

TWENTY-ONE YEARS OF UFO REPORTS

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My role here today is that of reporter; to report to you on my score or so years of experience with UFO reports (note I do not say UFOs) for I myself have never had a UFO experience, and with those who make such reports, from this and many other countries. I was asked in 1948, as an astronomer then at Ohio State University, to review the UFO reports received by the Air Force to determine how many of them originated from misperceptions of astronomical objects or events. This consultancy continued across the years and gave me the chance to monitor the flow of UFO reports submitted to the Air Force, and to observe the Air Force handling of the problem as first one, then another officer took charge of Project Blue Book.

As reporter of the UFO scene, I am reminded of the old dictum of the reporter: Who, What, Where, When and Why. I will have no difficulty in dealing with the Who, What, Where, and When, for that means simply dealing with facts -- particularly with the incontrovertible fact that UFO reports exist, and that the time and location of the reported event is generally known, as well as the identity of the witnesses.

When, however, we get to the "Why" -- well, I shall leave that to the rest of the speakers, but I shall challenge their explanations if they are not conversant with the first four -- the Who, What, Where, and When. I am very weary of pontifications by those who have not done field work, so to speak.

Indeed, I would like to say a word about scientific methodology as it pertains to this problem. I have discussed this at length with the noted

Canadian philosopher of science, Thomas Goudge.

"One of the most interesting facets of the UFO question to me," Goudge writes, "is its bearing on the problem of how science advances. Roughly I would say that a necessary condition of scientific advance is that allowance must be made for (a) genuinely new empirical observations and (b) new explanation schemes, including new basic concepts and new laws." Goudge continues and points out that throughout history any successful explanation scheme, including 20th century physics, acts somewhat like an establishment and tends to resist admitting genuinely new empirical observations, particularly when they have not been generated within the framework of that explanation scheme -- as, for instance, the reluctance to admit meteorites, fossils, the circulation of the blood, and in our times, ball lightning. History is replete with such examples.

Or, if the establishment does quickly accept such new observations it tends to assimilate them into the going framework -- as, for instance, the attempt to admit the existence of meteorites as stones that had been struck by lightning. "Hence," Goudge concludes, "the present establishment view that UFO phenomena are either not really scientific data at all (or at any rate, not data for physics) or else are nothing but misperceptions of familiar objects, events, etc. To take this approach, is surely to reject a necessary condition of scientific advance.

One can never know whether UFO reports represent genuinely new empirical observations, however, if one commits the type of logical fallacy strikingly demonstrated in the following Air Force analysis of a radar-visual UFO report from Kirtland Air Force Base. Two witnesses in the control tower reported that at 11:00 p.m. an object which looked to them, through binoculars, like a lighted up-ended automobile came to within 200 feet of the ground when it

*explained more
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disappeared behind a fence in a highly restricted area, easily visible from the control tower, whereupon it rose abruptly at a very high angular rate and disappeared. It was observed visually for about 6 minutes, about half of that time through binoculars, its trajectory tracked both visually and in part by radar.

The Air Force ascribed this sighting to aircraft, but here is what the officer who investigated the case reported: "The two sources are Airways Operations Specialists with a total of 23 years experience; both were on duty in the control tower at Kirtland AFB when the sighting was made -- both appeared to be mature and well poised individuals, apparently of well above average intelligence, and temperamentally well qualified for the demanding requirements of control tower operators. Although completely cooperative and willing to answer any question, both sources appeared to be slightly embarrassed that they could not identify or offer an explanation of the object which they are unshakably convinced they saw. In the opinion of the interviewer, both sources are considered completely competent and reliable."

Project Blue Book gave the following specific reasons for explaining this report as that of an aircraft:

1. The observers are considered competent and reliable sources and in the opinion of the interviewer actually saw an object they could not identify.
2. The object was tracked on a radar scope by a competent operator.
3. The object does not meet identification criteria for any other phenomena.

So, the witnesses were solid, the radar operator competent, and the object unidentifiable as any other phenomenon, and therefore the object had to be an aircraft. Clearly, if such reasoning is applied to all UFO reports

we can hardly expect to find out whether any genuinely new empirical observations exist to be explained.

Schroedinger, father of quantum mechanics wrote, "The first requirement of a scientist is that he be curious; he must be capable of being astonished, and eager to find out." Perhaps he should have added, and be ready to examine data even when presented in a bewildering and confusing form.

