

Gretchen Stahlman : An analysis of the scientific literature on UAPs from 1967 to 2023

Gretchen Stahlman submitted an article to arXiv on March 22, 2024 entitled: "Closing the Information Gap in Unidentified Anomalous Phenomena (UAP) Studies".

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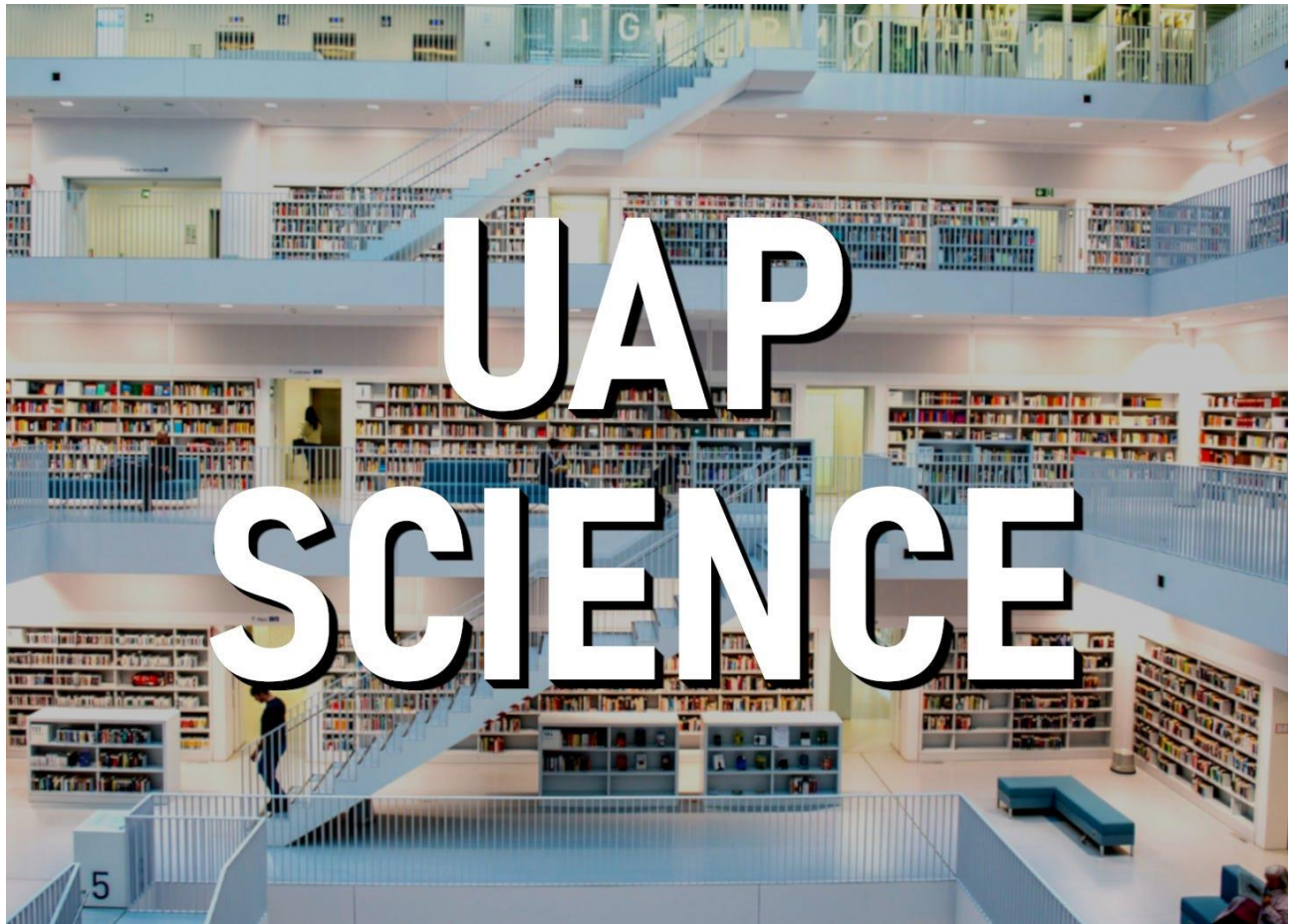


