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Development, Dissemination, and Revision of Good Scientific Practice for Research on UAP

Danny Ammon*, Ph.D.
Gesellschaft zur Erforschung des UFO-Phänomens e.V.

https://orcid.org/0000-0001-8960-7316

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**Author contact: dannyammon@mailbox.org*

ABSTRACT

Research on UAP experiences, especially in the form of a single case study or investigation, is primarily conducted by lay or citizen scientists worldwide. There is a need for responsible and methodically justified research to be established to receive verifiable, comparable work results and to ensure ethically conscientious interactions with other researchers and experience reporters. In this article, principles of good scientific practice for research on UAP in Germany are presented. In part, these principles are derived from existing professional norms, but they are further specified for UAP research. Predecessors of the principles are identified; then the process of their development and different stages of review are described. Furthermore, the application of the principles and their revision process are discussed. The paper concludes with the presentation of the research principles in the current version. In conclusion, the establishment and application of such principles can improve the quality of research conducted by volunteering individuals or non-profit organizations and thus generate better data on UAP.

1. Background and Methods

Since their appearance as modern phenomena, sightings of flying saucers, UFOs, or UAP have been investigated by interested parties to determine their origin and cause. Because of the nature of the phenomena and how they are being handled in western societies, the study of UAP is confronted with some difficulties. This is reflected in the usage of different terms or acronyms over time, where suggestive or constricting words like "saucers" (on a frequently reported form that has been perceived) or "flying object" (predetermining self-propelled, solid objects as a cause for sightings) have been replaced by the current UAP as "Unidentified Aerial Phenomena" or even "Unidentified Anomalous Phenomena" to clarify a broader coverage of experiences. In this sense, the renaming of the research topic over the decades was also accompanied by a certain shift in meaning, because "flying saucers" or "flying objects" encompass a different set of phenomena than "unidentified aerial phenomena" or even "unidentified anomalous

phenomena", from very concrete object shapes to general anomalies. To reflect the current transitional period from UFOs to UAP (in the sense of "aerial phenomena"), these two terms are used synonymously here insofar as they are in no way intended to promote any certain *ad hoc* interpretation or hypothesis about the causes of the phenomena. The research principles presented here focus on the investigation of perceptions of unidentified phenomena through the questioning of witnesses.

The UFO Experience (Hynek 1972) is an anomalistic spontaneous phenomenon: witnesses have made an extraordinary observation, often unique and perceived as beyond the usual everyday world. To date, such observations could not be confirmed by measurements such as photos, video, radar, etc., in their entire range, so that for many aspects of the phenomena witnesses must be resorted to.

The phenomena themselves belong to the field of anomalistics, an umbrella term, which can be defined as the investigation of anomalies or phenomena that fall outside current understanding—e.g., parapsychological or cryptozoological topics—and their evaluation by the general application of scientific methods, see Truzzi 2000).

In most cases, observations occur spontaneously, i.e. without any common and known external cause, independent of the phenomenon or the experience itself. A UAP experience is in the vast majority of cases not individually repeatable. This core of the appearance of UAP—the reports of UAP sightings—is often documented in single case studies and the observed phenomenon is categorized. In most cases, an attempt is also made to attribute what is reported to a known, conventional stimulus. Further investigations of UAP then deal with the analysis of all data obtained by single case studies, contemplate the subject "UAP reporter" or refer to the way that UAP are dealt with in society. Research on UAP is therefore a highly interdisciplinary endeavor due to the various aspects involved: knowledge of meteorology, for example, can be just as useful as that of psychology.

Most organizations and researchers basically strive to obtain intersubjectively valid knowledge about UAP and are therefore committed to logical, methodical investigative approaches that should be in line with general scientific work. Furthermore, when investigating single cases, the protection of personal information as well as the reporters themselves is required for ethical as well as legal reasons.

Although they might share the basic approach as well as a responsible acting with professional scientists working at research institutions, UAP researchers can have a different background: They are for the most part lay or citizen scientists who pursue their activities of collecting and providing data for any subsequent research in their free time with limited resources and varying levels of education. While the basic scientific process and its principles today are often put down in the form of professional norms (e.g., DFG 2019, MPG 2021 in Germany), subject- and institution-specific training, research and publication rules as well as legal foundations exist for professional scientists, whereas lay researchers are free to approach the topic of UAP as they wish, apart from legal conditions that apply to all people. The pursuit of a methodical and ethically responsible approach to UAP is therefore a purely voluntary one.