There is much in the UFO problem to be astonished about -- and much to be confused about too. It is quite understandable how such confusion has arisen. Over the past twenty years I have had such a sufficiency of experience with crackpots, visionaries, religious fanatics that I hardly need be further reminded of people who espouse the idea of UFOs as visitors from outer space for their own peculiar purposes. You will note that I say "espouse the idea" not "make UFO reports". Very rarely do members of the lunatic fringe make UFO reports. There are many reasons for this but, primarily it is simply that they are quite incapable of composing an articulate, factual, and objective report.

In addition to being fully aware of the cultists and the manner in which they muddy the waters even though they don't generate UFO sightings, I am also quite, quite aware of the wide-spread ignorance of many people of astronomical objects, high altitude balloons, special air missions, mirages and special meteorological effects, and of their willingness to ascribe the viewing of such to the presence of something mysterious.

This group of people, as contrasted to the crackpots, is far more of a factor in the UFO problem because they do generate reports which represent a high noise level, so high, in fact, that many who have not looked carefully into the matter are quite satisfied that all UFO reports stem from such

misperceptions. The facts in the case however, are that it is relatively simple for an experienced investigator to sort out and quickly eliminate nearly all of the misperception cases.

It is a pity that people so often are not well informed, objective, and accurate reporters; I have been looking at UFO reports since 1948 and I am nauseatingly familiar with UFO reports spawned by Venus, twinkling stars, aircraft, etc. Some 18 years before the Condon Committee was formed I was already aware that the great majority of UFO reports were indeed nothing more than misperceptions by the uninformed.

Such reports of course, must be deleted before any serious study of the UFO question can begin. Let it be clearly underlined that from this moment on I am speaking only of UFO reports which remain unexplained by trained investigators; then, and only then, are we truly dealing with something that is unidentified, and unidentified by people capable of making an identification. In short, an original UFO report must pass through a narrow band-pass filter before it qualifies as worthy material for scientific study, the objective of which is to determine whether any genuinely new empirical observations exist; whether there truly is a UFO phenomenon. Only those reports which survive the running of this gauntlet can qualify.

An objection to this approach immediately arises: Aren't we just rejecting everything but the tail-end of the distribution curve of human reactions to visual stimuli? This is, of course, what I firmly believed during my first years of association with the UFO problem. It still may be true - but in my opinion, it is open to very serious question. We can hold that assumption - that we are dealing with the vagaries of human perception, only if we believe that we deal with a homogeneous set of observations; that is, the tail of the distribution curve must belong to the same universe of

data. Otherwise it is like examining the distribution curve of the sizes of oranges and trying to fit watermelons to the tail of the distribution curve.

Let me define the UFO phenomenon, the existence of which we wish to determine or deny, as that phenomenon described by the contents of reports of visual or instrumental observations of lights or objects in the air (or near to or on the ground) whose presence, trajectories, and general character are not explainable in verifiable physical terms, even after intensive study. The Condon Report furnishes us with many examples.

For years I strongly resisted accepting the idea that a genuine UFO phenomenon might exist, preferring to hold that it was all a craze based on hoaxes and misperceptions. As my review of UFO reports continued, and as they grew in number to be of statistical significance, I became increasingly concerned that the whole subject didn't evaporate as one would expect a craze or fad to do, and I became increasingly aware that the phenomenon of UFO reports not only persisted in this country but in many areas over the world. And it began to concern me that if there were some world wide compulsion to report strange things, why these particular sub-sets of strange reports out of an infinite universe of possible strange reports?

The degree of strangeness is certainly one dimension of a filtered UFO report. The higher the strangeness index, the more information elements the report contains which defy explanation in ordinary physical terms. The other dimension, or coordinate, is the probability that the report refers to a real event; in short, did the strange thing that defies explanation in normal physical terms really happen? What is the probability that the witnesses described an actual event of high strangeness? This represents a different evaluation, not of the report this time, but of the witnesses, and involves

different criteria.

The criteria I have used in determining the coordinates of points to be included in the diagram are these:

For Strangeness: How many individual items, or information bits, does the report contain which demand explanation, and how difficult is it to explain them, on the assumption that the event occurred?