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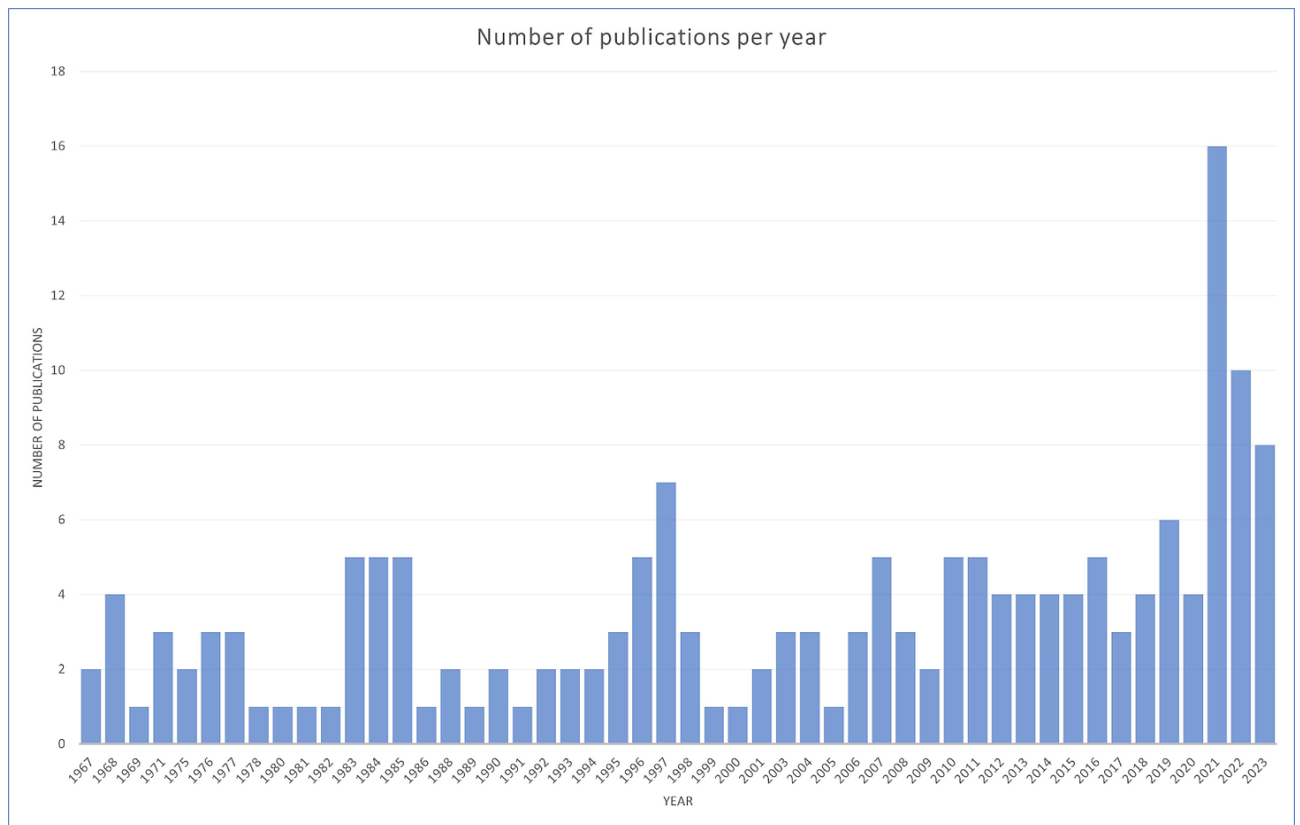
[Gretchen Stahlman](#) is an Assistant Professor in the School of Information at [Florida State University](#). The overall purpose of Gretchen's work is to inform open science and scholarly communication initiatives, as well as to develop methods, services, and infrastructures for long-term information management and responsible data science. She has more than 10 years of professional experience related to librarianship and information management, gathered by working in the [Joseph R. Skeen](#) academic library, and as a documentation specialist for the Atacama Large Millimeter/submillimeter Array ([ALMA](#)) telescope construction project.