The research principles presented below have been gradually developed since 2008 with the participation of many people from the various German UAP research organizations (see acknowledgment). We wanted to express in written form how we aspirate to act in accordance with appropriate scientific and ethical standards in the investigation of UAP, and we wanted to publicly share the result to make them accessible and recognizable by everyone involved in this research. For UAP reporters who turn to us, it is proven in this way that the quality of the case investigations is secured with the means of common research principles. We also wanted to specify that, due to the different levels of education of the people involved, a transfer of knowledge and skills similar to the teachings organized at universities is indispensable for future UAP researchers.

1.1 Methods & Principles

Four methods were used to develop the principles:

- literature review and content assessment of professional norms from general science
- research and consultations on existing codices from UAP research
- literature reviews and consultations on codes from anomalistics
- composition and reworking of the first version of the principles in several iterations in a mailing list with involved people

The resulting initial version of the research principles was published in two German journals (Ammon 2011, Ammon 2012) and on the Internet (GEP 2023). The publication triggered a discussion process that led to a revision within

a short period of time. Furthermore, the two other major German UAP research organizations of the time, MUFON-CES and DEGUFO, adopted the research principles as a common working basis (Müller 2015).

In the years that followed, three further revisions of the principles emerged, culminating in the current version of May 5, 2023. In addition to minor linguistic adjustments, the focus was particularly on how to deal with hypnosis procedures for reporters of abduction experiences, around which a discussion arose in different publication organs and through direct conversations among board members of UAP research organizations (von Ludwiger 2012; Kramer 2019).

With the current version of the research principles, an English-language translation is presented for the first time. With the translation, we would like to make the work from Germany more widely known and subject the principles to an even more extensive discussion process. This process has already been started by announcing the English-language principles in two UAP-related mailing lists: the Google Group "UFO Collective" and the community "EuroUFO", on which a large part of European, but also globally active researchers are represented (UFO Collective 2023; EuroUFO n.d.).

The applicability of the research principles refers to conducted and published research, especially on single case studies. Reported work or published case documentation including appropriately described methods can be reviewed to determine whether specific requirements from the research principles have been met. If, in the opinion of readers or discussion participants, this was not the case, a violation can be presented within the discussion or in addition to the case documentation and discussed in turn. This approach has already been taken in some of the regularly published case documentation in Germany. In this way, it is possible to subject the research on UAP experiences to continuous review and discussion based on common principles of good scientific practice.

2. Discussion

Efforts to establish comparable work on UAP experiences through appropriately explicated codices have existed for several decades. Besides publications concerning methods for single case studies (Hendry 1979, Randles, 1981), this concerns especially the "Code of Practice for UFO Investigators" of British UFO organizations, which was already created in 1981/82 and further developed until the 2000s (BUFORA n.d.). The Code of Practice was used as a basis for the German research principles since the beginning of their development. Due to the previous lack of awareness in Germany, the potential for further development and the comparable developments of different specifications of good scientific practice in academic sciences, a further discussion process on research principles *per se* is justified. This applies in particular since to date, the development of the research principles happened only in German-speaking countries. This limitation is to be overcome with the present English-language translation.

Another advancement in the field of UAP research concerns approaches to the technical detection of UAP without the need to rely on experience reports from eyewitnesses. Currently, these approaches have even found their way into academic projects in the USA as well as in Germany (Loeb and Laukien 2022; Kayal 2022). While many of the basic guidelines in the principles also apply here, additions or even separate research principles may be required in the future for measurement based UAP detection. It should be noted that it is still unclear whether observed and measured UAP contain the same set of phenomena or whether there are differences. This has not been investigated so far and remains an urgent research desideratum, otherwise UAP could be understood to mean different things by different researchers.

Unlike the professional norms of academic scientists, the developed research principles cannot be used for sanctioning: lay or citizen science researchers cannot be stripped of academic titles or dismissed from employment. However, even without these more stringent ways of monitoring adherence to norms, research principles serve a purpose: they provide a basis for methodological critique of any individual work by researchers who acknowledge such principles. The application or failure to apply any of these principles should be apparent to everyone from the work results. It is hoped that these opportunities will also exist, at least in part, for new government efforts in this area, especially in the USA (DNI 2022; DNI 2021; NASA 2023).