For Probability: Integrating over several witnesses, what is their collective objectivity? How do they respond to tests of their ability to gauge angular sizes and angular rates of speed? What is the condition of their eyesight? What are their medical histories? What technical training have they had? What is their general reputation in the community? What is their reputation for publicity seeking, for veracity? What is their occupation and how much responsibility does it involve? No more than half-scale credibility is to be assigned to one-witness cases.

If one now plots the strangeness of a report against the credibility of the witnesses, or against essentially the same thing, the probability that the event happened more or less as stated, one obtains an interesting scatter diagram which may be called the strangeness-probability diagram (Σ for short). All points plotted represent UFO reports that have passed through the misperception and hoax filter. Clearly, the most provocative and potentially scientifically important UFO reports are those in the upper right hand region of such a diagram, the locus of reports that contain many information elements and have a high probability rating, reports for which the witnesses were of such a caliber, and the circumstances surrounding the reported event were such as to make it virtually impossible to discount the reported event. Examples of such information bits are craft description, inertial laws, ability to affect animals, to interfere with automobile ignition systems, and to leave visible marks on land and on cultivated fields.

The Condon report includes several such cases.

In my long experience in personal contacts with witnesses, one paramount thing has impressed me above all, and that is that those witnesses who generate high Σ reports are all trying to describe an event for the description of which they have an entirely inadequate vocabulary, much as an aborigine would lack the vocabulary to describe a supersonic jet or a nuclear submarine. Whatever else can be said of the UFO phenomenon, it represents for the witness an undoubted event, and an event for which he was totally unprepared. The majority of such witnesses, contrary to popular belief, were originally highly skeptical about UFO's. Suddenly they had an experience which profoundly affected them -- sometimes traumatically. Speaking from years of experience with witnesses, I can say that faced with the experience of a UFO event, the witnesses are generally perplexed and uncertain as to what to do about it. Invariably they attempt to explain it in ordinary terms and fail. Curiosity overwhelms them, yet they know only too well that they will be targets for ridicule (for as they confess, they had often in the past ridiculed others), if they report. Generally they confide only in their own family, if at all, and they often prefer to remain silent. Sometimes they will finally report observations years after they have occurred.

Any serious investigator is aware that a reservoir of latent reports must exist. Not only has the Gallup poll so indicated, but I frequently try the experiment of asking for a show of hands of those who either themselves or their close friends had a puzzling UFO experience. I generally find that more than 10% of the audience will raise a hand. But when I ask for hands of all those who reported the event in some official manner, I find virtually no hands raised. Judging from this and other personal observations, I would estimate that for every officially reported UFO sighting there exist many dozens that

have gone unreported.

I believe that as scientists we should be astonished that high Σ reports even exist. What does a serious person, holding a valued reputation stand to gain by making such a report? Why do people go to the trouble of filling out questionnaires, of subjecting themselves to sometimes hostile inquiry, and of being the target of unpleasant attention?

The reason appears to be twofold. Witnesses have told me that they had not intended to say anything about their experience but they felt that it might be of importance to the government, or to science, and felt it their duty to report. The second reason is curiosity. They want to know whether anyone else experienced the same event, and whether the event has a rational explanation. They are visibly reassured when I tell them, if it be the case, that their sighting fits a pattern and resembles other reported sightings from various parts of the world.

What about patterns of UFO reports? How can we classify UFO reports as an aid to their study? Clearly, if each UFO report represents a unique happening, the UFO is not amenable to scientific study. Such a classification however, must be free of any preconceived ideas as to the nature and cause of UFOs. Thus the classification must be observational; it should be akin to the state of the classification of stellar spectra in the days before we had a theory of stellar spectra, or somewhat like the classification of galaxies is today.

I have adopted a very simple classification system based solely on the manner of observation. Such a system tells us nothing, of course, about the nature of the UFO, but it can suggest a means of gathering further data.

There seem to be four basic ways in which the UFO presents itself, so to speak, for human observation: (1) As "Nocturnal Lights," the objects to

which the lights are presumably attached being generally barely, if at all, discernible; (2) As "Daytime Discs," when the UFO generally, though not necessarily, appears as a disk or long oval; (3) As "Close Encounters" during day or night; these are sightings made at ranges less than 1000 feet, and often accompanied by physical effects on the land, on plants and animals, and occasionally on humans; and (4) radar UFOs, a special subset of which is the radar-visual observation, an example of which I gave earlier.