In the remainder of this article, we highlight, with the author's agreement, the part of the publication which presents the preliminary analysis of the scientific literature on UAP from 1967 to 2023. We have added some additional elements and citations from the publications cited in the study. You will find the detailed bibliography and cited texts in Gretchen Stahlman's original article and referenced papers.

Unidentified Flying Objects (UFOs) have long captured the public's fascination and speculation while stigmatized in scientific circles. However, the phenomenon recently renamed Unidentified Aerial Phenomena (UAP), now called Unidentified Anomalous Phenomena by [NASA](#), represents an increasingly legitimate area of scientific interest. This shift in perception gained traction with a 2021 public [report](#) released by the U.S. Office of the Director of National Intelligence (ODNI). The report acknowledged that some incidents of strange objects in the sky remain unexplained and that more and better-quality data are needed to understand the nature of these objects, emphasizing a need for further investigation about UAP. Based on this observation, Gretchen Stahlman presents in her article a preliminary analysis of the scientific literature on UAPs from 1967 to 2023 by exploring a wide range of research areas. The study overall aims to begin bridging a gap between UAP Studies as an evolving research area and Library & Information Science (LIS). This exploration of scholarly literature about UAP, a topic that potentially represents an emerging interdisciplinary scientific field, aligns with the broader goals of these fields to understand how scientific knowledge evolves and gains legitimacy over time through consensus.

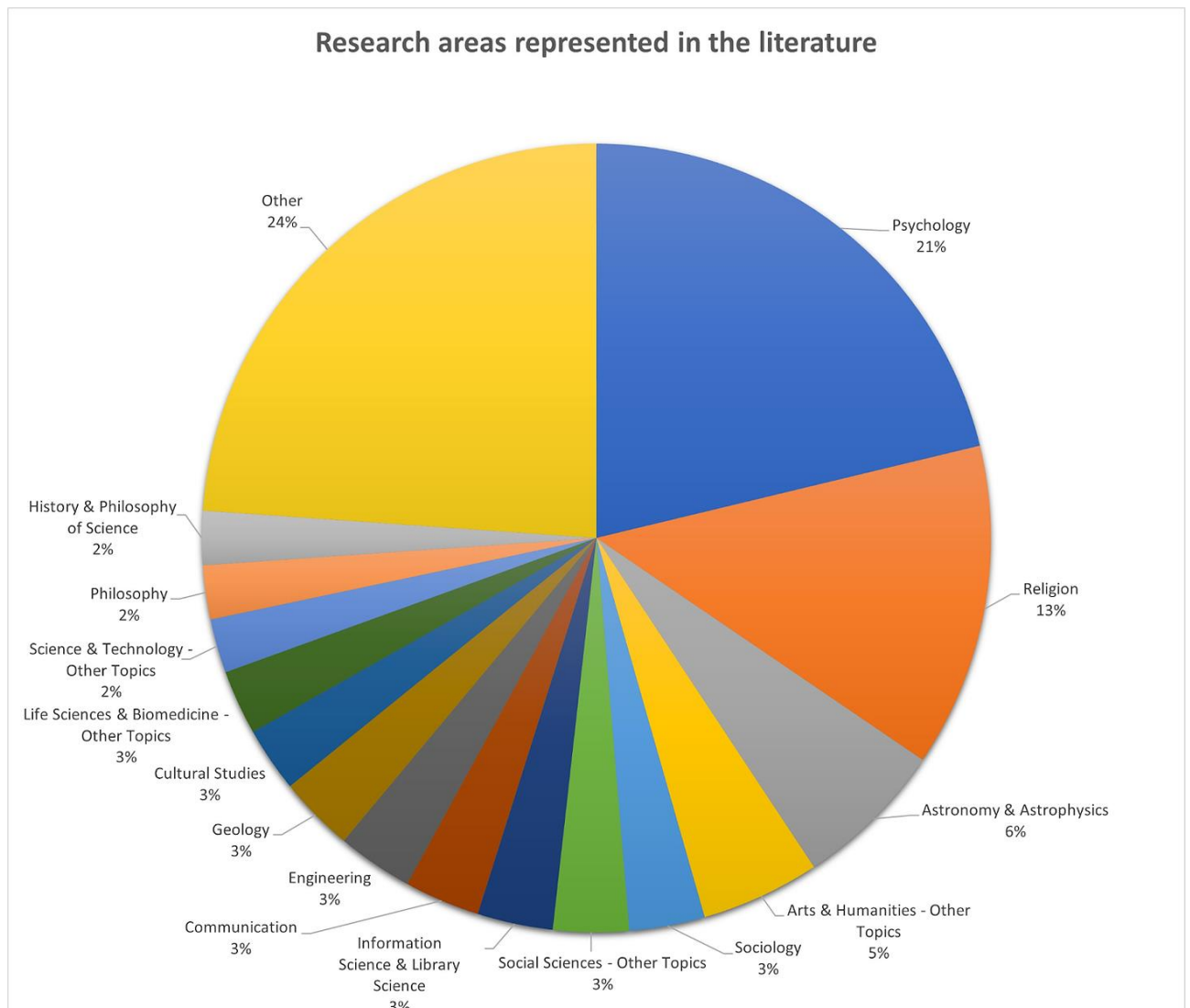
Guided by the research question "How has the topic of UFOs/UAP evolved as a subject of scholarly inquiry over time?", an exploratory scoping review was conducted via the scientific and technical information platform [Web of Science](#) with the following query limited to titles and abstracts: ("ufo" OR "ufos" OR "uap" OR "uaps"). The query was limited to title and abstract, and results were further refined to include books, conference proceedings, and scholarly articles in English or Spanish. To ensure that Library & Information Science sources were sufficiently captured, the same search was conducted via [ProQuest](#) across three LIS databases: [Library & Information Science Collection](#), Library & Information Science Abstracts ([LISA](#)), and [Library Science Database](#). After applying the [PRISMA](#) (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines and selection method, 174 sources were finally selected for this study.

