

Commonalities in Arguments Over Anomalies

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Abstract—There are a number of features that seem to be common to controversies **about** claimed anomalies. Foremost perhaps is the very fact of controversy. Typically, the anomaly runs counter to the expectations of established **orthodoxy**, and there is **often** a populist tone to the argument. Questions concerning the demarcation of science from pseudoscience and of epistemology in general are typically raised. It becomes important to distinguish between the pros and cons of a particular claim and what is said by the disputants; an examination of the ways in which belief and disbelief are distributed among various groups can be useful in clarifying the issues. It is also vital that one distinguish between the **occurrence** and the reporting of events. As with interdisciplinary work, it is problematic to establish what parts of existing knowledge might be relevant; and anomalies bring to attention large and **sometimes** unsuspected areas of ignorance. There are pitfalls **in** assuming that anomalies with superficial similarities have any functional or necessary relation to one another. The manner in which anomalies are perceived is clearly influenced by **contemporary** science and by contemporary **societal** beliefs. For many reasons that go far beyond the possible reality of any given anomalous claim, then, the study of anomalies can be interesting and enlightening.

Introduction

There seems to be agreement over the existence of a class or category of "anomalous phenomena"—the sort of subject with which the Society for Scientific Exploration (**formed** for the study of anomalous phenomena) is concerned. But it is no simple matter to define precisely what it is that makes a particular topic a member of that class.

The attempt to enumerate these subjects shows that the class is a large one: **e.g.**, abominable snowman, absent healing, acupuncture, astral projection, astrology, Atlantis, auras, automatic writing, ball lightning, bio-rhythms, clairvoyance, dowsing, flying saucers, Loch **Ness** monsters, **Wilhelm Reich**. The list is long indeed and has spawned a number of bibliographies, compendia, and encyclopedias (for example, Cavendish, 1974; **Clarie**, 1978, 1984; Corliss, **n.d.**; **Shepard**, 1978; see also such periodicals as *Fate*, *Skeptical Inquirer*, *Zetetic Scholar*).

The attempt to enumerate illustrates one corollary of the lack of a good definition: controversy over the inclusion of particular items. Although most people seem to feel that such a category of topics exists, and would also

agree over the inclusion of many such subjects as those listed above, there is no unanimity over **all** the topics to be included. Thus ball lightning, earthquake lights, hypnotism, and the **kraken exemplify** subjects now regarded as fit for scientific inquiry but not so **regarded** in the past—though even today's opinion is by no means unanimous on these matters. On the other hand, fairies, Martian canals, and unicorns, say, were once taken quite seriously but no longer are—except by a few, that is.

Those last statements sharpen the point: perhaps the most significant feature common to **all** these matters is lack of unanimity or even consensus, and therefore there is **controversy**. Other commonalities **will** become evident as one considers some suggested definitions of the class of anomalous phenomena.

Attempts at Definition

The sort of subject with which we are concerned would better be called not simply anomalies but rather *alleged* anomalies (Westrum & Truzzi, 1978). Not everyone agrees that the phenomena actually exist, and at least some of those who insist that they do also believe that there is nothing actually anomalous (in the sense of unnatural) about them.

That the allegations of anomalies meet with disbelief illustrates that they are in some manner surprising (Westrum & Truzzi, 1978): they appear to contradict accepted knowledge. The degree of contrariness varies **from case to case**: those matters that Truzzi (1977) has called "**crypto**" merely assert the existence of unexpected **objects**—Loch Ness monsters, say—whose actual demonstrated discovery would demand very little adjustment of current theory; "para" matters, on the other hand, assert unexpected relationships and would demand major change in existing theory—for example, psychokinetic effects.

Some attempts to define the class of anomalies are implicit and not explicit; thus one or another topic will be described as "**Fortean**," or "**occult**," or "pseudoscience," say. In the following discussion, the aptness of such terms is considered.