The publication, recognition, and application of the research principles described here is intended to contribute to further serious research on UAP based on generally valid, methodologically developed findings, for which transparency, cooperation, and protection of UAP experiencers or measurers are paramount.

3. Results: Principles of Good Scientific Practice for Research on UAP, Version May 5, 2023

Preamble

"We can define the UFO simply as the reported perception of an object or light seen in the sky or upon the land the appearance, trajectory, and general dynamic and luminescent behavior of which do not suggest a logical, conventional explanation and which is not only mystifying to the original percipients [UAP/UFO in the wider sense] *but remains unidentified after close scrutiny of all available evidence by persons who are technically capable of making a common sense identification, if one is possible* [UAP/UFO in the stricter sense]." (Hynek 1972, 26)

The existence of UAP/UFOs as defined above—encompassing all personal, social, and scientific consequences resulting from these experiences—can be explored by scientific means. This research can be seen as a branch of anomalistics (as noted earlier), since it exhibits basic characteristics that are explored by this field (Truzzi 2000). It is highly interdisciplinary and knowledge production is often due to interested people in the form of isolated or cooperative work as well as in associations (*citizen science*). The abbreviation UFO stands for "Unidentified Flying Object" without any further meaning concerning origin or type of such an object. Due to historically negative aspects and ridicule of the definition of the term UFO (Martin 1982), the term UAP (Unidentified Aerial Phenomenon) is synonymously used. Both terms are used here exclusively phenomenologically in the sense of descriptive science.

The aim of the principles outlined here is to establish a model for ethical research and specific guidelines for responsible behavior in the investigation of all aspects of UAP/UFOs for laypersons or *citizen science* researchers. In recognition of the general scientific working methodology, the principles are based on existing professional standards for scientific work in Germany (DFG 2019; MPG 2021), but also include existing codes of conduct for the analysis of UFOs and related spontaneous phenomena (Baker and O'Keefe 2007; BUFORA PA 2005).

From time to time, the principles will be reviewed and, if necessary, revised. Researchers who wish to propose improvements or extensions are invited to contact one of the boards of the organizations that respect the principles.

Complete coverage of all ethically and professionally appropriate procedures in all conceivable research situations is clearly impossible in a document on basic principles. Where appropriate, further regulations from scientific fields, from anomalistics research and from legal requirements should be considered, or detailed and standardized working methods for the research on UAP/UFOs are to be applied or developed.

The following points describe general guidelines for research as well as for the handling of experiencers and the public, which are essential in the investigation of UAP/UFOs. Adhering to the basic principles requires a disciplined and responsible approach of all those who respect them. This responsibility forms the basis of cooperative research work and a secured knowledge gain.

3.1 General Research Practice

1. To investigate UAP/UFOs by scientific means implies a methodical search for findings that are valid intersubjectively. The structure of such efforts must always be committed to truth, honesty, and fairness: We want to acquire, not invent knowledge. This aim is to be achieved in fair partnership with other researchers.
2. The work on UAP/UFOs must be carried out *lege artis*: The basic rules for the collection and selection of data explained here must be observed strictly. Wherever such rules have not yet been established, researchers (as their investigation as a form of *citizen science*) are to develop basic principles together and in conjunction with relevant reference sciences and expand the present document.
3. Research on UAP/UFOs takes the form of scientific-critical work: openness to different perspectives and the willingness to question one's own results, to discuss them self-critically with others and to accept unpleasant findings are basic prerequisites for all researchers. Implicit axiomatic assumptions should become known as such and wishful thinking must be overcome by means of a factual investigation.
4. Many research questions on UAP/UFOs require highly interdisciplinary efforts to solve them. The research object as a spontaneous phenomenon can be grasped methodically only to a limited extent. As a result of these hurdles, systematic attention must be paid to possible misinterpretations among all those involved. This applies especially to the process of hypothesis formation in individual case analyses. The assessment of an individual case as an event that remains unexplained (UAP/UFO in the stricter sense) may only take place after extensive

and methodologically strict investigation; neither may the assignment of a known occurrence as a cause for an individual case be made lightly, but it must be based on comprehensible and verifiable conclusions.