Below is the graph representing the distribution of the number of articles on the subject of UAPs and UFOs identified in the study by year of publication.



The most represented areas of research are in order:

- Psychology (21 %)
- Religion (13 %)
- Astronomy & Astrophysics (6 %)
- Arts & Humanities (5 %)



A more detailed analysis of sources published since the release of the ODNI report in 2021 was conducted. Among the 34 selected sources, Astronomy and Astrophysics can be considered the dominant field of research with 7 publications. The subset of 34 sources published since 2021 are categorized and analyzed according to three categories.

Physical & Natural Sciences

Three papers describe methods and instruments for capturing UAP data. Two of these papers are affiliated with the Harvard-based [Galileo](#) Project. This Project is a scientific search program for potential astro-archeological artifacts or remnants of extraterrestrial technological civilizations, or potentially active extraterrestrial equipment near Earth. [Abraham Avi Loeb](#) and [Frank H. Laukien](#) co-founded the project in July 2021. In the first paper, [Watters et al.](#) highlight motivations for studying UAP along with a roadmap for deploying equipment and implementing multi-sensor data processing pipelines, while in the second paper, [Cloete et al.](#) outline computational techniques for detecting anomalous phenomena in data. In the third paper, [Szenher et al.](#) present a multi-camera system and a calibration software which can capture images in the visible, infrared and near infrared wavelengths and will be used to compute the velocity and acceleration of airborne objects.

[Antonio et al.](#) analyze a large dataset of 80,332 UFO sightings reported from 1906 to 2014 as a tool for investigating how the human behavior in reporting events was sensitive to media broadcasting and daytime hours. [Wu & Yang](#) present a theoretical foundation for a new type of aircraft anti-gravity propulsion, trying to reveal UFO-flying secrets. [Smith](#) speculates about the nature of interstellar probe technology hypothetically sent by a distant extraterrestrial civilization, while [Zuckerman](#) challenges Avi Loeb's hypothesis according to which [Oumuamua](#), the first known interstellar object that recently passed through the solar system, was alien technology.