Enigmas was a term used by Rupert **Gould** (1890–1948), who wrote about a number of these subjects (Gould, 1928, 1929, 1930, 1934, 1944). But the term implies a real phenomenon that awaits explanation, missing the point that disagreement often subsists over whether a claimed anomaly is even real. Further, an enigma may be an isolated event or fact, whereas a **significant** aspect of "anomalous phenomena" is the claim that something of generality is at stake—not just a single deformed animal, say, but an unexpected *species*. Again, **data** quite within the mainstream of a given science can be "enigmatic," whereas the anomalous phenomena that concern us are typically outside any single discipline, be it because of the subject or because of the views of the disciplinary practitioners. So "enigma" is too broad and misses the points that make anomalies *non grata*.

Fortean refers to Charles Fort (1874–1932) who published several volumes describing alleged anomalies (Fort, 1919, 1923, 1931, 1932). As with any attempt to name a field after an individual (compare "Darwinism"), this is at once too restrictive and too vague: too restrictive if interpreted only as those things about which Fort actually wrote; too vague and subject to disagreement if understood **nonrestrictively** as all the things and ideas with which Fort would concern himself if he were active today. Apt, however, is the connotation of matters commonly ignored or regarded as intellectually unrespectable by authoritative opinion; and also apt is the implication that those who take these matters seriously believe that there is considerable wheat among the **chaff**. While Fort himself did not venture far into theory or attempted explanation, many **Forteans** are less inhibited (see, for example, *Fortean Times*).

Occult is quite commonly applied to some of these matters. But that implies some hidden or secret system of understanding or power, whereas some alleged anomalies are merely claims that a particular sort of thing exists, say, a Sasquatch. Where "Fortean" may stress too much mere phenomenology, "occult" places too much emphasis on the metaphysical. "Occult" is apt, however, in the implication of disagreement; though some devotees use the term proudly, in more common usage it has a not quite respectable connotation, of beliefs that are outdated, inappropriate or downright wrong.

Oddities was another term used by Gould, unsatisfactory for the same reason as "enigmas" (see above); oddities can be "mere," whereas an important aspect of anomalous phenomena is their alleged significance as well as reality.

Popularfallacies captures important features: the topics are outside the scientific mainstream and often enjoy wide public acceptance; a couple of classic books in this genre base their titles on these features (Gardner, 1957; Mackay, 1841). "Populist" might be even better than "popular" because proponents often stress the antagonism of the establishment and the fact that anyone among the lay public is free to become an advocate or investigator. But "fallacies" is not an appropriate general label. Though some of such subjects have become discredited (fairies, Martian canals, unicorns, etc.), others have moved to respectability (meteorites being perhaps the classic instance). Moreover, a characteristic aspect of anomalous phenomena is the willingness of a significant number of serious people to take them seriously, at least provisionally; **otherwise**, in point of fact, these subjects would not be so visible. "Fallacies" is part of the rhetoric of these controversies, not an appropriate definition.

Pseudoscience is a commonly applied term; it is apt in the respect that an invariable feature of the controversies is arguing over whether or not the matter is science or scientific, not apt in prejudging that question.

These attempts to label or define illustrate the difficulties and why one **often** resorts to drawing up a list rather than to venturing a definition.

However, the partial aptness of the labels points to some common features of anomalous phenomena: there is disagreement over the truth and significance of the subjects; the established intellectual disciplines disdain them; though most of them may be fallacious, history teaches that at least a few of them harbor a kernel of truth and are likely to attain respectability in the future. Also, these subjects raise the questions: What is science? What is pseudoscience? How are they to be distinguished?

Disagreement

Disagreement over anomalies tends to be quite sharp: people seem to be very sure, either that anomalies are real and significant or that they are not real. Not many are both actively interested in such a subject and largely neutral over its reality; and those few "zetetics" or "true skeptics" tend to be sniped at from both sides (Truzzi, 1987).