There is no attempt in this observational classification to be mutually exclusive. Clearly a nocturnal light might be a daylight disc in the daytime, or both might become close encounter, or radar cases.

Let us examine each category. The nocturnal light report offers the least potential for scientific study, as it has the least information elements and thus a low strangeness index. The nocturnal light UFO can be defined as a light or combination of lights whose kinematic behavior passes through the filter; i.e. it cannot be logically ascribed to balloons, aircraft, meteors, planets, satellites, satellite re-entries, or missiles. The experienced investigator generally has no difficulty with the screening process here. Years of checking enable him to filter these out almost at first glance. Of course, should a UFO choose to masquerade as a hot air balloon or a photographic night air exercise, there is no easy way of differentiation, at least as long as we are limited to observing from the ground. If we had immediate reaction capabilities, and could send an interceptor, then we could clear the matter up quickly or, perhaps we would experience what has often been reported in the past twenty years: as the intercepting plane approaches the light in question, it either suddenly goes out or seems to take off and soon out-distances the investigator. In that event the originally reported NL earns its place among other members of the Nocturnal Light category.

As an example of this category we have a case I investigated personally, involving five witnesses, the senior witness being the long-time associate director of a prominent laboratory at MIT. The nocturnal light was first sighted by his son, who had been out airing the dogs. He came bounding into the house crying, "There's a flying saucer outside!" The senior observer picked up a pair of binoculars on his way out. He told me that he didn't expect to see anything unusual but was going out to see what the commotion was all about. For the following ten minutes he was engrossed by what he saw -- the nature of the light, its motions, its hovering, and its take-off. He described the light as having a high color-temperature although essentially a point source, subtending less than a minute of arc in the binoculars. The five observers were fortunately able to compare it to an airliner and a helicopter, both of which passed by during the observation interval and neither the motions nor lights of these craft bore any resemblance to those of the UFO, sub-class NL. The trajectory of the object was plotted against the framework of the branches of a denuded tree. This observer was a good one, and in his report included the condition of his eyes and that of the members of his family. The adult observers were both far sighted and the senior observer wore glasses only for reading.

Incidentally, all my attempts as scientific consultant to the Air Force at that time, to mount a serious investigation of this case, came to naught. The Blue Book evaluation is, however, Unidentified, but somehow the word unidentified is not a challenge to inquiry. It has been classified as unidentified, and therefore the case is solved - it has been identified as Unidentified!

So certain is the Air Force, at least publicly, that all UFO reports must represent normal things that they see no point to serious investigation. In most of the time I acted as consultant to the Air Force I repeatedly urged immediate reaction capability and proper scientific investigation, but to no

avail.

The next classification category is the Daylight Disc. These are reported daylight sightings of objects seen at moderate distances. The prototype report runs something like this: I was driving along and there crossed over in front of me, a shiny metallic disc. It seemed about 500-1000 feet above the road. It came down fairly close to the ground, stopped and hovered with a wobbling motion and then took off with incredible speed, straight up, and was gone in a few seconds. There was no noise.

This daylight category quite understandably has more photographs to support it than all the others put together. An example is the McMinnville, Oregon case which the Condon Report lists as unsolved.

A photographic daylight disc case, was reported by three prospectors in bush country near Calgary, Alberta. I personally investigated the terrain, the people, the negatives, and the camera. Mr. Fred Beckman of the University of Chicago and I have satisfied ourselves that the images on these color negatives are real images. The terrain, the interrogations of the witnesses, plus the sworn affidavit of the principal witness all lead me to put this into the class of the McMinnville photos, but as with so many other cases, one is finally impaled by uncertainty.

These photographs do not stand alone, however. The published literature on UFOs is replete with such photographs. Some are patent hoaxes but most have never been investigated sufficiently to rule out very sophisticated hoaxes. A hoax is all one has to rule out, however. For if the daytime photo shows any detail at all, aircraft and balloons etc., are immediately ruled out. The picture itself is sufficient to establish the strangeness index. It is the other coordinate, credibility, that is difficult. Proper interrogation, tracing of the processing history of the negative, microscopic and microphotometric examination of the negative plus proper psychological testing of the witnesses

to the taking of the photograph, should serve to rule out all but the most highly sophisticated, expensive, and laboriously contrived hoaxes. Now in any one case it is clearly impossible ever to state unequivocally that a photo of a daylight disc is genuine, but I would submit that 25 such separate photographic cases, each subjected to exhaustive tests, would allow us to approach certainty asymptotically, so that we could say that the probability of a hoax in all 25 cases is vanishingly small.

