sources that probably grew markedly over time. While very similar initially to the curves for the two best UFO sources, a slow start followed by an exponential increase, the decade 1997-2007 saw a lull which then gave

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8. The *New York Times* archive lists fifteen comparable articles before 1975, the earliest from 1961. Nexis uni does not explain its coverage period or sources but it seems fair to say that starting in 1975 is not particularly misleading.

way to another exponential increase. Contrast this with Figure 13 (p.56), another broad search using WorldCat to capture articles, print books, and dissertations characterized by the keyword “extraterrestrial” alone. This curve with 51,461 items rises gradually in the 1940s and early 1950s before a sharp increase to 1970, followed by a lull until the 1990s. Two distinct forms of cultural production, two curves that on the whole rise in tandem with intensifying globalization, but each has a peculiar lull – for which I have no explanation at this time.

Figure 14 (p.57) displays results for a subset of Figure 13, dropping articles and restricting the print books and dissertations by adding the keyword “alien” to “extraterrestrial.” The pattern is similar, though the dip in the early 2000s is deeper and the expansion thereafter is steeper. Both figures differ from UFO sightings in that very little activity occurred in the 1950s, and for “extraterrestrial AND alien” – that is, items that clearly have to do with life forms in the Outside – little activity is apparent until the 1980s. I will discuss the great expansion at that point below.

The Globalization Prediction is well supported by the figures for news items and Worldcat entries: the curves rise over time with only modest dips and end at their highest points (allowance being made for the incompleteness of data in the most recent two or three years). The same can be said of the next two figures. Figure 15 (p.58) displays the number of feature films per year with the keyword “alien” (excluding documentaries, short films, and the like), 944 films in all, while Figure 16 (p.59) shows 346 video games that have “alien” in the title. Both figures reveal rising trends over their respective periods. These curves are much choppier than those in earlier figures, due to the relatively small numbers of items they contain, but they are in line with the prediction that intensifying globalization engenders greater cultural production about the Outside.

The Disruption Prediction foresees declines in cultural production in times of world-society disruption. In Figure 12, news items fit the prediction with a dip after 2007, during the financial crisis, but the earlier extended dip after 1997 is anomalous. Figure 13 works better, the only notable dips in “extraterrestrial” print items occurring after 2001 and 2009, and Figure 14 for “extraterrestrial AND alien” print items has a dip after 2000 as well, though not at the time of the global financial crisis. I am hesitant to try to assess the Disruption

Prediction with respect to “alien” feature films and video games, given the low numbers of items and the choppiness of the curves.

One notable peak period for alien feature films is the decade from 1978 to 1988. This double hump is likely not related to globalization per se but to the release of several blockbuster films that stimulated both the cultural production industries and the general public to pay more attention to the Outside. Both Steven Spielberg’s *Close Encounters of the Third Kind* and George Lucas’s *Star Wars* were released in 1977; the first *Alien* film, by Ridley Scott, hit screens worldwide in 1979; Spielberg followed with *E.T. The Extra-Terrestrial* in 1982. While other big-hit films and television shows helped keep interest up, like the American series *The X-Files*, which ran from 1993 to 2002, and *Independence Day* of 1996, Figure 15 has a more faddish character: great popularity for the decade of the blockbusters, an extended lull (though still much higher than in the 1950s and 1960s), then another burst of popularity in the late 2000s. The video games curve in Figure 16 has the same character, with three bursts of alien-titled games but substantial lulls in between the bursts.

To sum up the results for news items, print materials, films, and video games, the Globalization Prediction is supported, the Disruption Prediction is largely supported (leaving aside films and video games), and the Fad Prediction is not supported in that the curves all rise throughout the various periods, though alien films and video games do appear to display fad-like behavior within the generally increasing trend.

### *Crop Circles*

The two crop circle databases address circles in the USA only (International Crop Circle Researchers’ Association) and worldwide circles (Crop Circle Center). The latter has a much larger number of incidents (6,753 vs. 569), but I include the former as an independent source of evidence. In Figure 17 (p.60), we find very few crop circles in the 1950s, a burst in the mid-1960s but still only twelve incidents at the peak, then a steep decline followed by an explosion of circles in the 1980s that led to a high peak in 2003 and a total collapse thereafter. The curve is fad-like beyond question, though the decline to zero in 2006 suggests that the compilers lost interest in their task after 2003. That this may not be the case is suggested by the worldwide data in Figure 18 (p.61): crop circles were rare before the 1980s, jumped

to hundreds per year through the 1990s, and fell dramatically to the present. These patterns do not coincide with intensifying globalization, they do not reflect world-society disruptions, and they look very much like fads.

One important matter to keep in mind in relation to crop circles is that their construction requires a great deal of dedication, planning and preparation, and labor. Clandestine construction is difficult and risky, though it is likely that most circle producers have received permission from the farmers whose fields are involved. Permission normally would entail compensation; in that event, crop circle construction may also be fairly costly. English artists Doug Bower and Dave Chorley managed to create more than 200 crop circles from 1976 to 1990, but that is only thirteen a year. Such committed teams are certainly rare, and most circles are likely one-off productions. Under these conditions, it is not surprising that the crop circle phenomenon has been fad-like.

#### *The Humanoid Prediction: Aliens are Mostly Humanoid*

Given mostly supportive evidence for Predictions 1 and 2, and support for the Fad Prediction for some cultural forms, what can be said about the Durkheimian prediction that most of the aliens involved in third-kind encounters are humanoid? The only data on this issue that I have found is in the Larry Hatch UFO database. Hatch recorded 1,511 sightings (9.5% of the total of 17,859) that were purported to involve vehicle occupants. The distribution of occupants across major categories appears in Figure 19 (p.62). The largest category (just over half) are decidedly humanoid entities, while the second largest (23%) are “pseudo-human,” *i.e.*, more human-looking than not. Another 16% are described as a “figure,” a vague term whose meaning remains obscure; presumably, the occupant’s shape was not easily described but some sort of living being was reported. The remaining categories – man-in-black, giant, monster, and robot – together account for 10% of the occupants. The net result is that 74% of occupants were humanoid or nearly so, only 3% were decidedly unearthly monsters, and 4% were inorganic robots.

Durkheim lives! Entirely unfamiliar, that is to say, truly alien UFO occupants are rare indeed. When UFO observers report encounters, they are highly likely to project human forms – despite the availability of non-humanoid exemplars in numerous science fiction books,



horror films, fantasy novels, and so on. Figure 4 thus provides strong evidence in favor of the Humanoid Prediction.

*The Threat Prediction: UFO Abductions and Alien Invasions*

To this point I have concentrated solely on rather neutral indications of consciousness of and interest in the Outside: UFO reports, news items with an extraterrestrial or alien allusion, books and films with content related to the Beyond. But the Outside is far from neutral; for any bounded social unit, the Outside may also pose threats and dangers. I take up this aspect with two figures capturing information about fictional threats. I then turn to the more realistic threat of near-Earth objects and the emergence of scientific and technical efforts to increase humanity's capacity for planetary defense.

The Threat Prediction holds that major disruptions in world society, while producing declines in overall cultural production regarding the Outside, may increase cultural production depicting threats to humanity or planet Earth. For this prediction, Larry Hatch's database is again uniquely useful for its information about UFO abductions. Figure 20 (p.63) plots yearly incidents from 1950 to 1999, a total of 405 abductions or about 2.3% of the database's UFO reports. Abduction claims are thus rare but not negligible; if we apply this percentage to the largest UFO database, it amounts to some 3,800 abductions. A cursory glance at Figure 20 is enough to tell us that abductions are fad-like, in several waves; there is no general rise alongside globalization. This conclusion must be tempered by the fact that Hatch's database is inadequate for recent decades, but this is the only evidence available. Do world-society disruptions engender spikes in the curve? With so few cases overall, inferences about this issue are hazardous, but it just so happens that, after the initial small peak in 1954, the later peaks (nearly) coincide with the turmoil of 1968, the second oil shock of 1978, and the collapse of Communism in 1989 and thereafter. Some tentative support for the Threat Prediction, perhaps?

Figure 21 (p.64) shares the inadequacies of Figure 20: a small number of cases overall and much instability in the yearly count. The data reflect feature films with "alien invasion" in the title; the imagery is (sometimes non-humanoid) creatures from outside the solar system attempting to take control of Earth for their own selfish or nefarious purposes. Five spikes

are evident and only one of them, 1967, can reasonably be linked to a major disruptive period. Unlike alien abductions, the upward trend for alien invasion films fits with the intensifying globalization thesis, but the Threat Prediction does not appear to be at all applicable.

Can the Threat Prediction be dismissed, then? Judging by Figure 22 (p.65), which shows print books and dissertations with “alien invasion” in the title, the answer is once again “yes.” The curve is smoother and the spikes are subdued compared to the previous two figures. The overall impression in Figure 22 is that of a largely monotonically rising yearly count. This is good for the Globalization Prediction but leaves the Threat Prediction aside.

### *Near-Earth Objects and Planetary Defense*

My final topic, the last chance for the Threat Prediction to find support, is the search for near-Earth objects (NEOs) and means to deflect or destroy them, what has come to be called planetary defense. The character of this form of cultural production is obviously different from that of forms reviewed above, heavily dependent as it is on technological advances in astronomy, rocket guidance systems, data-intensive computation, and so on. Does this mean that the threat posed by NEOs is immune to the sociological processes at the center of my analysis?

The answer to this question is to be found in Figures 23 through 26 (pp.66-69). The first of these displays the yearly tally of the number of scholarly articles characterized by the keyword “near Earth objects” in the Scopus database. The data reach back only to around 1980; this is a new field and very few such objects were known before the past two decades.<sup>9</sup> With 995 articles, Figure 23 shows a familiar curve, rising gradually with some fluctuations to a peak at the end of the period (again allowing for incomplete data in the most recent years). A comparable search on Google Scholar using Harzing’s *Publish or Perish* identified 10,475 items, mostly articles, with a similar curve (Figure 24). The curves have modest bumps as a consequence of the first two global conferences on the issue, a 1995 conference sponsored

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9. In 1980 only 95 NEOs were known, 44 comets and 51 asteroids. As of April, 2018, the comet total had reached only 107 (comets are rare) but the asteroid count was 18,034, with more than two-thirds of the total having been identified in the most recent decade (Center for NEO Studies 2018).

by the United Nations and a 2004 conference co-sponsored by the American Institute of Aeronautics and Astronautics (a major INGO of the global aerospace community) and The Aerospace Corporation, a federally funded research center. What the curves lack is any trace of effects of world-society disruptions – no spike in the early 2000s (Internet bubble burst, al-Qaeda attacks) or during the years of the financial crisis. Instead, NEO articles increase quite uniformly.

In Figures 25 and 26 the story is similar, though it begins even later, in the 1990s. The impact of the two initial conferences is striking in the Scopus data in Figure 25, while a sustained increase is evident only after 2010. With only 224 articles, however, little can be concluded from this figure. Figure 26, with 2,288 items based on Google Scholar, is more meaningful, and it closely resembles Figure 24, the Google Scholar articles about NEOs. World-society disruptions are not relevant, the curve rises steadily, and it is almost certainly still on the upswing.

To sum up, the Threat Prediction fails consistently. Global disruptions may modestly decrease cultural production regarding the Outside but they do not at the same time spark outbursts of concern for the threats posed by the Great Unknown.

To round off this section, Figure 27 (p.70) presents a list of the external threats to Earth that have been identified by the scientific and technical community, especially astronomers and astrophysicists. Two are confined to the local region: solar flares and NEOs. Measures are being taken – planetary defense – to understand and attempt to ward off the dangers of NEOs, but none of the other threats are ever likely to be avoidable through human action. The “distant in space” threats have their origin many light-years from the Sun but are potentially dangerous at any time; a wandering black hole collision, an extraterrestrial organism plague, or an alien invasion could occur next week or next year. The “distant in time” threats are hardly imminent; they are billions of years in the future. The final two items, “fanciful,” are more science fiction than actual possibility. Many a web site features alarmist worriers who hold that CERN’s Large Hadron Collider (the favorite target, because best known) will generate a doomsday black hole before long; some conspiracy theorists claim that it will even be a deliberate action. As for the last threat – that the Earth, humans, and everything else around us is nothing but an experiment or simulation run by godlike crea-

tures – yes, this is the stuff of science fiction, popularized especially by the Wachowskis' *The Matrix* in 1999.

The list of planetary threats from the Outside in Figure 27 is much longer than it was a few decades ago, and the literature on such threats has become enormous. This, too, can reasonably be seen at least in part as an effect of our globalized conceptualization of the planet as a single, bounded, world society and polity. Humanity is now constantly on the lookout for new threats, no matter how distant in time or space, no matter how unlikely they may be. One can confidently predict that the list will expand further, thanks to future advances in observing instruments and in the power of human imagination.

*Prediction Summary:*

The final findings, based on all forms of cultural production, are as follows:

Globalization Prediction: More globalization implies more cultural production regarding the Outside: supported.

Disruption Prediction: Major disruptions in world society lead to disruptions in cultural production regarding the Outside: largely supported.

Fad Prediction: Cultural production regarding the Outside involves fads: not supported except for crop circles, though partially supported for alien films and video games, which display fad-like behavior within a generally rising trend.

Humanoid Prediction: Cultural production regarding the nature of aliens in close encounters strongly favors humanoid forms: supported.