Some of these disagreements have persisted over a very long time, about astrology or various psychic phenomena, say; other disagreements are only a few decades old, such as those about Loch Ness monsters or UFOs (though, of course, the proponents believe in a much longer history of what underlies those alleged phenomena); and other disagreements can be very recent, for example those concerning matters of holistic health. But what might seem to be a long persistence of some of these matters may be partly an illusion. As in science, philosophy or any other intellectual concern, the matter is not *precisely* the same now **as** it was then: the reasons for belief and for disbelief change (for instance over heliocentricity); the purported attributes alter (Greek "atoms" are not John-Dalton "atoms" and the latter are not 1987 "atoms"); the misfit of the anomaly with the wider society is different ("disembodied spirits" were not always as unthinkable **as** they are now). That sort of change over time vitiates an otherwise and theoretically attractive way of winnowing wheat from the **chaff**: a widely agreed characteristic of pseudoscience is that it does not progress, whereas science does; in practice, however, the attempt to apply this criterion to a specific instance usually fails **as** the disputants also disagree over whether or not there has been *significant* progress as opposed to mere *ad hoc* adjustments or retreats to vaguer positions.

There is no agreed procedure or venue for settling these disagreements: they are waged in the media, in specialist publications and meetings, and only rarely and episodically in mainstream **scientific** journals. The literature is unorganized, and individual items vary enormously in reliability.

Each anomaly tends to have its own set of enthusiasts, the number of whom varies widely: it is tiny for something like Flat-Earth theory, whereas belief in some form of extrasensory perception is a majority rather than a minority view. For many anomalies, belief is widespread among the public or the laity so that the proponents actually represent the majority while at the same time they are a minority with respect to established expert opinion

in the relevant fields. The disbelievers, on the other hand, have prevailing expert opinion on their side but often feel themselves to be a struggling minority with respect to the public and the media.

Many devotees of a particular anomaly have little or no interest in other anomalies: most **UFOlogists** have little interest in **cryptozoology**, and vice versa. Some people, though, have a catholic taste in anomalies—a few as believers, others as zetetics or as students of the "meta-phenomenon" of "concern with anomalies." Amongst the disbelievers, on the other hand, indiscriminate catholic rejection of all anomalies is more the rule than the exception (Abell & Singer, 1981; **Cazeau & Scott**, 1979; Gardner, 1957; Sladek, 1973; Skeptical Inquirer).

Societal attitudes toward believers cover a wide range. Most people suspect that "something is wrong" with Flat-Earth proponents, whereas they tend to regard Christian Scientists just as people who happen to have a particular religious belief. Here again one sees the difficulty of generalizing: one has to distinguish the average popular or lay view **from** the average intellectual view: medical people and intellectuals tend to hold more drastic opinions about Christian Science than does the public at large. Occasionally, an anomaly may display a peculiar mixture of acceptance (or toleration) and rejection: thus, chiropractic is intellectually anathema but legally sanctioned, and those who have recourse to chiropractors include some who reject the theoretical claims made for it. Again, though the metaphysical notions pushed by Rudolf Steiner have had almost no adherents for quite some time, private schools based on Steiner's precepts for education have long continued to enjoy respectability.

For many anomalies, the proponents are not at all homogeneous in other respects: **Nessie** hunters, **UFOlogists**, or parapsychologists, for instance, encompass **all** social, intellectual, educational, religious, and national categories. For some anomalies, however, there are typical correlations: between, on the one hand, political liberalism and agnosticism or atheism, say, and on the other hand, holistic medicine, organic gardening, and health faddism in general. Occasionally, there are quite tight correlations: for instance, between Creation Science and religious fundamentalism.

In examining the disagreement over any given anomaly, then, one has to inquire separately into a number of issues: the division of opinion, differences in opinion among different groups, and possible correlations with other social or intellectual factors.

Belief Distributions

Since there is no single, compelling authoritative view and no unanimity over anomalous matters, it could be **useful** (Bauer, 1987) to describe disagreements by means of belief distributions which show how widely held among various groups are varying degrees of belief in a given anomaly. Thus, with respect to Flat-Earth theory, almost everyone is sure that the

belief is wrong, but a very small group holds the opposite, and almost no one is neutral about it; among scientists the minority view is missing altogether, but if opinion had been sampled a couple of millennia ago, or were sampled nowadays among Stone-Age peoples, the distributions would be quite different. On the other hand, the distribution of belief over clairvoyance would show a high degree of belief, a high degree of undecidedness, and little utter disbelief; and that distribution will have changed over the centuries **much** less than has the Flat-Earth one, and is likely to be less different among different cultures; however, within western society the distributions would be markedly different among various groups, more so than over Flat-Earthness.