Social Sciences (including Communication, Psychology and Religious Studies)

In cultural studies, [Fians](#) points to a need for anthropologists to take seriously UFO witnesses who seem systematically marginalized or mocked, whose legitimacy is constantly questioned, and to not question the validity of their testimony on the basis of the strangeness of their stories. [Marchena Sanabria](#) shows how narratives such as UFO reports were sensationalized by the media to distract from political corruption in Costa Rica between 1979 and 1985. [Hayes](#) uncovers the history of the Canadian government's investigations into reports of UFOs, revealing how these reports were handled, deflected, and defended from 1950 to the 1990s (more than 5,000 reports of UFO sightings during this period), and explores Cold War-era tensions between state actors and citizens surrounding UFO theories and narratives. Based on the observation of the growth in consumers visiting UFO and alien tourism attractions and locations, [Wright](#) presents a multi-disciplinary analysis to highlight the relationships between UFOs, extraterrestrials and the tourism industry.

Social science approaches include [Yingling et al.](#)'s large survey of faculty members showing that many academics think UAP is an important topic for more academic research, where curiosity outweighed skepticism or indifference. Overwhelmingly and regardless of discipline, faculty were aware of reports but not legislation. Faculty varied in personal explanations for UAP, and nearly one-fifth reported UAP observations. [Stise et al.](#) analyze national survey data collected two months after the ODNI report release and show that paranormal documentary and reality television viewing, Fox News viewing, YouTube use, and [Joe Rogan Experience](#) listening were positively associated with belief in UFOs. Also following on the release of the ODNI report, [Bram](#) shows that people form favorable opinions towards conspiracy theories in general when reputable politicians acknowledge that UFOs may be extraterrestrial visitors. [Adorjan & Kelly](#) explore the case of "missing time" experienced by those claiming to have encountered aliens and UFOs to explore the importance and role of temporality in social constructionist scholarship. [McVittie & McKinlay](#) analyze the discourse about UAP conducted by media interviewers with individuals involved in a US national program, and examine how interviewers and interviewees negotiate the existence of UAPs as objects for which no explanation can be provided.

Religious studies scholars typically frame UFO and UAP as religious experiences. [Agrama](#) challenges the effectiveness of secular science in light of recent developments in the study of UFOs. Similarly, [Zeller](#) points to “enchanted” underpinnings of UFO investigations despite their rational, secular, scientific, and disenchanted scientific approaches. [Kivari](#) discusses how personal supernatural and paranormal experiences are integrated into broader social narratives. Finally, the Zeller series [Handbook of UFO Religions](#) offers an expansive and detailed study considering not only new religions founded on ideas about extraterrestrials and UFOs, but also how those within more mainstream religions have responded to the science, scientific speculation, and popular culture involving extraterrestrials, UFOs, and related concepts. There are studies ranging from specific cultural case studies as crop circles ([Pokorny](#)) to more general studies on UFOs and religion ([Ashcraft](#)).

Arts & Humanities (including History and Philosophy)