3.2 Collegiality and Cooperation

1. The search for knowledge about UAP/UFOs that is based on scientific criteria unites researchers. It has the effect that people who once were strangers now have something in common and, by this, become colleagues. Additionally, interdisciplinarity and the laypersons status of the research mean that each individual person is only capable of independent judgement and competence in a limited area. They remain dependent on the preparatory and supportive work of other researchers or need to do such work for others. All researchers must be able to trust contributions by colleagues. It is therefore essential that research on UAP/UFOs takes place in forms of work and organization that fully permit and support extensive communication and cooperation between all involved.
2. Since each researcher's work forms a building block for gaining knowledge about UAP/UFOs, it should be characterized by comprehensibility and accountability for all interested parties and should enable the application of the methodology or the results in further research, and complete transparency of the procedure, the means used, and the results obtained in all areas should be aimed for. Details which counteract the protection of a reporter of an experience according to section 3.6 sentence 5 are to be excluded from this.
3. Research on UAP/UFOs must be characterized by absolute openness to criticism and doubt from colleagues and co-workers, but also from representatives of opposing positions. These are to be taken seriously and treated on a strictly objective basis. If necessary, own research results must be adapted or abandoned.
4. The scientific work of colleagues shall not be hindered in any way. Therefore, deliberate delaying of factual communication or reviews, disclosure of confidential scientific data or results, misleading communication, or presentation of partial information about cases or results or deliberate publication of untruths of any kind must be avoided or sanctioned as counterproductive actions. Instead, a careful, unselfish, and unbiased assessment of the work of others is both important and the basis of any cooperation. A researcher aware of their bias should refrain from assessing or commenting on the work of others.
5. Relevant and non-confidential information about one's own work shall be provided to all interested researchers who act responsibly in accordance with these principles, even if they plan a publication. The source for the information must then be clearly indicated in the publication.
6. Persons whose professional qualifications or relevant level of knowledge is considered lower than their own should be helped and supported objectively and cooperatively. This can be done by referring to existing and published findings, by organizing conferences and seminars or by making an offer to act as a discussion partner.

3.3 Debate Culture

1. An important component of collaborative research on UAP/UFOs is open communication about data, results, and methodological issues. Receiving comments, ideas, questions, or counterarguments to one's own work shapes and improves every public statement by providing more secured knowledge even before it occurs. An open, tolerant discussion culture which allows everyone involved to contribute their ideas and arguments is necessary.
2. In the scientific struggle for understanding, as a first step different theories are possible and useful for navigating facts, but also for the interpretations of subjective experiences. They then must be considered carefully. The basis of any reasonable discussion is the recognition of the constructive research work done by others, regardless of whether it seems to be supportive or contrary to one's own methods and results.
3. Research on UAP/UFOs is characterized by a strong polarization of opinion and, unlike for established science, it is currently rarely an institutional or professional affair. For these reasons, it is equally important from a research-ethical as well as from a research-practical point of view, to distinguish the researchers' personal preconceptions from their work. No one should have to experience ignorance or contempt solely because of a "skeptical" or "supportive" position. Instead, the object of criticism should always be the specific approach and argumentation employed [or used] in research practice.
4. Insulting, dogmatic, threatening or otherwise inappropriate comments, similar reactions to professional

criticism or personal attacks on the reputation of a researcher should be excluded from all discussion on investigation of UAP/UFOs. Such comments should be ignored so as to prevent a culture of *ad hominem* rebuttals. Instead, in such cases, the necessary objectivity should be calmly requested, and the discussion should return to factual issues.

3.4 Backup and Storage of Data

1. Research on UAP/UFOs depends on obtaining raw data by interviews, measurements, observations, or other direct and indirect methods, where the experiencer usually plays the most important role as a source. Scientific investigations, calculations and experiments can only be reproduced or reconstructed when all important steps of data collection are transparent. Therefore, a sufficiently complete filing of all methods used, and results obtained, and a long-term storage of these protocols is necessary, if only to be able to access such records when published results are questioned by others.
2. Each individual case study of UAP/UFOs shall be documented in a file labelled with a unique identifier. The file should include the name of the witness, date of report, date, time and place of the reported experience, possible other witnesses, case classifications, names of the investigators, their assessments and all other documents relating to the investigation of the case (communications between investigators and witnesses, collection of secondary data, discussions during investigations, etc.).
3. Statements made in interviews shall, where practicable and with the consent of the respondent, be documented in video or audio recordings. If the interviewee objects to this procedure, a transcript as detailed as possible should be made. The names of those present during the interview must be documented.
4. Personal theses about an individual case or about UAP/UFOs, for example in the context of case assessments, shall be identified as such and strictly separated from the data collected, both in case documentations and in publications.
5. Fraud in scientific research includes deliberate inventions or distortions of facts, of research data or of circumstances of investigation. It also includes the deliberate concealment of information that makes the validity or reliability of data or of conclusions in an investigation appear questionable, as well as other similar misconduct. Anyone who encounters false statements or cover-ups of limiting facts by a fellow researcher should make extensive efforts to eliminate them, from a personal discussion with the person responsible to contact with the board of the organization in which the person responsible is active.