Even so, this would not prove the existence of truly strange flying objects, but it should provide sufficient justification for the proper attention to the phenomenon by the scientific world. And that is, of course, all that I advocate: that the subject of UFO reports is worthy of serious scientific attention. Inherent in the sheaves of UFO reports there may well be many doctoral dissertations for physicists, sociologists and psychologists alike. The problem is interdisciplinary, which because of the magic of that word, ought to get some of you grants!

The third category of UFO reports, the Close Encounter, offers by far the greatest potential for scientific study. Since a close encounter obviously offers a greater chance for observation, we can expect, and we get, many more information elements, and hence a higher strangeness index.

It is in this category that the theory of simple misperception fails utterly in explaining reports of craft landing 100 feet away, of visible marks left on the ground, of animals and people visibly affected, and of automobiles temporarily stopped on the road. Here we must either say that the witnesses were mentally unbalanced or something most interesting actually happened. However, I am not taking sides; I am merely reporting to you what is reported, over the world, and by seemingly competent witnesses.

I divide the close encounter cases into three sub-divisions: the close

encounter, pure and simple; the close encounter with physical effects, and finally, the close encounter in which "Humanoids" or occupants enter the picture. It is this latter subgroup which of course has the highest strangeness index and frightens away all but the most hardy investigators. Since my role here is that of reporter, I would be neither a good reporter nor scientist were I to deliberately reject data. There are now on record some 1200 reports of close encounters, about half of which involve reported craft occupants. Reports of occupants have been with us for years but there are only a few in the Air Force files, for generally Blue Book summarily, and without investigation, consigned such reports to the "psychological" or crackpot category.

A prototype of the close encounter per se is that of witnesses driving along a lonely road when the driver spies a strange glare in his rear view mirror. He becomes frightened, increases his speed to over 100 mph, trying to outdistance the UFO, but cannot. He stops the car, and tries to take cover. Shortly the light goes away, rising and vanishing quickly in the distance. One can say that such witnesses were mentally unbalanced, but just try saying that to their faces, especially when you discover that they are respected members of their communities and hold responsible positions.

Now the close encounter with physical effects. This is the category which interests me the most, since the reported effects on animal, vegetable and mineral are potentially measurable. For instance, there are more than a hundred reports on record of UFOs that caused car ignition failures. The all too typical case runs something like this: Suddenly, as if from nowhere, a bright light appears and soon seems to seek out the witnesses' car. As it stops to hover over the car, the car lights dim or fail as the engine dies.

Often the occupants of the car report feeling hot and prickly. After a few minutes the apparition leaves, and the car returns to normal operation, but the witnesses often do not, their equanimity temporarily destroyed.

Witnesses of such encounters do not readily lend themselves to interrogation. Often they tell no one for days, or they tell only very close associates. Eventually a serious UFO investigator comes to hear about it, and then the story unfolds. When they do unwisely tell their story indiscriminately their lives are invariably made miserable by ridicule and the taunts of unsympathetic so-called friends.

Let us consider the probabilities in car failure cases. On a cross country trip we occasionally come across a car disabled by the roadside, its hood up, waiting for the repairman or the tow truck. We should regard it as odd, and of low probability, were the car to heal itself, so to speak, and after a few minutes proceed as if nothing had happened. Now, however, if we add the condition that the event must be accompanied by a very bright unexplained light which hovers over the car, then I submit that such probabilities are extremely small. And when we deal not with two or three such cases, but many dozens, we are driven to the conclusion that something most extraordinary happened. If we have in these cases what Goudge calls genuinely new empirical observations requiring new explanation schemes, then we can anticipate not merely a scientific breakthrough, but one enormous quantum jump which will make the transition from classical physics to modern physics seem like child's play, but it may not be around the corner.

We in the 20th century may be as far away from a solution of the UFO problem as 19th century physicists were from an interpretation of the aurora borealis. It is, under those circumstances, still incumbent upon us as scientists to document and study the phenomenon to the best of our ability. But

at present, however, the absence of continued scientific study of the phenomenon still leaves it unclear as to whether genuinely new empirical observations exist. Yet even the Condon Report left unexplained some quarter of the copy examined.