Threat Prediction: Major disruptions in world society lead to increased cultural production about the Outside: not supported.

## **V. Conclusion**

On the whole, my predictions regarding the link between globalization and cultural production regarding the Outside are borne out rather well. Intensifying globalization since World War II has led to ever greater attention to the mysteries of the Outside, in both speculation

and science. That the end of the war marked the opening of the floodgates is consistent with many other aspects of globalization, such as the proliferation of IGOs and INGOs, the enormous growth of international trade and investment, the emergence of the United Nations and its many agencies as focal points of global governance, and so on. The late 1940s also happen to be the time when extra-planetary travel first became feasible and astronomical observation took a giant leap forward with completion of the 200-inch (508 cm) Hale Telescope at the Palomar Observatory (1948). In other words, social and technological conditions were ripe for making of the boundless void outside Earth a realm of rich cultural complexity, turning human creativity loose to fill the void with all kinds of imaginative entities that often cross the boundary of globalizing world society, sometimes posing mortal threats to the planet.

Disruptions of world society put a bit of a damper on cultural production regarding the Outside but the effect is generally small and temporary. The largely monotonic rise of Outside cultural creativity belies the notion that these cultural forms are simply fads that will fade away, though some fad-like behavior is evident, particularly with crop circles. The only prediction that clearly fails – and it fails miserably – is the Threat Prediction; there is no evidence of increases in threat perception due to world society disruptions across any of the several cultural forms I have examined.

### *Problems*

The most crucial problem with this initial study of humanity's relationship with the Outside is my inability to learn anything substantive about many of the databases. Despite repeated queries to many people associated with various databases, I received only two replies, neither of which was helpful. Full access to and detailed study of the databases, along with conversations with the databases' compilers, would be needed to decide how reliable and complete they are, how errors could be identified and corrected, how duplicate entries could be eliminated, and so on. I believe that the general patterns given in the data are not likely to be misleading, but I have insufficient information to make such an assertion with confidence.

A second issue is the dominance of the USA in most of the databases. The great majority of

UFO sightings, alien abductions, crop circles, alien and alien invasion films, extraterrestrial books, and so on, are cultural products of the USA, even though many other countries are represented. More broadly, the English-speaking world dominates and I do not believe that this finding is due primarily to the fact that the data sources are English-centric. Whether or not this is a fatal flaw is debatable. Perhaps cultural production about the Outside takes unfamiliar forms in other countries and language groups, which means that I am completely missing important evidence. Perhaps, however, Anglo-American dominance is to be expected. After all, the USA and UK, along with the former Anglo colonies, are wealthy, populous countries that account for a sizeable proportion of all global cultural production, and the USA and UK have been principal drivers of global processes and structuration for more than two centuries. In addition, the expanded individualism of the Anglo-American world empowers Americans and Englishmen and Australians and Canadians to invent, embrace, and promote all sorts of imaginative cultural production, from religious denominations to occult sciences to political ideologies to conspiracy theories to psychopathologies to sociological research. Theoretically, then, that the English-speaking world is so prominent is not problematic; it is predictable.

Third, while the rising yearly counts in the various cultural production domains are impressive, they are raw numbers, not proportions of cultural production. Do books about extraterrestrial phenomena account for a growing proportion of all books published? Have films about aliens increased their share of all films? Are books and dissertations concerning alien invasions occupying an increasing percentage of space in publisher catalogs? These are not easily answered questions, due to the difficulty of determining relevant totals, but my analysis would be more convincing if it showed that the proportions of cultural production regarding the Outside were on the rise. Perhaps, one might argue, since cultural production as a whole has been increasing massively in the globalizing world, there is nothing remarkable about the increases documented here. On the other hand, it would be very surprising indeed to find that the Outside of world society were of little interest, that the cultural curves were low and flat or trending downward toward zero. That cultural production regarding the Outside is routine, widespread, and almost always trending upward bodes well for the arguments given here.

### *Looking Ahead: Contact?*

Fresh out of graduate school in 1958, Frank Drake joined the staff of the National Radio Astronomy Observatory in Green Bank, West Virginia. Drake had been thinking about the possibility of communicating with alien civilizations, and he calculated that the 85-foot (26-meter) Green Bank instrument could likely detect signals from a similar telescope twelve light years away, which brought thirty stars within reach. Drake launched a small-scale initial search in April of 1960, scanning two nearby stars for six hours a day over several months across a narrow band of frequencies, without success. The next year, prompted by a member of the National Academy of Sciences, Drake and colleagues organized the first Search for Extraterrestrial Intelligence (SETI) conference. In preparation for the conference Drake developed his famous equation, a set of parameters for estimating the number of currently active technological civilizations in the galaxy that could, in principle, send or receive radio communication. Much more extensive searches followed in later decades using a variety of radio dishes, including the Arecibo thousand-foot (305-meter) radio telescope in Puerto Rico, where Drake was director for two years, and, since 2007, the 42-dish Allen Telescope Array in California. Thousands of stars and tens of thousands of frequencies have been surveyed. Some promising signals have been identified but none has been of unambiguously artificial origin.

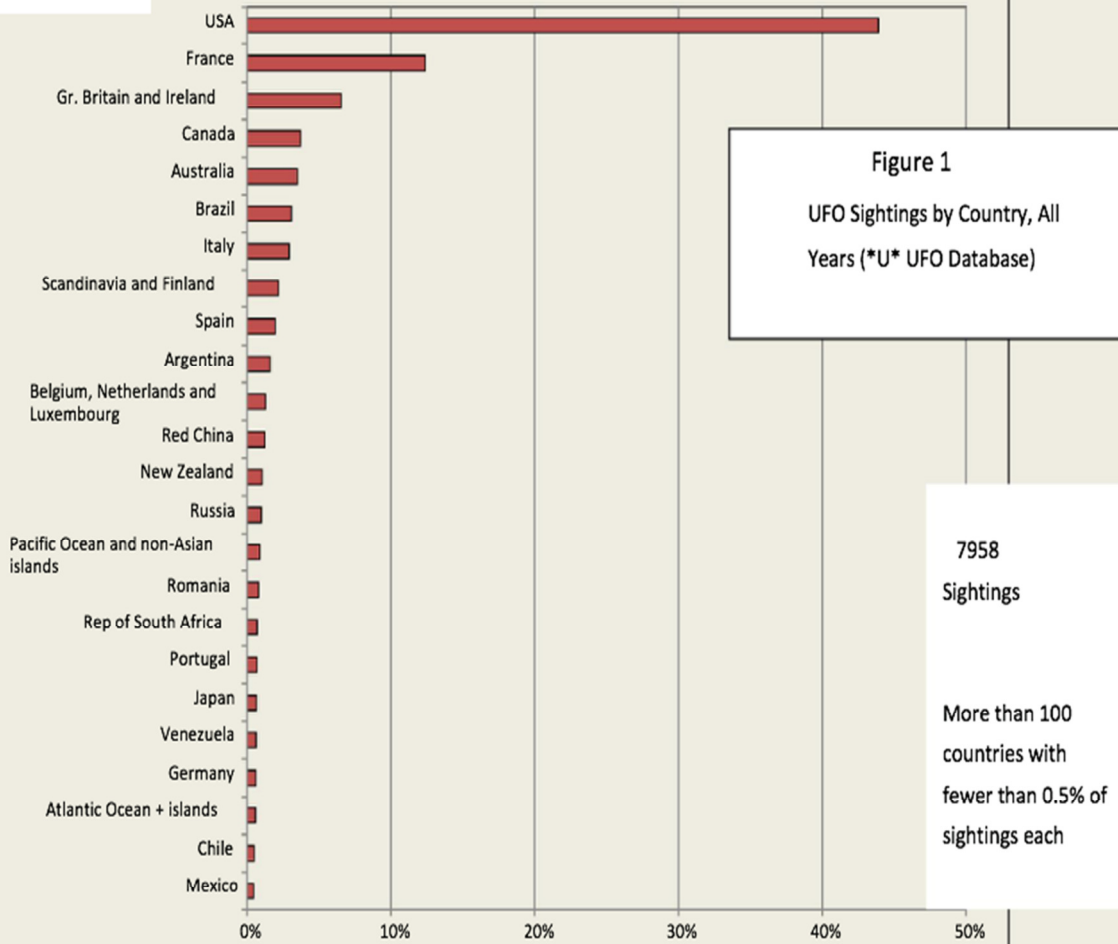
Searching for signs of technically advanced alien life forms is not the same as initiating communication, so-called active SETI. Frank Drake, along with astronomer Carl Sagan, was the driving force behind the 1974 “Arecibo message,” a high-powered three-minute broadcast from the newly refurbished telescope aimed at the globular star cluster M13, some 25,000 light years away. A dozen or so similar messages have been sent since but the wisdom of attempting to contact alien civilizations is hotly debated. Late in life, eminent physicist Stephen Hawking (2016), speaking of the “super-Earth” planet Gliese 832c (discovered in 2014), made a much-quoted remark about contact with technological civilizations in the Outside: “One day, we might receive a signal from a planet like this, but we should be wary of answering back.” His concern was that signaling our presence could lead to invasion and destruction, *The War of the Worlds* in real time.

With the rapid discovery of exoplanets (planets around stars other than the Sun) since the

1990s, thanks above all to the Kepler telescope's photometric observations beginning in 2009, extraterrestrial contact has become a far more realistic possibility. In our galaxy, planets are ubiquitous – most stars likely have one or more – and even rocky planets of roughly the size of Earth probably number in the billions. This makes Fermi's 1950 question all the more pertinent: if they are out there, why don't we know it? Perhaps the enormous scale of space is simply too great to make interstellar or cross-galactic communication and travel possible. Perhaps, however, sooner or later, the rampant, creative, explosively growing cultural production regarding aliens from the Outside will be challenged by actual contact, confirmed knowledge, and routinized exchange. If that happens, a cultural shift is likely: a new largest social unit and boundary, encompassing something like the Known Inhabited Region, will emerge, and tales of UFO sightings, alien encounters, and all the rest will have to take new forms with even more imaginative speculation about What May Be Out There.

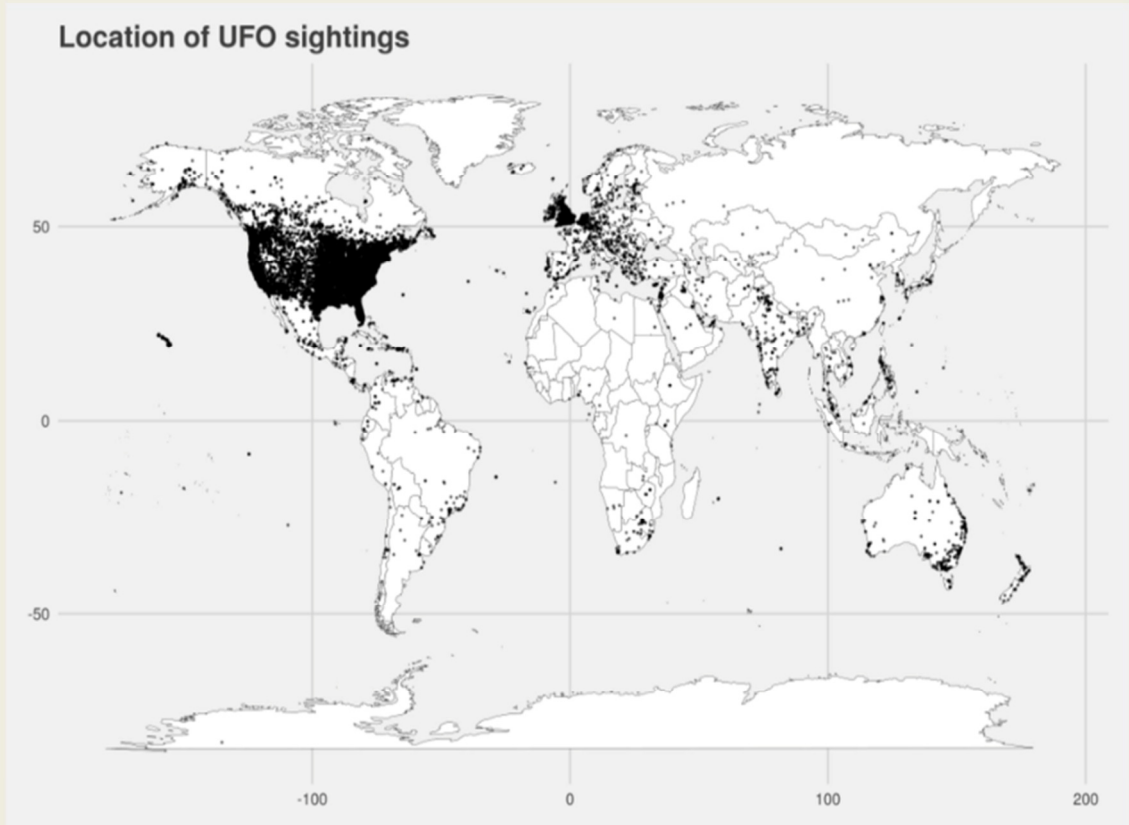


## VI. Figures



Source: \*U\* UFO Database (Larry Hatch), available from UFO SKEPTICISM, ufo-scepticisme.forumactif.com, at <https://github.com/RR0/uDb/tree/master/output/data>