Within the humanities-classified sources, [Hodges & Paxton-Fear](#) analyze the evolution of the writings which made it possible to recruit and then reinforce the beliefs of the members of the Heaven's Gate sect by promising them salvation through bodily transformation before their departure aboard UFOs. [Rose](#) explores racial aspects of UFO abduction narratives from white Americans, suggesting that these stories, which make up an overwhelming majority of such accounts, come from collective feelings of widespread culpability for the enslavement and profiting from African persons. [Guimont & Baumhammer](#) present a summary of the debates conducted online on Twitter by the Virtual History of Science, Technology, and Medicine group created following the COVID lockdown period. These discussions aimed to address topics of pseudoscience, including the subject of UFOs, and to discuss the role and public understanding of such theories in the history of science. Rooted in philosophical schools of thought, [Butman](#) analyzes the U.S. Navy's report that a UAP was observed by pilots dispatched from the Nimitz aircraft carrier in 2004, a report published by the [New York Times](#) in 2017. He argues that an unidentified phenomenon is an unexplainable phenomenon, meaning one with unknown causality. He explores how a phenomenon might appear within spacetime yet simultaneously appear independent of the causality of spacetime and reviews the concept of causation as it is developed by Descartes and Kant. Finally, [Smith & Jonathan](#) explore the epistemology and miraculous nature of UFOs respectively. According to them, some recent reports of UFO phenomena exhibit characteristics that could satisfy the notion of a miracle as defined by Hume as a violation of the laws of nature in section 10 "Of Miracles" of his philosophical work [An Enquiry Concerning Human Understanding](#).

These results represent a snapshot of scholarly literature and discourse about UAP at the time of writing Gretchen Stahlman's article (September 2023). Researchers from diverse areas are approaching UAP as a serious and actionable topic with implications for society and humanity (while stopping short of endorsing an extraterrestrial hypothesis). Circumstances are likely to change and evolve quickly in the future, although it is presently uncertain whether UAP Studies will develop into a recognized field.

Nevertheless, credible research is underway and gaining publicity, suggesting a trend towards legitimizing UAP Studies as an interdisciplinary research area that - in order to uphold the recommendations of the recent ODNI and NASA reports - to collect standardized and reputable data across physical contexts and geographical locations, ranging from civilian and military reporting to high quality images and sensor data within and beyond Earth's atmosphere.

To conclude on this article, we asked a few questions which Gretchen Stahlman kindly agreed to answer.

As you show in your article, UAP are a subject that has been little addressed in the scientific literature. Why did you choose this subject, which has been stigmatized for so long, to carry out your study?

I have been fascinated with the mystery of UFOs since early childhood. In school, I could always be found in the small paranormal section of the library. Even then, it was perplexing to me that so many reports and so much evidence had been collected, and yet "believing" in UFOs was considered by many to be eccentric. Over time, this led me to wonder about how we "know" things and evaluate "evidence", how knowledge unfolds through collective processes and experiences, and how science is conducted with the help of complex instruments and collaborations.

My interest in UFOs was also tied to captivation with space: a vast frontier that must hold countless forms of life and intelligence. I never "believed" we could be alone in the universe. Hoping to resolve this question, I began my university studies with the intention of becoming an astrophysicist. Instead, I turned towards Library & Information Science so that I could study and help to organize and manage scientific information more broadly. This allowed me to work with members of the astronomy community on information and communication related projects. So, in the end, I am still able to contribute in some way to our knowledge of the cosmos.

As I navigated my professional life and, later, academia through Ph.D. studies, I continued to read and keep up with developments in the world of UFOs. Although I made no secret of this interest and had many discussions with friends and colleagues over the years, I also had an ingrained sense that focusing on UFOs as an academic research topic would not be strategic. However, the winds began to shift in 2017 with the publication of the groundbreaking [New York Times article by Cooper, Blumenthal and Kean](#). At that time, I was working on my dissertation research about data curation in astronomy and started thinking about how to integrate the topic.

When the 2021 ODNI report was released, I was intrigued to read that the U.S. government openly highlighted deficiencies in data quality and availability as barriers to investigating unexplained UAP reports, as this is closely aligned with my research area. I enthusiastically wrote to a few colleagues that the time has come for UAP Studies to blossom as a legitimate, interdisciplinary research area. In the subsequent years, the topic has been increasingly de-stigmatized, and it seems we may have reached a tipping point or paradigm shift towards serious, widespread scientific inquiry in many disciplines.

Not long ago, a researcher (in the U.S. at least) would likely wait until a more advanced and secure career stage to begin investigating unconventional topics such as UAP. However, as an early career researcher, the reception to my work has been quite positive so far. This reinforces my belief that a tipping point has been reached, and more and more research and discussion will take place. I look forward to continuing this path and joining the growing UAP research community.