The fourth observational category contains those UFO reports involving radar. There are many reports in this category from responsible persons -- pilots and control tower operators. I have paid little attention to the radar cases, since I am no radar expert and the radar expert at Blue Book invariably ascribed all radar cases to malfunction or anomalous propagation, sometimes, I felt, on the grounds that since UFOs didn't exist, there could be no possible other solution. The Condon Report, however, contains the following remark about one such case: "This must remain as one of the most puzzling radar cases on record -- and no conclusion is possible at this time. It seems inconceivable that an anomalous propagation echo would behave in the manner described, even if anomalous propagation had been likely at the time."

Radar-visual cases offer more scope for study. The Lakenheath case, studied by the Condon Committee, remains an unknown, with the remark, "In summary, this is the most puzzling and unusual case in the radar-visual files. The apparently rational, intelligent behaviour of the UFO suggests a mechanical device of unknown origin as the most probable explanation of the sighting. However, in view of the inevitable fallibility of witnesses, more conventional explanations of this report cannot be entirely ruled out." In actuality, if one reads the body of the Condon Report carefully, one finds that it constitutes about as good a case for the scientific study of UFOs as I feel would have been possible by any group not initially conversant with the subject and having limited time and funds.

Some of you may be surprised that a considerable body of UFO evidence

exists. We have here the crux of the problem: neither you, as informed, active scientists, nor the public, have access to this information. Unfortunately, you who may wish to be informed about UFOs must get your information in the intellectual alleys where it is written like forbidden words on the back fences of literature -- the pulp magazines, the sensational adventure, mystery and sex magazines. There is in this country not one scientific journal in which I could publish a well documented UFO case, yet a recent bibliography of UFO literature of all and sundry sorts ran to 400 pages. It would appear that the UFO has become a problem for the librarian sooner than it has for the scientist.

Consider too, the plight of a serious UFO witness. I know they exist because I have interviewed several hundred. Where can they go to report? Only the most naive would today report to the Air Force. To report to the local police is scarcely better. Many witnesses have told me of the ridicule they met when they took that path. Besides, I have seen many police blotters. UFO reports are entered as "complaints".

The witness, if he wishes to report, must seek out the relatively few persons or organizations which will lend a sympathetic ear. My own mail brings me very good UFO reports, generally with a request for anonymity, but I have neither the time nor the funds to make proper investigations.

As I look back over the past 21 years association with the UFO problem, I note that the intellectual climate today is enormously better for taking a good look at it than it was even a few years ago. This Symposium is itself an example. It would have been impossible to have held it even a year or two ago. In fact, it was impossible to hold it last year. And had I, years ago, when I realized the nature of some of the reports in the Air Force files, attempted to call for a major investigation, I would simply have been labelled a nut and thereby would have lost all possible future effectiveness.

In summary, then; the result of my 21 years of monitoring of UFO reports is:

1. Reports of UFO observations exist after the deletion of the pronouncements of crackpots, visionaries, religious fanatics, et al.
2. A large number of UFO reports are readily identifiable by trained investigators as misperception of known objects and events.
3. A small residue of UFO reports are not so identifiable. These:
 - A. Are widely scattered over the earth, and come from such widely separated places as northern Canada, Australia, South America and Antartica.
 - B. Are made by competent, responsible, psychologically normal people; i.e., credible witnesses
 - C. Contain descriptive terms which collectively do not specify any known physical event, object or process, and which do not specify any known psychological event or process.
 - D. Resist translation into terms that do apply to known physical and/or psychological events, objects, processes, etc.

That is, as Goudge points out, translation would alter the meaning of the original report and hence effectively violate the methodological criteria governing the advance of science:

1. It must be possible for new observational data to occur; i.e., the existing conceptual framework of science, or the attitudes of scientists, must not rule out such new data a priori.
2. The existiv_e, conceptual framework must allow new concepts, principles, laws, etc., to be formulated to interpret and explain the new observational data.

Finally, may I say that although I know of no hypothesis that adequately covers the mountainous evidence, this should not nor must not deter us from following the advice of Schroedinger -- to be curious, capable of being astonished, and eager to find out.