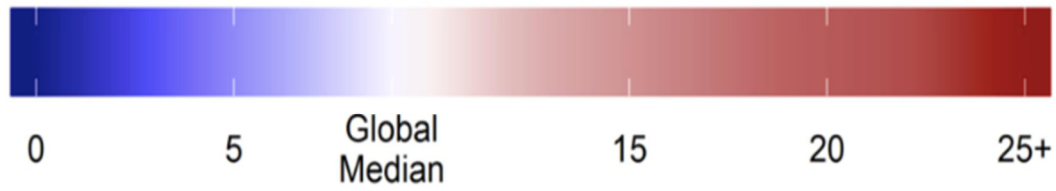
Figure 2



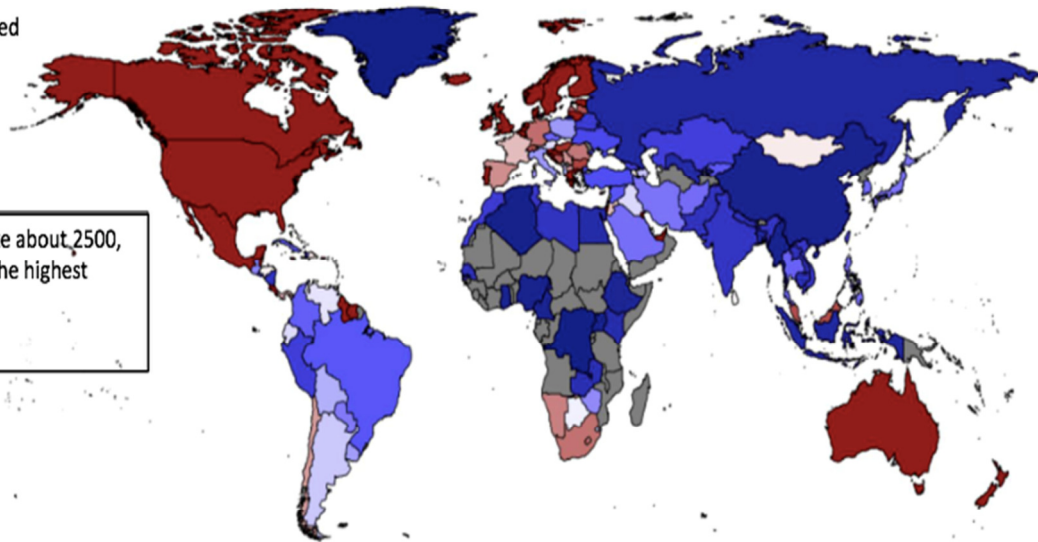
Source: Bouchet (2018) using data from the National UFO Reporting Center

Figure 3

## UFO Sightings Per 10M People



Gray=no sightings reported

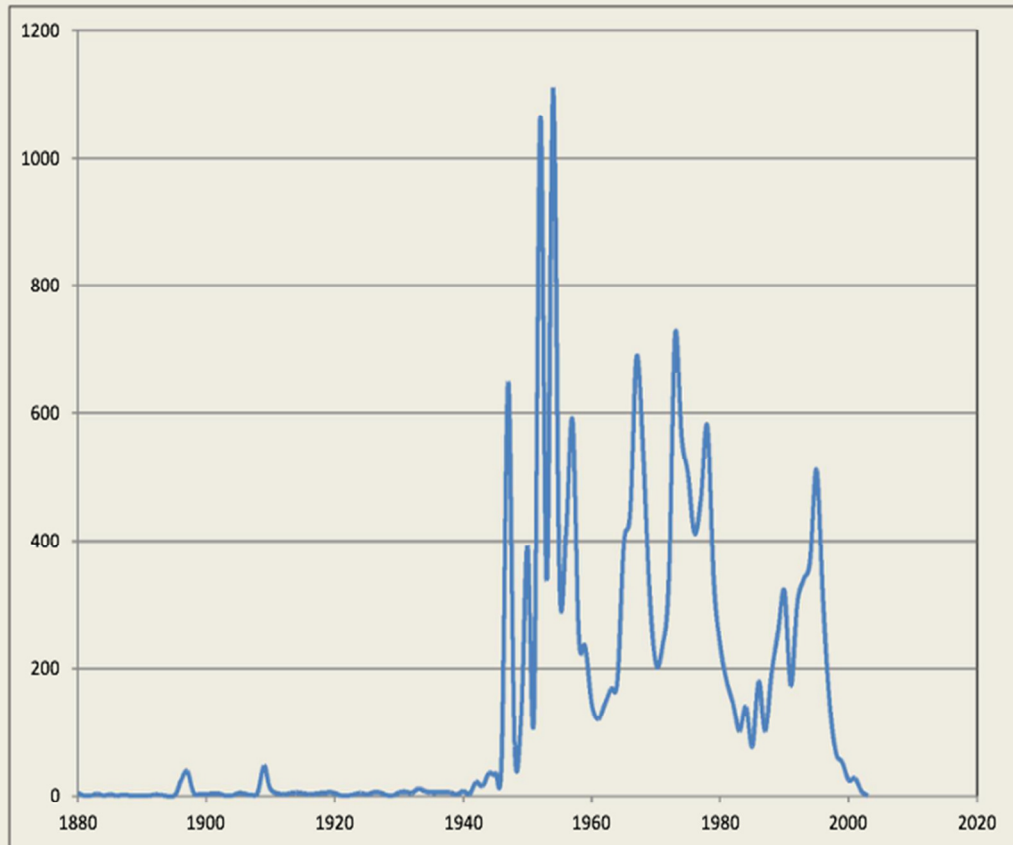


USA rate about 2500, by far the highest

Figure 4

UFO Sightings, 1880-2003

(\*U\* UFO Database, Larry Hatch)



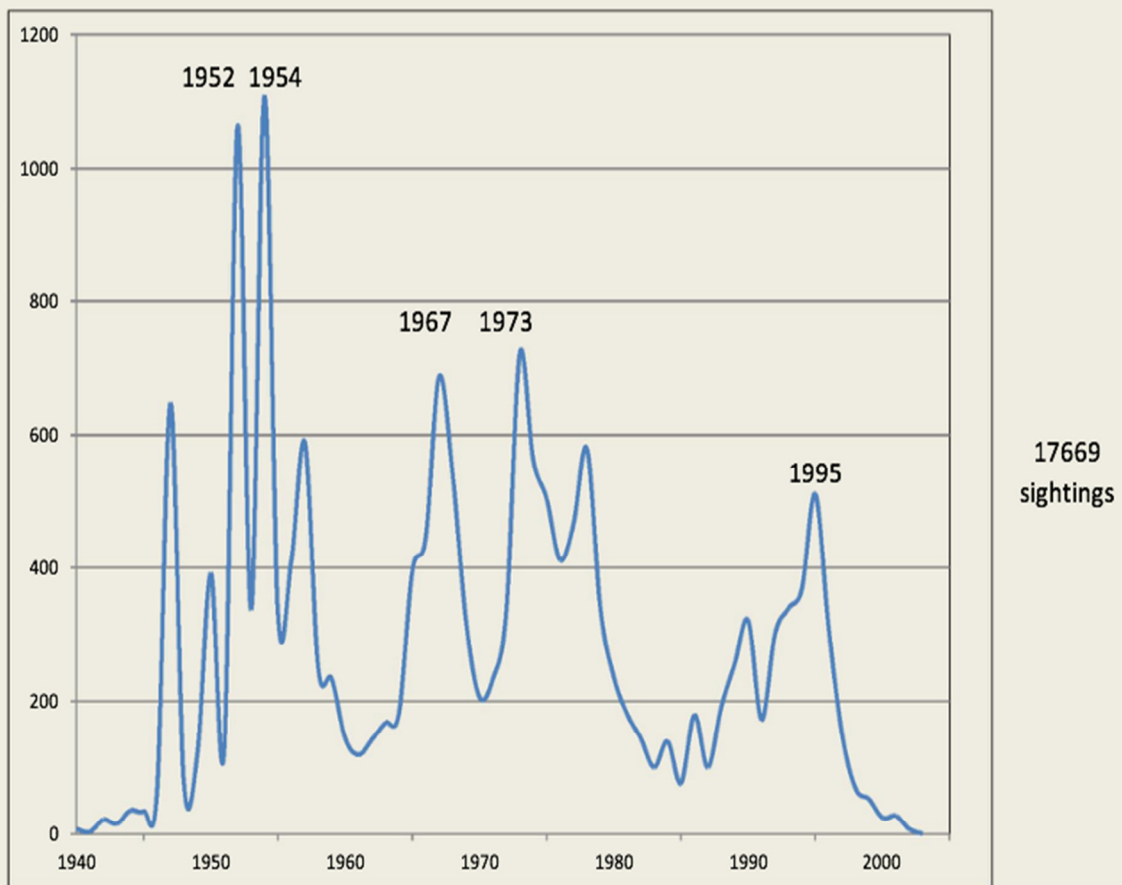
18102  
sightings

Source: \*U\* UFO Database, available on the site UFO SKEPTICISM, [ufo-scepticisme.forumactif.com](http://ufo-scepticisme.forumactif.com),  
at <https://github.com/RR0/uDb/tree/master/output/data>

Figure 5

UFO Sightings, 1940-2003

(\*U\* UFO Database, Larry Hatch)

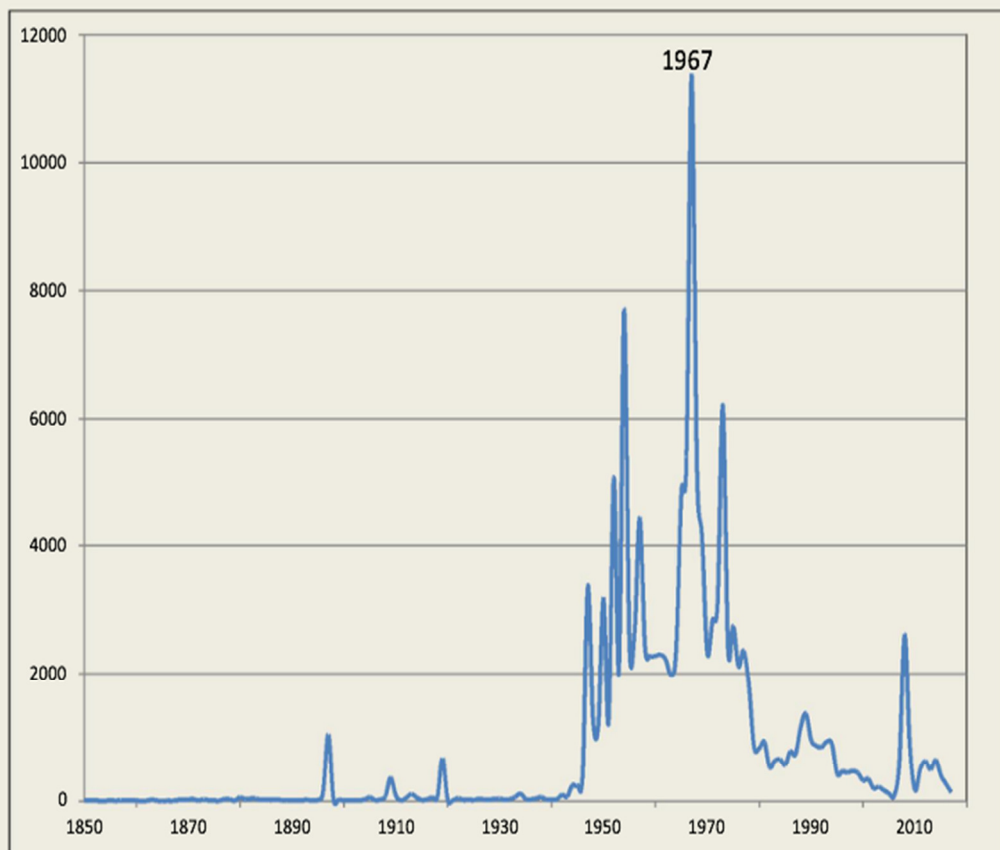


Source: \*U\* UFO Database, available on the site UFO SKEPTICISM, [ufo-scepticisme.forumactif.com](http://ufo-scepticisme.forumactif.com), at <https://github.com/RR0/uDb/tree/master/output/data>

Figure 6

UFO Sightings, 1850-2017

(UFO-DB.com)