3.5 Publication of Results

1. Research on UAP/UFOs should be conducted to maximize knowledge gain and benefit for society. The publication of specialist work is therefore a particularly important area of responsible scientific action. In a publication, authors announce results for whose professional and scientific reliability they assume responsibility. His or her publications determine the perception of a researcher both by colleagues and by the public.
2. Papers which announce new scientific results must therefore describe the results and the methods used in a comprehensive and logical manner. This especially applies to the consistent handling of all source material, the use of which must be marked, and which must be clearly cited in the publication, since only this practice makes possible verification by third parties.
3. Strict honesty shall be sought in the recognition and appropriate acknowledgement of contributions from predecessors, competitors, and co-workers. All findings supporting or questioning the results presented should be reported in accordance with this principle.
4. In an effort to establish a fault-tolerant research culture, falsified hypotheses shall also be published in an appropriate manner, and errors shall be admitted.
5. If several authors are involved in a research project or in the publication based on it, everyone should be named as co-author who contributed significantly to the concept of the study or experiment, to the development, analysis, and interpretation of the data or to the recording of the manuscript itself and who agreed to its publication. The authors are always jointly responsible for the content of their publication.

3.6 Dealing with Experience Reporters

1. An essential part of the investigation of UAP/UFOs as a largely spontaneous phenomenon is the scientific examination and assessment of individuals reporting

their experiences to the investigators. These witnesses as well as any persons acting in the name of experiencers must be protected in a particular way. They voluntarily report an unusual and socially controversial experience which defies their rational judgement, and they cooperate in the investigation of this experience.

2. The intensity of efforts to uphold the personal protection of the witness shall depend on his involvement in the investigation: the greater the personal involvement of the experience reporter, the more he must be protected from any resulting damage.
3. The primary objectives of the protection of witnesses are their personal integrity and their mental and physical health. No research method may be designed in such a way as to give the personal characteristics of an experience reporter which are worthy of protection a low priority or deliberately impair them.
4. All personal data submitted, whether in the context of individual case investigations, of research projects or of studies, are also particularly worthy of protection. Regardless of whether such research activities are carried out within the framework of an association, of another organization or as individual researchers, the relevant regulations of the German Federal Data Protection Act (BDSG) and of the EU General Data Protection Regulation (GDPR) for non-public bodies apply to the collection, processing and use of personal data based on the right of informational self-determination. The principles of data avoidance and data economy, i.e., the collection of only the personal data required for the respective purpose, are hereby central. This results in both obligations (for the researcher) and rights (for the witness) which need to be strictly observed. For the researcher, this essentially means informing the witness about the voluntary nature, scope, purpose, and duration as well as storage and use (dissemination) of the collected data they provide. Furthermore, the witness shall be informed about his rights: the right to receive information at any time as to whether and which data are stored, as well as the right to have the data deleted or rectified or blocked.
5. Each experience reporter decides to participate in an individual case investigation, and they can revoke it at any time without reprisal. To place the voluntary decision on a well-founded factual basis, informed consent must be obtained in more detailed investigation (starting with the standardized interview based on sighting questionnaires) by providing the witness with standardized information on the working methods, objectives, specific steps, and type of data to be collected during the case investigation.
6. All direct interviews with the experience reporter should be arranged in advance. In any event, a rejection of such an appointment or interview by the witness, their wish for a third party to participate in an interview or for interviews by case investigators of other organizations must be respected.
7. All personal interviews of a witness should preferably be conducted by two case investigators. At least one of the case investigators should be of the same self-reported gender-identity as the witness. The parents or legal guardians should participate in an interview of underage reporters.
8. Each interview exposes the witness to the influence of the researcher's beliefs, which can obstruct free memories and influence statements. In this regard, the highest priority of an interviewer should be the possibility for a witness to recount his or her experience free of intervention. Personal theses and speculations about the case, about UAP/UFOs or about other topics are not to be expressed by the investigator during the interview. If such details are discussed later, they shall be declared as unproven statements to the experience reporter.
9. The investigator shall always speak in a clear and unambiguous way to the witness during any case investigation. A strong formal or professional terminology should be avoided. Special interview techniques (e.g., questionnaires, psychological tests) or examination devices that are unknown to the witness must be explained and may only be used with their permission. The case investigator must be professionally qualified for the application of these techniques or the devices.
10. The performance or commissioning of polygraph tests (so-called "lie detectors") to assess the credibility of a witness statement does not produce reliable results about their truthfulness (Ickinger 2011). Polygraph test results are inadmissible as evidence in German criminal trials. Experience reporters who wish to undergo such a procedure shall be informed of these problems. Results of polygraph tests in case documentation or in case publications must not serve as sole evidence of the credibility of a witness or of the credibility of their statements.
11. Regression hypnotic techniques are to be excluded from any case investigation. The request of experience