Has your work as a documentation specialist for the ALMA telescope construction project been a source of reflection in relation to this study?

Indirectly. I sought employment with ALMA because of my interest in both astronomy and librarianship, and it was exciting to support radio astronomy as a documentation specialist managing information about the telescope's design and related organizational and logistical activities. I was privileged to visit iconic locations such as the Very Large Array on the Plains of San Agustin in New Mexico, and Green Bank Observatory in Green Bank, West Virginia, and of course the ALMA site in the Atacama Desert of Chile. These awe-inspiring places and facilities only enhanced my sense of wonder at the cosmos as well as the capacities of humans to build such incredible instruments and explore the universe through data. Overall, this professional experience helped me to understand how astronomy operates through international and intercultural cooperation. Therefore, it is political as well. In terms of UAP research, we'll similarly need international cooperation and politics to establish standards and construct appropriate instruments for collecting and interpreting data on a global scale. We'll also similarly need to organize and curate information in meaningful ways.

Could the statistical analysis that you have carried out to study the evolution and distribution by field of scientific publications over the last 60 years be carried out with other types of information sources, such as international journals, or video media (YouTube for example)?

I do not think this method would map straightforwardly to certain other types of information, as I was retrieving publications from established scholarly literature databases through structured search queries. Also, the publications have robust metadata (such as journal information, publication date, keywords, etc.) and similar features that facilitate interpretation. However, for less structured information, text analysis methods could be implemented with the text of documents or social media posts, for example, through automated approaches such as topic modeling and sentiment analysis to draw general insights. In this way, we could similarly analyze the evolution of discourse over time using media sources. I have started some preliminary work in this area.

In the age of generative AI capable of creating an overabundance of false information (text, conversation, image, video, sound), what sources of data on UAPs do you think could constitute completely reliable information?

Several categories of information come to mind. First, historical information including data that may or not be in digital format or data that has been digitized and archived in a reputable location. Beatriz Villarroel's [VASCO project](#) is one amazing example of a project that is searching for evidence of UAP using digitized photographic plates.

The digitized plates are available through an established astronomy data archive, which is highly unlikely to contain false information. Second, human reporting, to some extent. While UAP reports can certainly be falsified, reports that can be corroborated by multiple independent witnesses and where the integrity of the reporter(s) is verified can potentially be considered reliable. Third, information that is collected and organized by reputable institutions and credible individuals. This includes the archived astronomy data mentioned above, as well as data generated by instruments developed and operated by such reputable institutions and credible individuals.

Here is where the idea of knowledge as a social and cultural process comes into play. Philosophically, it can be argued that no information is “completely” reliable or true, as everything is filtered through various media, machines, perceptions, and norms. In the age of generative AI, it is more important than ever to cultivate strong critical thinking skills for evaluating the quality of information and credibility of sources to determine reliability.

Do you have other study projects on UAPs in preparation?

Yes! There is one collaborative project that I am very excited about but can’t discuss right now. I look forward to sharing the outcomes of that project over the next few months.

In terms of the literature review presented here, this was a short paper presenting initial results. I intend to enhance it and conduct a more thorough analysis of the full set of papers (versus only the recent subset of 34). Also, as mentioned in the above question about analyzing information sources, I am doing some preliminary work with social media data to further examine the evolution of UAP discourse.

Finally, I am bringing UAP Studies into the classroom as well. One of the classes I teach is a graduate-level course called “Data Organization”. This semester I invited my students to conduct a final project making recommendations for how to organize UAP data. This involves evaluating data sources and data quality, standardizing this information so it can be widely accessed and used, integrating diverse sources of information, and ensuring that databases are properly constructed. I also recently developed a new course that will be taught in the future, “UFOs and Information”, which will explore the historical and socio-cultural contexts of UAP as well the intersection of UAP and information science. The course takes a serious and critical approach to exploring scientific processes through the lens of UAP. I look forward to continuing to engage university students in this important topic.

Translated by Kate Sellier