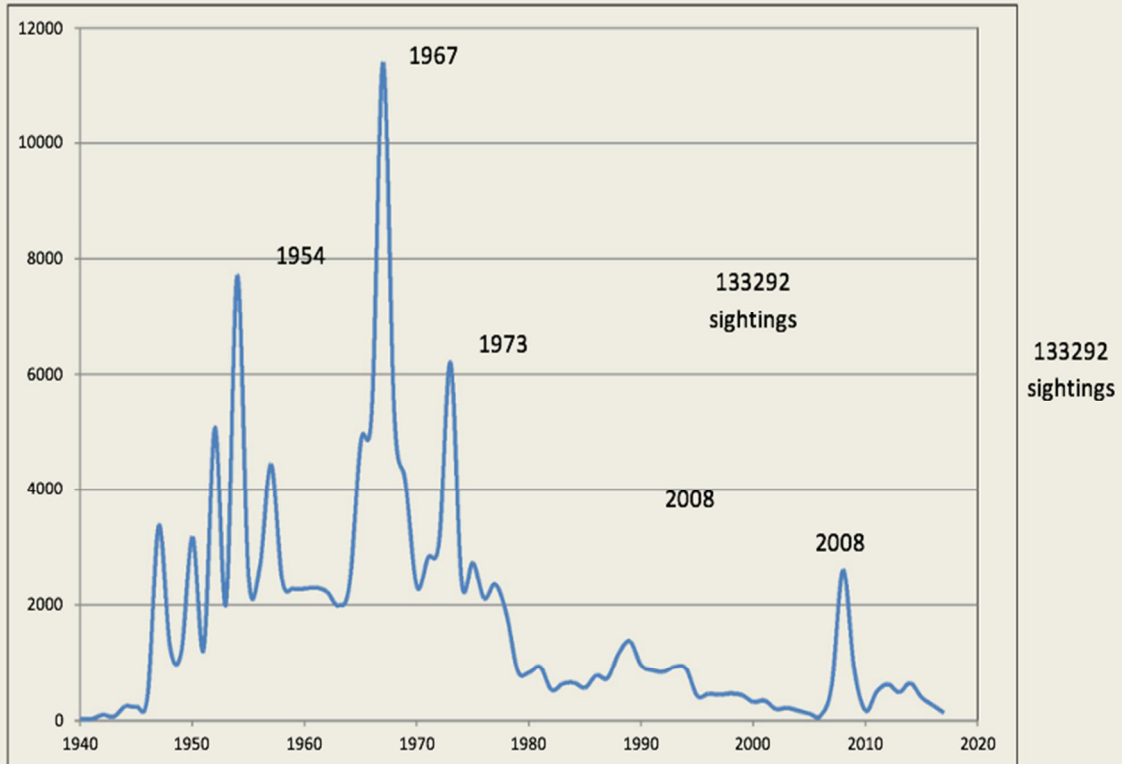


Source: UFO DB, [www.ufodb.com](http://www.ufodb.com)

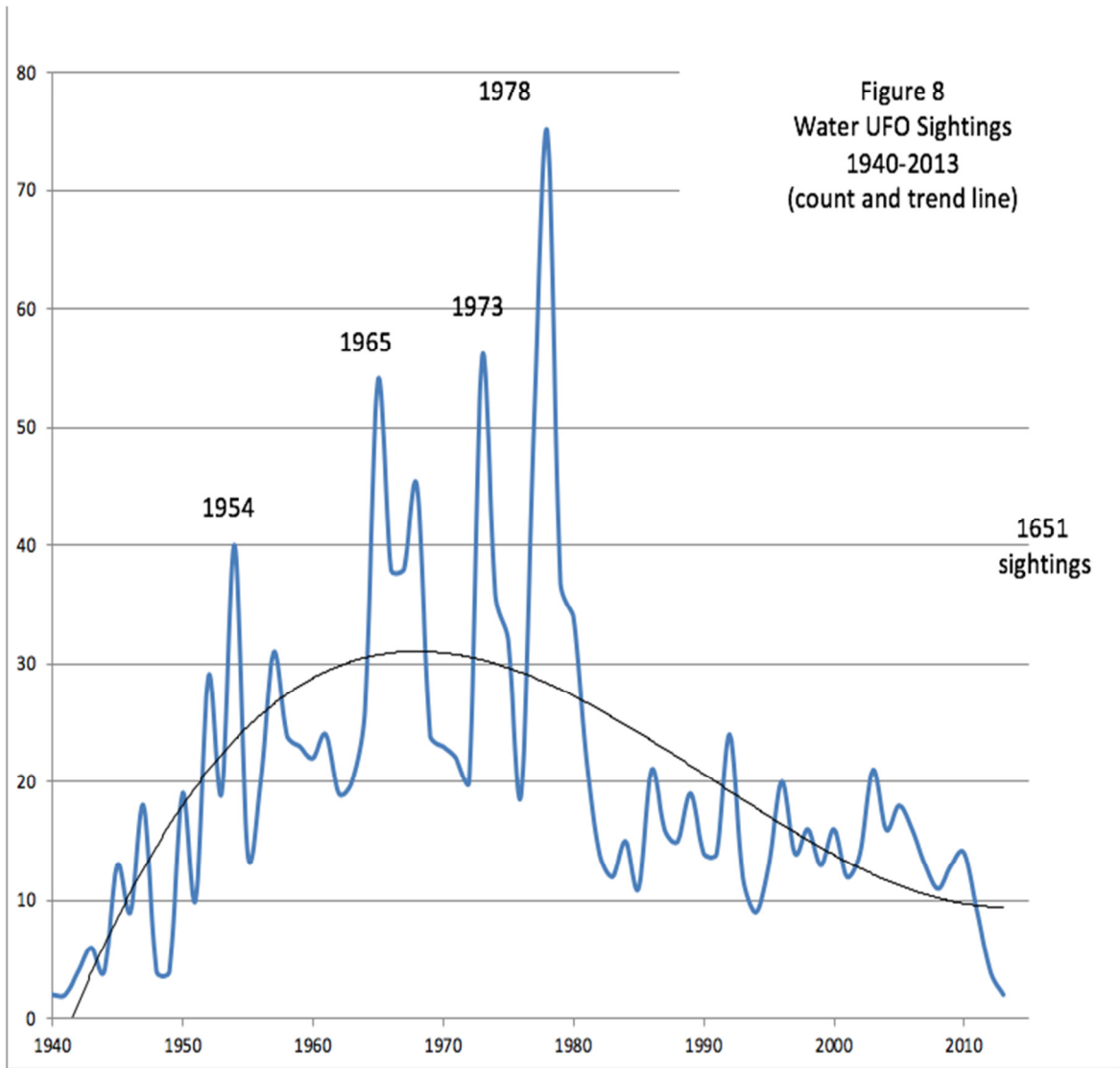
Figure 7

UFO Sightings, 1940-2017

(UFO-DB.com)



Source: UFO DB, [www.ufo-db.com](http://www.ufo-db.com)



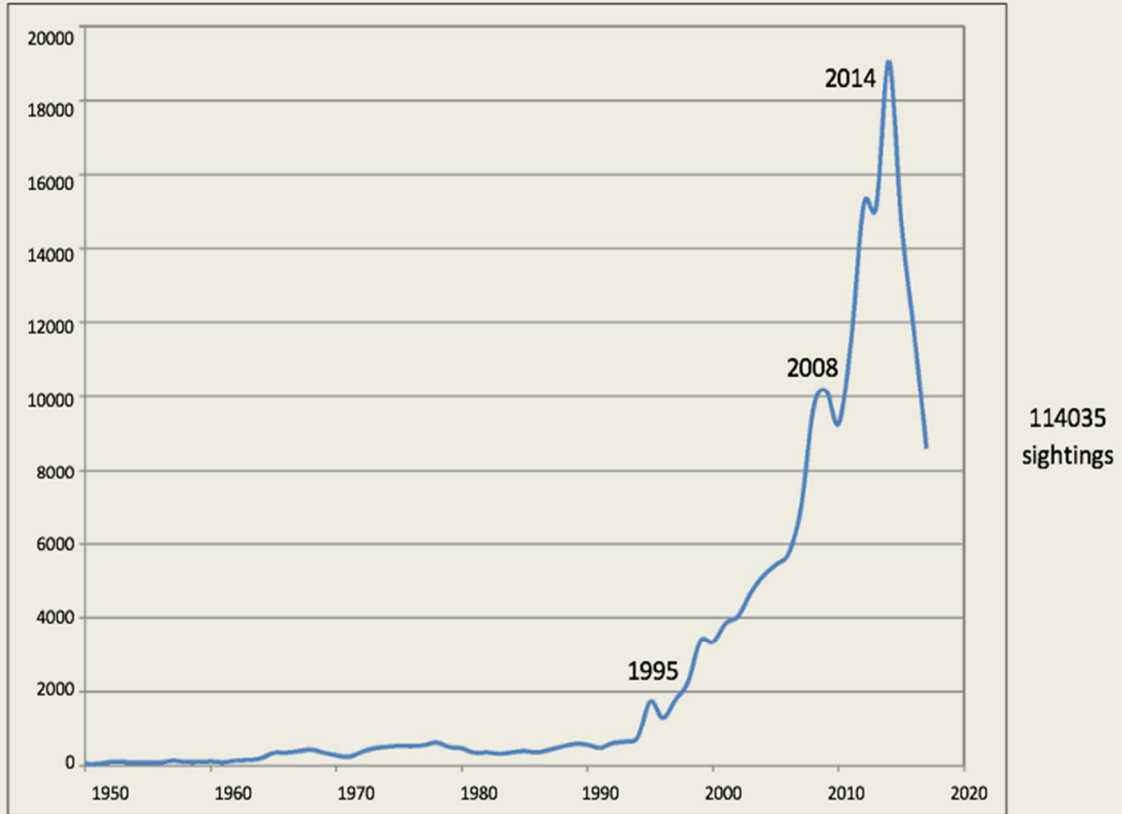
Source: [www.waterufo.net](http://www.waterufo.net)



Figure 9

UFO Sightings, 1950-2017

(UFO Hunters)

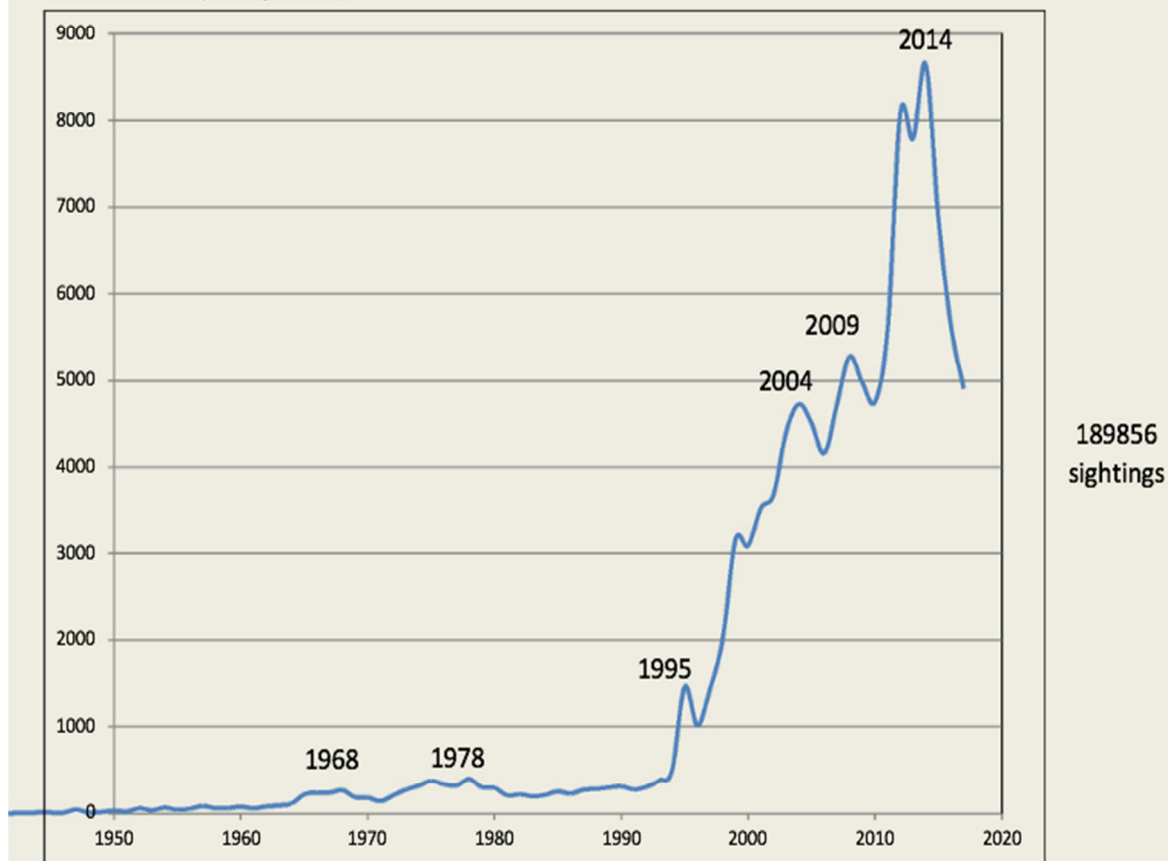


Source: UFO Hunters, [www.ufo-hunters.com](http://www.ufo-hunters.com)