reporters for such methods is to be rejected. The problem of pseudo-memories and possible negative effects such as memory impairment should be pointed out (Fiedler 2008; Revenstorf 2006). If experience reporters persist in their wish, they should be referred to medically trained personnel, but the case investigation should be terminated or properly completed before regression hypnosis is performed.

12. If there are signs of trauma or stress in an experience reporter, they should be immediately informed about the possibility of support by psychologists, physicians, or other qualified advisers. The handling of witnesses whose report belongs to the category of the so-called *abduction experience* should be regulated in separate guidelines for psychologically qualified investigators (Gotlib *et al.* 1994).
13. Without the consent of the owner, holder or an authorized representative, no private property must be damaged through the work of case investigators. Caused damages are to be compensated without request.
14. For the publication of an individual experience case containing UAP/UFOs which is relevant to data protection laws, the consent of the party or parties concerned must be obtained. In any case, the anonymity of a witness must be kept in any publication, unless the witness specifically agrees to the disclosure of personal, identifying data. In this case, each witness shall be informed of the potential consequences of the publication. Their decision for or against a publication is to be considered binding.
15. When a person contacts an organization to report a UAP/UFO experience, in most cases they are interested in an explanation of the causes of that experience. Witnesses must therefore be informed of the results of the investigation. In addition, they have the right to access case files kept under their name.
16. A witness might report something or submit material such as photographs and videos to be investigated with the intent to deceive. Researchers must be aware of this possibility and should be familiar with such forms of hoaxes without putting witnesses under general suspicion. If there are clear indications of a hoax, the experience reporter must be confronted with the judgement of the researcher. Their statement should be requested and included in the analysis before the results of the investigation are published.

3.7 Conduct Towards the Public

1. Society is interested in understanding the research on UAP/UFOs and its consequences. However, the more complex scientific research becomes, the greater efforts are needed to explain its objectives, methods, and results to the general public in an intelligible way. Moreover, with every public statement a researcher represents both his own organization and research on UAP/UFOs in general. Therefore, a professional willingness to inform the public with the participation of the media about the scientific character of the research work and its individual aspects in a purely factual form is desirable.
2. The responsibility to appropriately inform the public may contradict the characteristics of mass media presentations. Researchers should be aware of this and should not publish unconfirmed statements, unproven allegations, subjective speculation, or confidential information. Particularly impermissible are statements made in the name of an organization or researcher without his or her consent or the consent of the board as well as presentations of unpublished material from others without their consent. Publicly expressed doubt of the integrity of experience reporters or of fellow researchers can only be made if there is clear evidence and it is relevant to the public.
3. Researchers should cooperate with authorities, especially in circumstances which could affect social security or the life or physical integrity of people. Threats to the public or potential damage to property arising in a case investigation must be reported to the police or other responsible persons immediately, and all possible measures must be taken to protect society and property.
4. Participation in research on UAP/UFOs and in individual case investigations does not constitute a specific privilege. For example, researchers may be forced to disclose confidential information in court. In such cases, individual principles laid down here may become temporarily invalid.

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