Figure 10

UFO Sightings, 1950-2017

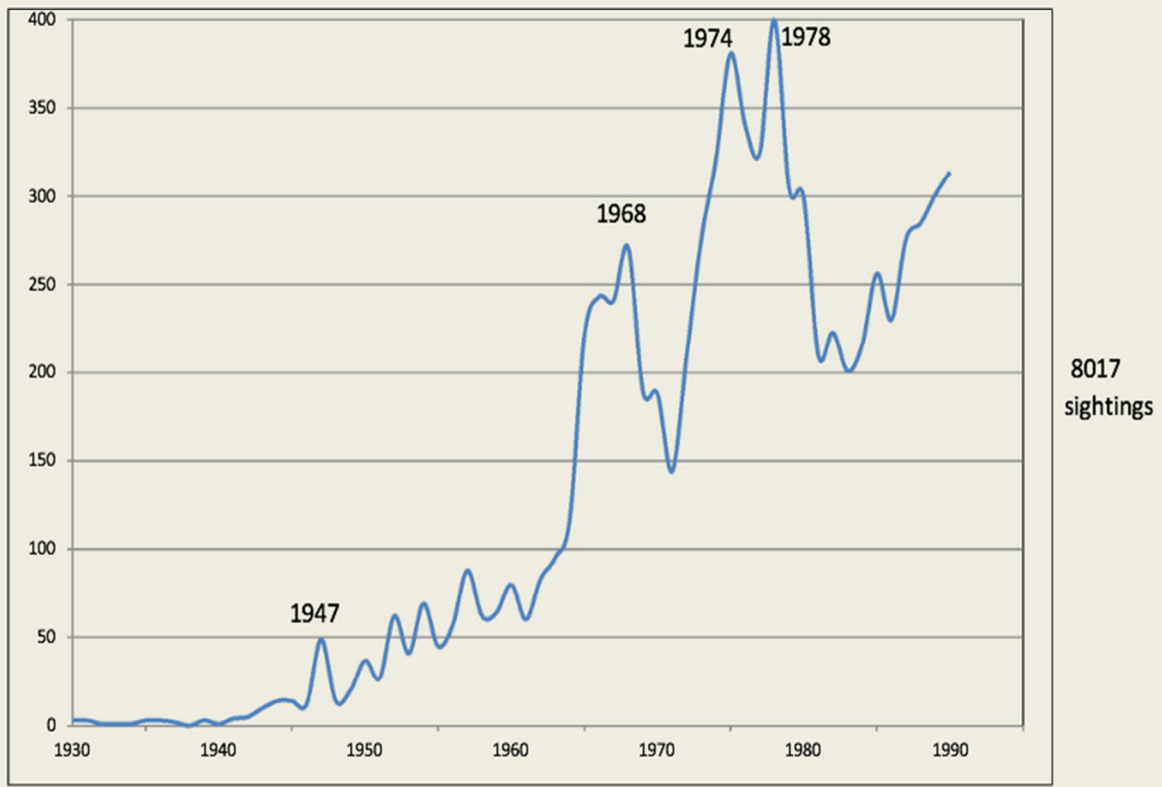
(National UFO Reporting Center)



Source: National UFO Reporting Center, [www.nuforc.org](http://www.nuforc.org)

Figure 11

UFO Sightings, 1930-1990  
(National UFO Reporting Center)



Source: National UFO Reporting Center, [www.nuforc.org](http://www.nuforc.org)

Table 1:

First Books, Films, TV Episodes, Video Game

|      |  |   |
|------|--|---|
| 1898 | The War of the Worlds, H. G. Wells   | "alien invasion" book                                 |
| 1902 | A Trip to the Moon, Georges Méliès   | "alien" feature film                                  |
| 1929 | "The Planet of Peril, Otis Adelbert Kline  | "alien abduction" book, (serialized)                  |
| 1938 | Saurus, Eden Philpotts   | "alien" and "extraterrestrial" book                   |
| 1950 | Behind the Flying Saucers, Frank Scully<br>Flying Saucers Are Real, Donald Keyhoe  | "flying saucer" books                                 |
| 1951 | "Verdict from Space" in Tales of Tomorrow  | "alien" TV episode                                    |
| 1952 | The Flying Saucer Mystery<br>"Shooting Star" in The Schaefer Century Theatre   | "ufo" documentary film<br>"alien invasion" TV episode |
| 1953 | The War of the Worlds  | "ufo" feature film                                    |
| 1954 | Killers from Space<br>"Baccarratti's 'Z' Ray" in Space Patrol  | "alien abduction" feature film<br>"ufo" TV episode    |
| 1955 | The Case for the UFO: Unidentified Flying Objects, M. K. Jessup,<br>UFO: Unidentified Flying Objects, M. K. Jessup and Frank Edwards                                       | "ufo" in book title                                   |
| 1962 | "Hocus-Pocus and Frisby" in The Twilight Zone  | "alien abduction" TV episode                          |
| 1978 | Space Invaders   | "alien" & "alien invasion" video game                 |
| 1989 | Controversy of the Circles: An Investigation of the Crop Circles<br>Mystery, Paul Fuller and Jenny Randles; The Circles Effect and<br>Its Mysteries, George Terence Meaden | "crop circle" books                                   |
| 1992 | A History of Crop Circles  | "crop circle" documentary film                        |
| 1994 | "Gender Bender" in The X-Files   | "crop circle" TV episode                              |
| 1995 | Crop Circles   | "crop circle" feature film                            |

Table 2:

Aliens and Alien Invasions: A Few Book Titles

Alien Under My Bed

Your Co-worker Could Be A Space Alien

Who Invited Aliens to My Slumber Party?

Wanda and the Alien Go Camping

Having Fun with Alien Technology

Funny Boy Takes on the Chit-chatting Cheeses from Chattanooga

Lesbian Ancient Aliens: The Sapphic Paradigm

Surviving an Alien Invasion

How to Stop an Alien Invasion Using Shakespeare

Alien Invasion and Other Inconveniences

Killer Klowns from Outer Space

Dinosaurs vs. Aliens

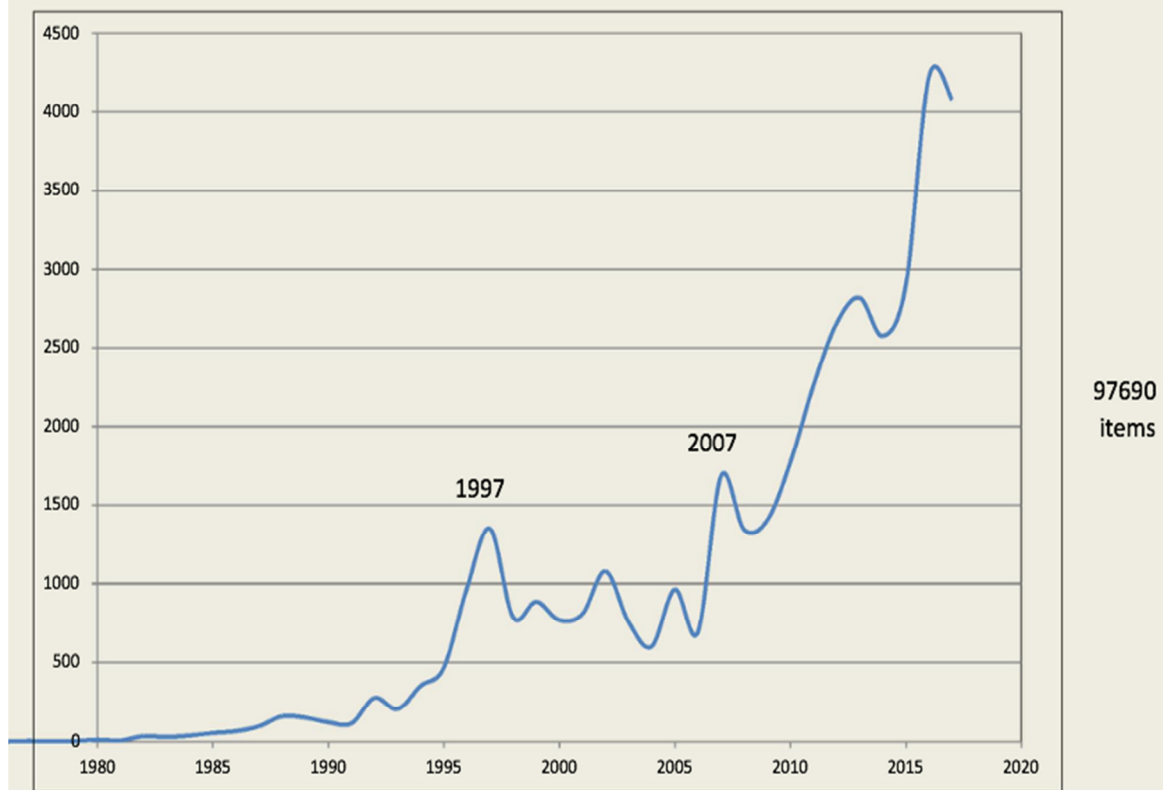
Captain Underpants and the Invasion of the Incredibly Naughty

Cafeteria Ladies from Outer Space

Figure 12

News Items Mentioning "Extraterrestrial AND Alien"

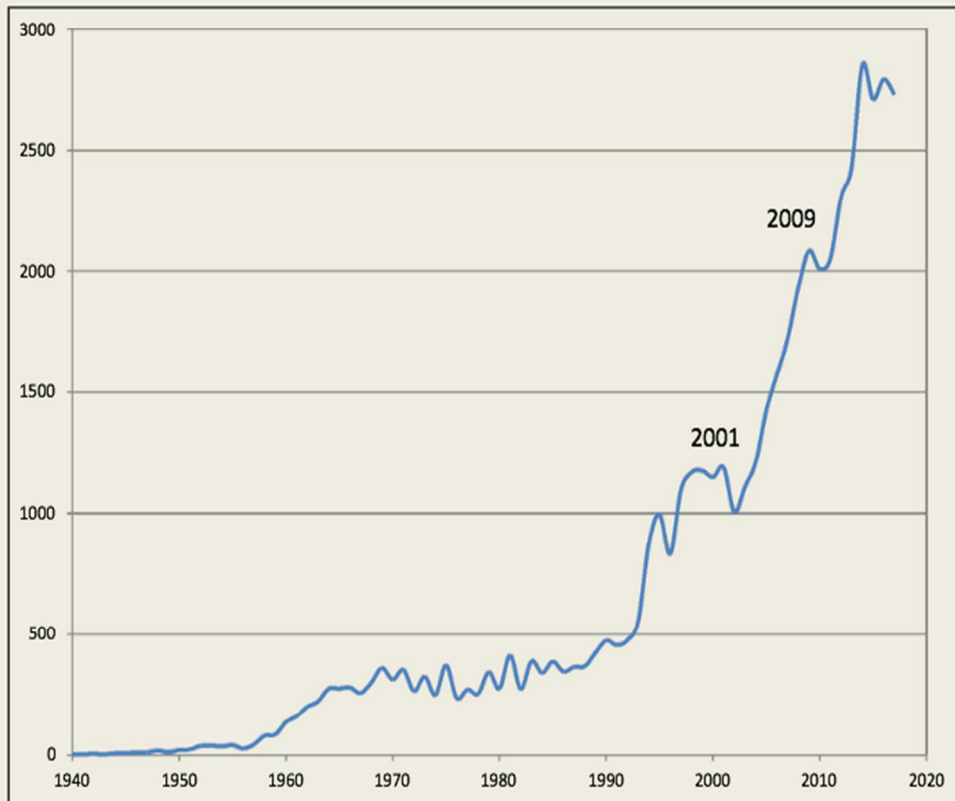
1975-2017



Source: Nexis uni, [www.lexis-nexis.com](http://www.lexis-nexis.com)

Figure 13

Articles, Print Books and Dissertations with  
"Extraterrestrial" as Keyword, 1940-2017



37806 articles,  
13167 books,  
488 dissertations

Source: WorldCat, worldcat.org, Online Computer Library Center

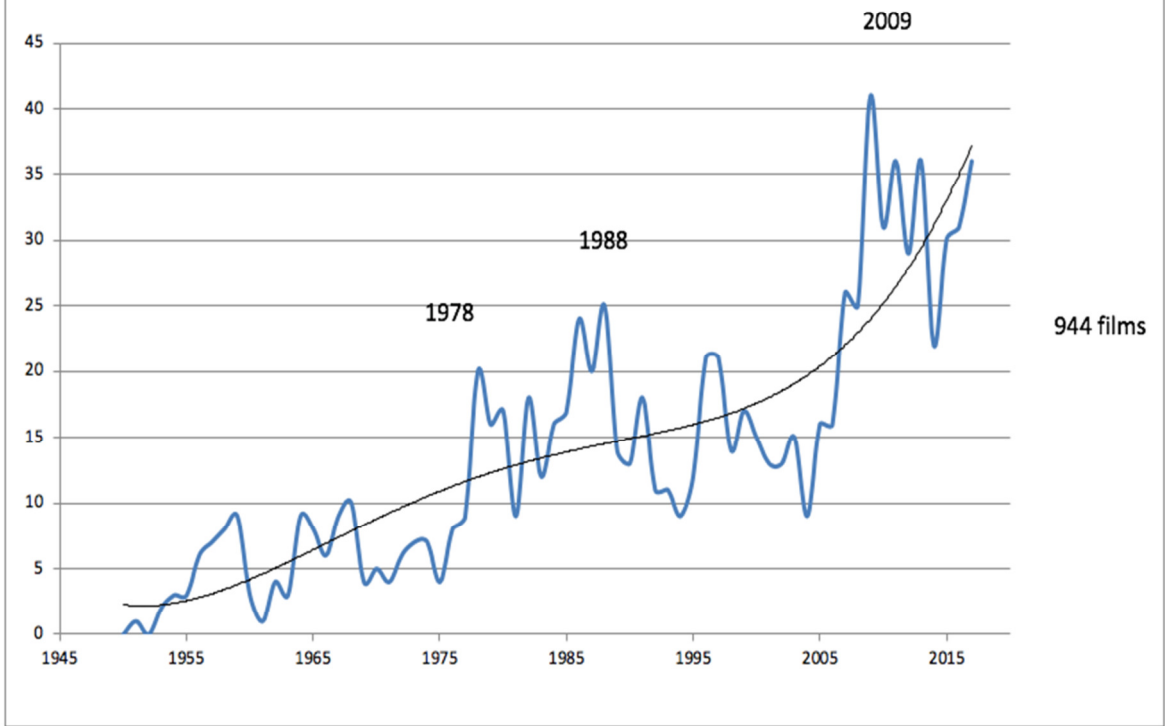
Figure 14  
Print Books and Dissertations with "Extraterrestrial  
AND Alien" as Keywords, 1938-2017



Source: WorldCat, worldcat.org, Online Computer Library Center

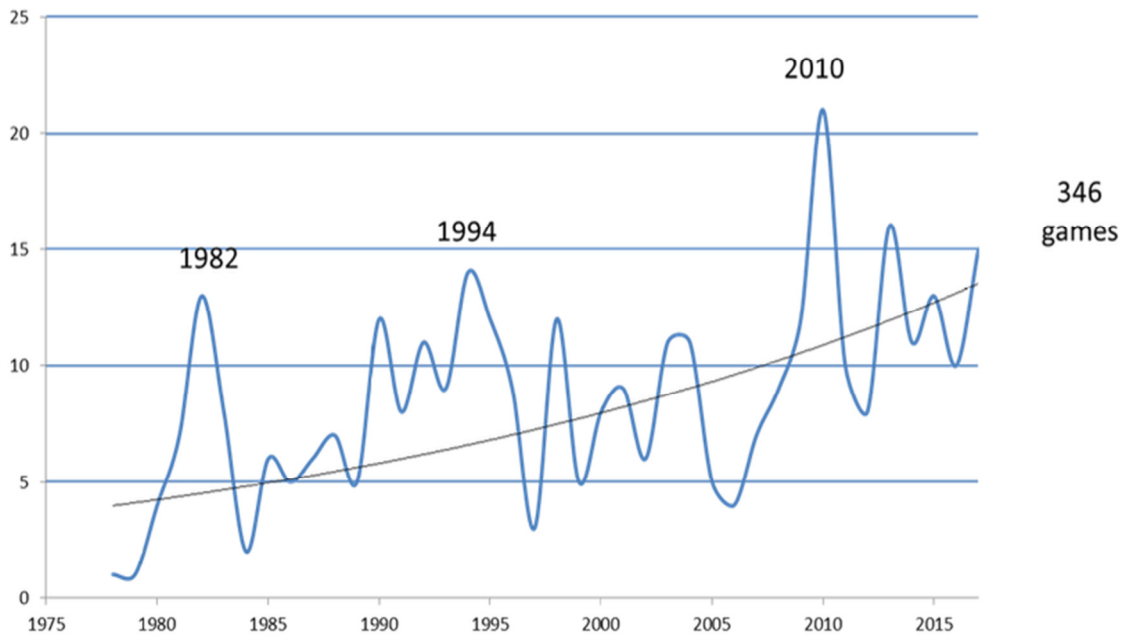


Figure 15  
Feature Films with "Alien" Keyword  
1951-2015  
(IMDb; count and trend line)



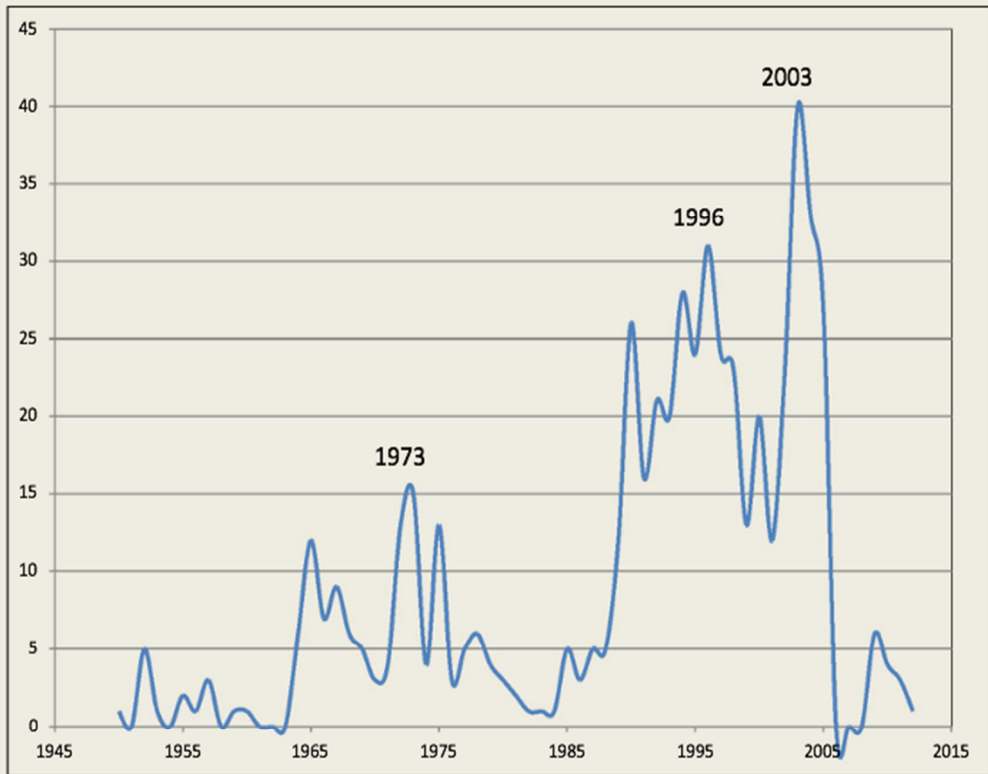
Source: Internet Movie Data Base, [www.imdb.com](http://www.imdb.com)

Figure 16  
Video Games with "Alien" in Title  
1978-2017  
(count and trend line)



Sources: Moby Games, [www.mobygames.com](http://www.mobygames.com); TheGamesDB.net; IGDB.com

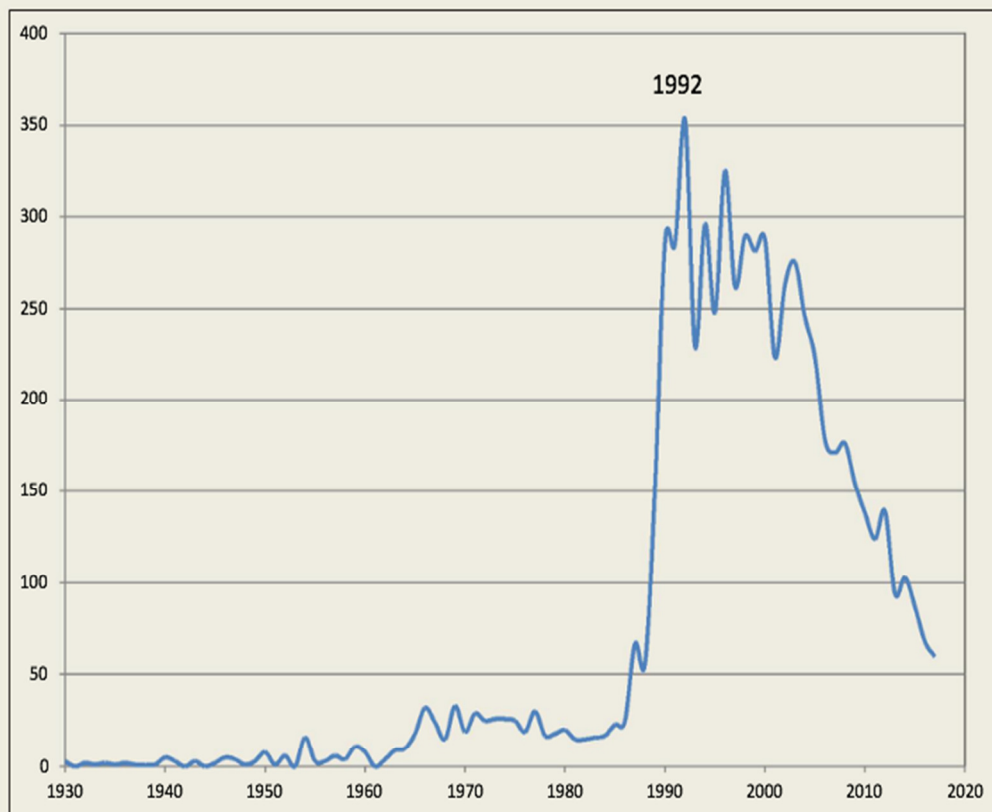
Figure 17  
Crop Circles, USA  
1950-2012



569  
circles

Source: International Crop Circle Researchers' Association,  
[www.iccra.org/USA\\_CC\\_Statistics/usaformations-statistics.html](http://www.iccra.org/USA_CC_Statistics/usaformations-statistics.html)

Figure 18  
Crop Circles Worldwide  
1930-2017



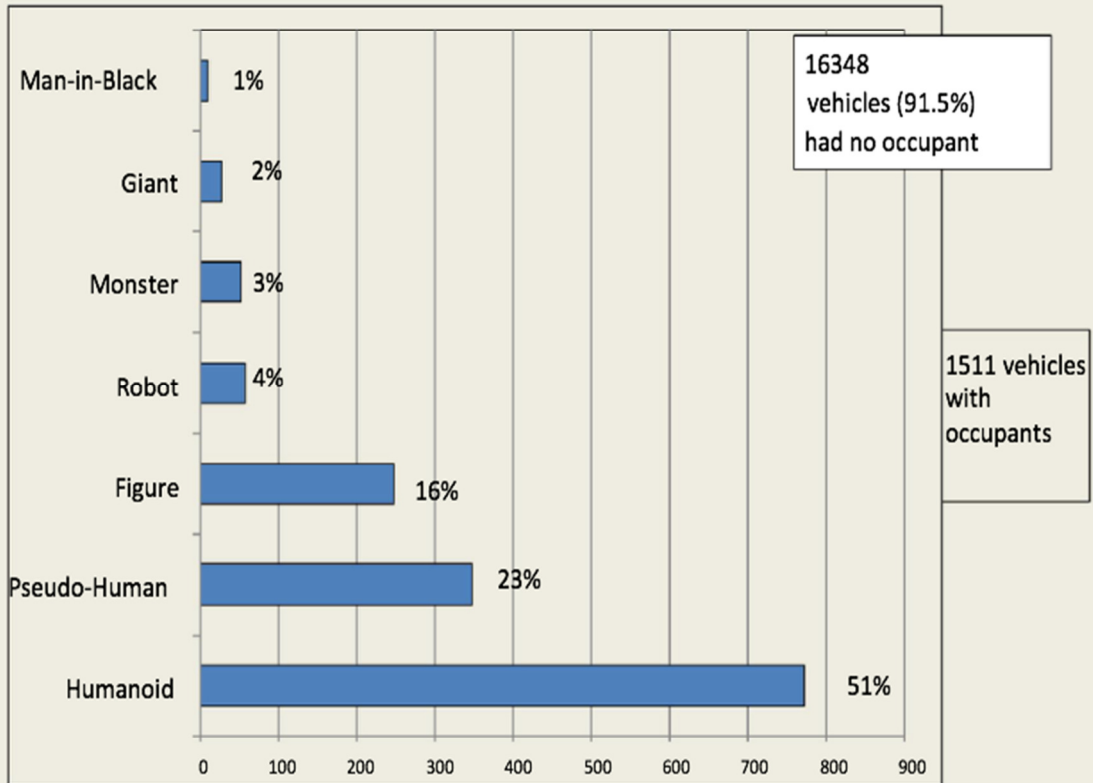
6753  
circles

Source: [www.cropcirclecenter.com](http://www.cropcirclecenter.com)

Figure 19

Type of Alien Encountered in UFO Vehicle Sightings

All Years to 2003

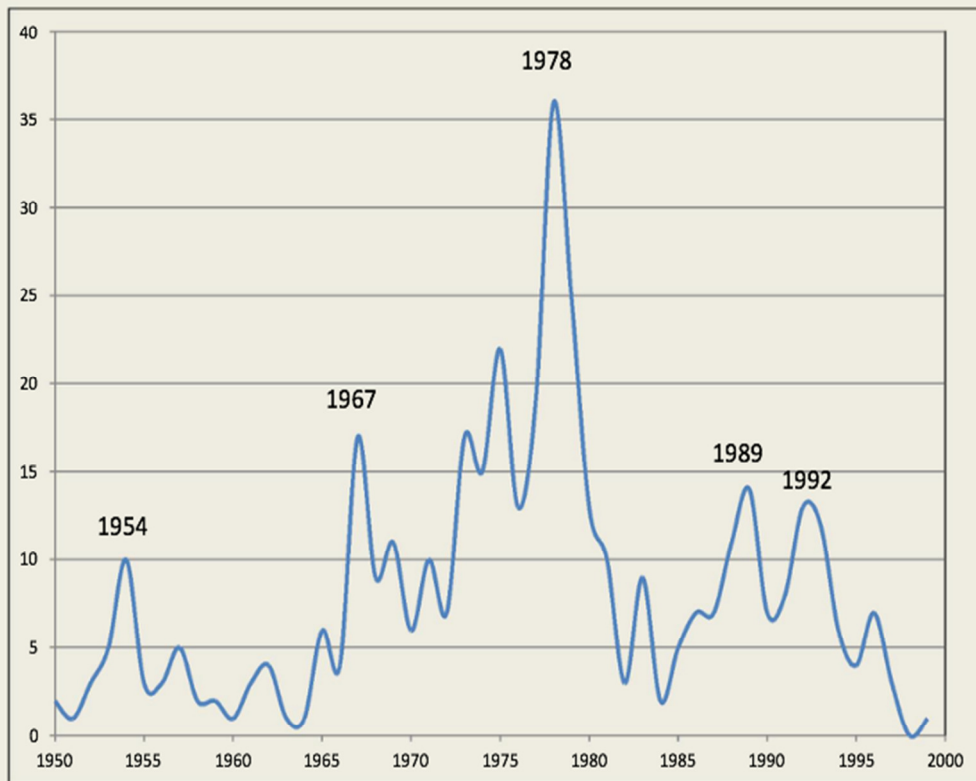


Source: \*U\* UFO Database (Larry Hatch), available on the site UFO SKEPTICISM, ufo-scepticisms.forumactif.com, at <https://github.com/RR0/udb/tree/master/output/data>

Figure 20

UFO Abductions, 1950-1999

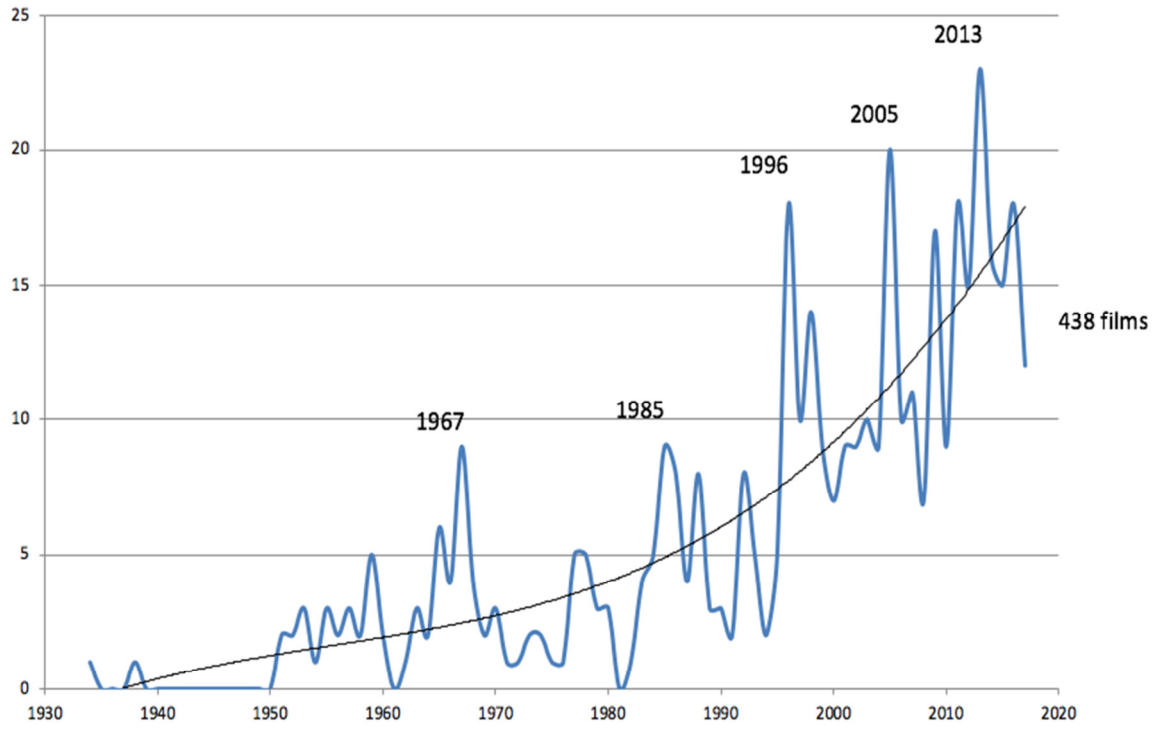
(\*U\* UFO Database, Larry Hatch)



405  
abductions

Source: \*U\* UFO Database, available on the site UFO SKEPTICISM, ufo-scepticisme.forumactif.com, at <https://github.com/RR0/uDb/tree/master/output/data>

Figure 21  
Feature Films with "Alien Invasion" in Title, 1934-2017  
(IMDB; count and trend line)



Source: Internet Movie Data Base, [www.imdb.com](http://www.imdb.com)

Figure 22

Print Books and Dissertations with "Alien Invasion" as Keyword, 1962-2015

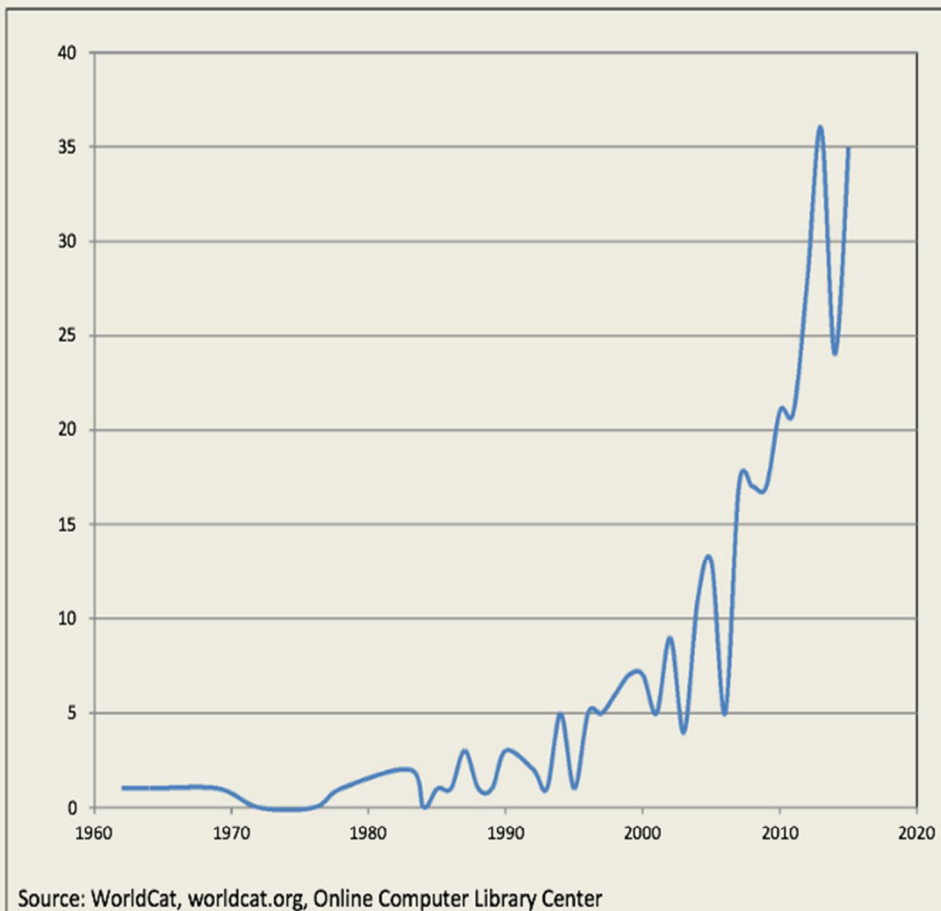
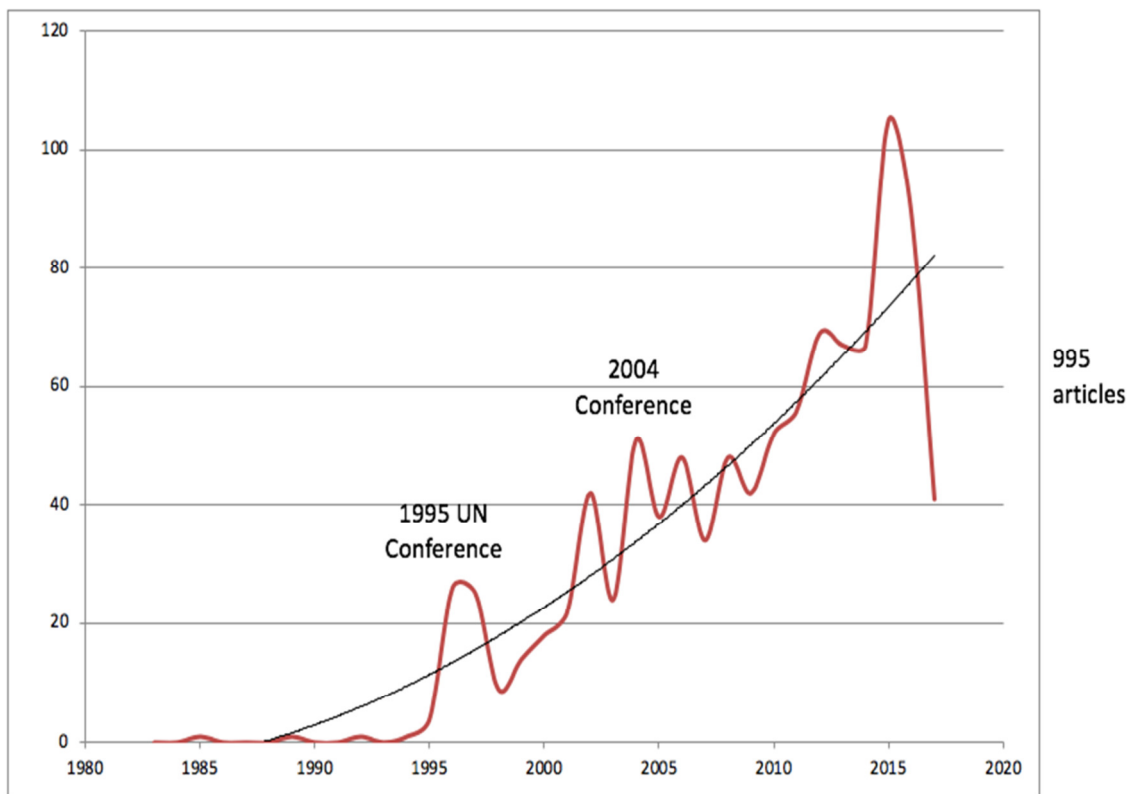




Figure 23  
Scholarly Articles with "Near Earth Objects" Keyword 1983-2017  
(count and trend line; Scopus)



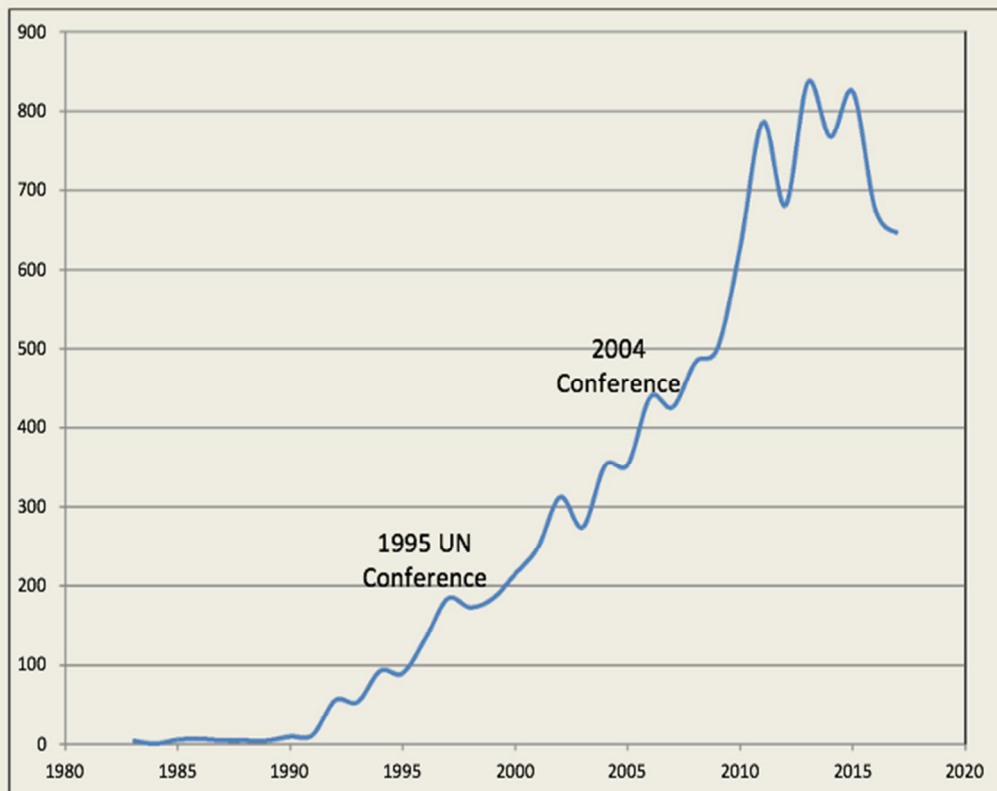
Source: Scopus (Elsevier), [www.scopus.com](http://www.scopus.com)

Figure 24

Scholarly Items with "Near Earth Objects" Keyword

1978-2017

(Google Scholar via Harzing)



10475  
items

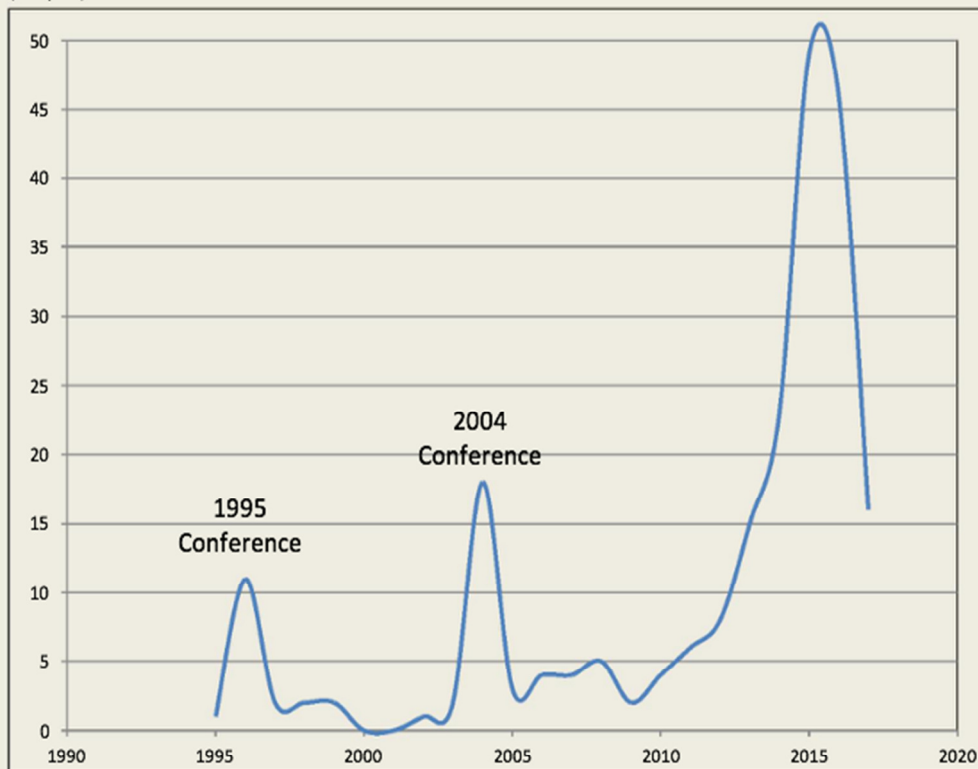
Source: Google Scholar, [www.scholar.google.com](http://www.scholar.google.com), using Harzing's Publish or Perish, <https://harzing.com/resources/publish-or-perish>

Figure 25

Scholarly Articles with "Planetary Defense" Keyword

1995-2017

(Scopus)



224  
articles

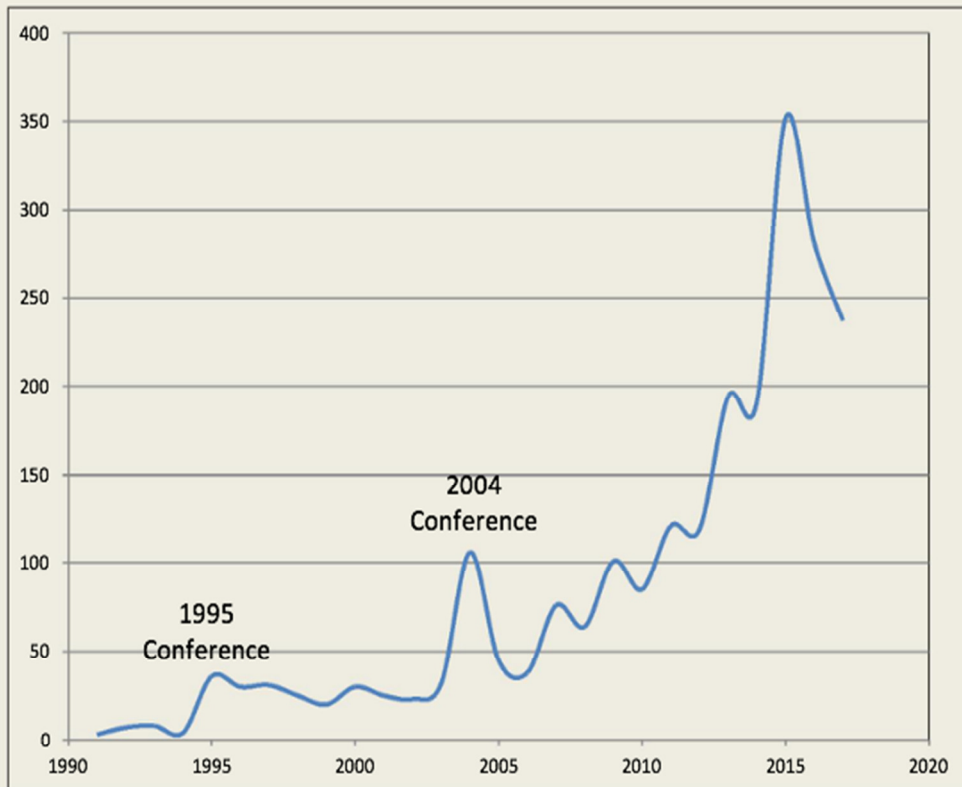
Source: Scopus (Elsevier), [www.scopus.com](http://www.scopus.com)

Figure 26

Scholarly Items with "Planetary Defense" Keyword

1991-2017

(Google Scholar via Harzing)



2288  
items

Source: Google Scholar, [www.scholar.google.com](http://www.scholar.google.com), using Harzing's Publish or Perish, <https://harzing.com/resources/publish-or-perish>

Figure 27

### External Threats to Planet Earth

#### Local (solar system)

- High energy solar flares
- Near-Earth objects, NEOs (asteroids, comets)

#### Distant in space

- Gamma ray bursts (supernovae, hypernovae)
- Rogue planets or planetoids
  - Orange dwarf Gliese 710, ca 1.5 million light years away
- Stellar collisions
- Wandering black holes
- Dark nebulae (interstellar dust clouds)
- Extraterrestrial organisms carried by asteroids or interstellar travelers
- Alien invasions

### More External Threats to Planet Earth

#### Distant in time

- Increased radiation from the Sun (1-2 billion years)
- Transformation of the Sun to a red giant (7-8 billion years)
- Expansion death of the universe (dark-energy powered "Big Rip" or "Big Freeze," tens of billions of years)
  
- Big Crunch, if collapsing universe (tens of billions of years)

#### Fanciful

- Physicists create an omnivorous black hole in a particle accelerator
- The experimenters (simulation designers) end their experiment

## References

- Anonymous. 1678. *The Mowing–Devil: or, Strange NEWS out of Hartford–shire*. London?: publisher unknown.
- Barth, Frederick, ed. 1969. *Ethnic Groups and Boundaries: The Social Organization of Cultural Difference*. London: Allen & Unwin.
- Boli, John, and George M. Thomas, eds. 1999. *Constructing World Culture: International Nongovernmental Organizations Since 1875*. Stanford, CA: Stanford University Press.
- Burroughs, Edgar Rice (publishing as Norman Bean). 1912. *Under the Moons of Mars*, serialized novel, *The All–Story*, Vol. XXII nos. 2–7, February–July.
- Center for NEO Studies. 2018. “Discovery Statistics.” <https://cneos.jpl.nasa.gov>.
- Conversi, Daniele. 1995. “Reassessing Current Theories of Nationalism: Nationalism as Boundary Maintenance and Creation.” *Nationalism and Ethnic Politics* (1)1: 73–85.
- Day, Benjamin Henry (pseudonym for Richard Adams Locke). 1835. “Great Astronomical Discoveries Lately Made By Sir John Herschel.” New York: *The Sun*, August 25–31 (six articles).
- de Fontenelle, Bernard le Bovier. 1686. *Entretiens sur la pluralité des mondes (Conversations on the Plurality of Worlds)*. Amsterdam: Pierre Mortier.
- Durkheim, Émile. 1912. *Les formes élémentaires de la vie religieuse: Le système totémique en Australie*. Paris: Félix–Alcan.
- East Oregonian*. 1947. “Impossible! Maybe, But Seein’ Is Believin’, Says Flyer.” Pendleton, Oregon, June 25.
- Flammarion, Camille. 1862. *La Pluralité des Mondes Habités*. Paris: Mallet–Bachelier.
- Godwin, Francis. 1638. *The Man in the Moone*. London: John Norton.
- Hannan, Michael T. 1979. “The Dynamics of Ethnic Boundaries in Modern States,” pp. 253–75 in *National Development and World System*, edited by Michael T. Hannan and John W. Meyer. Chicago: University of Chicago Press.
- Hawking, Stephen. 2016. “Stephen Hawking’s Favorite Places,” video episode 1. London: Bigger Bang Communications.
- Hubbard, Elijah Kent. Between 1825 and 1832. “Une visite faite à cette terre par un habitant de Mercure” (“A visit to this land by a resident of Mercury, a composition in French”). Unpublished story, Kreitzberg Library, Norwich University, Northfield, Vermont.
- Irving, Rob, and Peter Brookesmith. 2009. “Crop Circles: The Art of the Hoax.” *Smithsonian.com*, December 15. [www.smithsonianmag.com/arts-culture/crop-circles-the-art-of-the-hoax-2524283](http://www.smithsonianmag.com/arts-culture/crop-circles-the-art-of-the-hoax-2524283).
- Kepler, Johannes. 1634. *Somnium, seu opus posthumum De astronomia lunari*. Sagan and Frankfurt: Herzogliche Druckerei. Interleaved Latin and English texts can be found at The Somni-

um Project, <https://somniumproject.wordpress.com>.

- Killheffer, Robert K. J., Brian M. Stableford, and David Langford. 2017. "Aliens." *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls, and Graham Sleight. Gollancz, 29 Sept. 2017. Accessed 18 April 2018. <http://www.sf-encyclopedia.com/entry/aliens>.
- Marriott, Leo, and Simon Forty. 2017. *Heavyweights: The Military Use of Massive Weapons*. Barnsley, South Yorkshire : Pen & Sword Military.
- Poe, Edgar Allan. 1835. "Hans Pfaall – A Tale." *Southern Literary Messenger*, Vol. 1:10, June: 565-80.
- Robertson, Roland. 1992. *Globalization: Social Theory & Global Culture*. London: Sage.
- Rock, James. 1909. *Thro' Space*. Boston: New England Druggist Publishing Co.
- Roswell Daily Record*. 1947. "RAAF Captures Flying Saucer on Ranch in Roswell Region." Roswell, New Mexico, July 8.
- Sanders, Charles Richard, ed. 1972. *The Collected Letters of Thomas and Jane Welsh Carlyle Volume I*: 286. Durham, NC: Duke University Press.
- Scully, Frank. 1950. *Behind the Flying Saucers*. New York: Henry Holt.
- Stableford, Brian M., David Langford, and David Pringle. 2017. "Invasion." *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight. Gollancz, 24 Nov. 2017. Accessed 19 April 2018. <http://www.sf-encyclopedia.com/entry/invasion>.
- Wells, Herbert George. 1898. *The War of the Worlds*. London: William Heinemann.
- Williamson, Jack. 1929. *The Alien Intelligence*, serialized novel, *Science Wonder Stories*, Vol. I nos. 2-3, July-August.
- Winslet, Kristen Ann. 2017. "MUFON CMS Closed Case Statistics, 2017." Huntington Beach, California: Mutual UFO Network.
- W. S. L. S. (Wladyslaw Somerville Lach-Szyrma). 1874. *A Voice From Another World*. Oxford and London: James Parker.
- W. S. L. S. (Wladyslaw Somerville Lach-Szyrma). 1883. *Aleriel, or A Voyage to Other Worlds*. London: Wyman and Sons.

## Data Sources

Bouchet, Jonathan. 2018. "E.T. phone home" (but mostly after 8:00pm).'

[www.kaggle.com/jonathanbouchet/e-t-phone-home-but-mostly-after-8-00](http://www.kaggle.com/jonathanbouchet/e-t-phone-home-but-mostly-after-8-00).

Cropcirclecenter.com, <http://cropcirclecenter.com>.

Harzing, Anne-Wil. 2018. *Publish or Perish*, available from <http://www.harzing.com/pop.htm>.

Internet Movie Data Base (IMDb), <http://www.IMDB.com>.

International Crop Circle Researchers' Association, <http://www.iccra.org>. Data obtained from <http://www.iccra.org/byyear/usaformations-byyear.htm>.

Monfort, Sam. 2017. "I Want to Believe: UFO Sightings Around the World." [viz-this.wordpress.com/2017/02/21/i-want-to-believe-ufo-sightings-around-the-world](http://viz-this.wordpress.com/2017/02/21/i-want-to-believe-ufo-sightings-around-the-world).

Nexis Uni, a service of Lexis-Nexis, <https://www.lexisnexis.com>.

National UFO Reporting Center, <http://www.nuforc.org>. Data obtained from <http://www.nuforc.org/webreports/ndxevent.html>.

Internet Games Data Base (IGDB), <http://www.igdb.com>.

MobyGames, <http://www.mobygames.com>.

Scopus, a service of Elsevier B.V., <http://www.scopus.com>.

TheGamesDB.net, <http://thegamesdb.net>.

The Movie DB, <https://www.themoviedb.org>.

UFO-DB.COM, data obtained from [http://www.ufo-db.com/WfrmShowJahr.aspx?uid\\_Menu=18bdb04b-74f1-496a-9401-9a17b3fb6a54](http://www.ufo-db.com/WfrmShowJahr.aspx?uid_Menu=18bdb04b-74f1-496a-9401-9a17b3fb6a54).

UFO Hunters, <http://www.ufo-hunters.com>. Data obtained from <http://www.ufo-hunters.com/stats>.

Ufo-Scepticisme, Forum d'étude pragmatique du phénomène ovni (et phénomènes connexes). Data obtained from <https://github.com/RRO/uDb/tree/master/output/data..>

WorldCat, a service of OCLC Online Computer Library Center ([www.oclc.org](http://www.oclc.org)), <http://worldcat.org>.