The point is that meaningful enquiry into anomalies is difficult unless one can obtain some information about who are the believers and who are the disbelievers, what attributes **correlate** with belief and with disbelief, and how belief has changed over time. On topics that are in the mainstream, if one says, for example, "It is known that . . . ," or "It has been shown that . . . ," others either accept the statement through their own knowledge or recognize that it **can** be validated in texts or reference books or the primary literature. However, if one makes a similar statement about a claimed anomaly, one immediately encounters objections and such questions as, "Who knows? Who has shown?". On topics in the mainstream, the interested neophyte or outsider readily finds authoritative works; on anomalous topics, by contrast, he finds disagreements and had better look into who the disputants are, what the division of opinion is among different groups, and so forth.

Where belief distributions are available, they can **afford** some unexpected insights. Thus, in the matter of Loch Ness, a content analysis of the literature revealed the following (Bauer, 1988), more or less counter to intuition: within the scientific literature, the average opinion is neutral and the belief distribution is almost the "normal" ("bell-shaped") one; the daily press has shown little change of opinion over the years, whereas in magazines there **was** a marked shift from disbelief toward belief beginning in the 1950s. The analysis also showed marked variations in the degree of polarization of opinion: during periods when little fresh news came from Loch Ness, strong belief and strong disbelief decreased and the degree of undecidedness grew.

One superficially tempting definition of the class of anomalous phenomena might be, subjects for which both proof and disproof are lacking. But a consideration of belief distributions reveals how unworkable in practice that theoretically apt definition would be: who has the authority to decide what is sufficient proof and what suffices as disproof? In principle, one might argue that where opinion is strongly divided, Q.E.D.: the issue has not been proven one way or the other. In that case, however, the belief distribution—if it reflects "objectively" formed opinions—should be concentrated around neutrality or undecidedness, whereas in practice the belief distributions on such things are much more polarized than that (see Bauer, 1987,

1988): some people maintain that belief has been proven correct while others insist that disbelief has been proven to be warranted.

The distinction between what the facts might demonstrate and what interested people believe ought to be made, but commonly it is not made. In assessing the possible merits of any given anomaly, one needs to distinguish between, on the one hand, the **case** that might ideally or disinterestedly be made and, on the other hand, the **case** that is actually made by the proponents. Also, in assessing the criticisms levelled by disbelievers, one needs to distinguish between those that speak to (or rather against) the purported evidence for the anomaly and those that merely rebut, in debating fashion, points ventured by believers. Something that is quite true can be propounded so incompetently and by such dubious characters that one is misled into not believing; or, people of excellent character might utterly flub making a proper, logical **case**; or, trustworthy people can in **good** faith make a convincing **case** for something that happens not to be so. That some proponents of some anomaly happen to be fraudulent or logically incompetent does not (in itself) invalidate the anomaly; that the proponents are in many ways demonstrably wrong, even, does not inevitably entail that their anomaly altogether **fails** to exist (Clark, 1983). None of that, of course, is intended to avoid the reasonable view that the burden of proof for demonstrating an anomaly rests on the proponents, that no one is obliged to take them seriously or to take any interest in the matter unless and until that burden of proof has been accepted and discharged. At the same time, one needs also to recognize that, no matter how compelling the evidence, there will always remain some people who refuse to alter their preexisting, demonstrably false beliefs.

Relevant Knowledge

Always at issue with anomalous phenomena is the relevance of the accepted categorical knowledge held by the various disciplines. The investigation and discussion of anomalies take place largely outside the intellectual mainstream: journals of biology rarely feature **sea** serpents or **Nessies**; journals of astronomy or physics pay almost no attention to Velikovsky or his ilk. The literature expounding specific anomalies consists chiefly of books from commercial, nontechnical publishers—often potboilers or even worse—as well as articles in popular magazines, in specialist periodicals, and in small-circulation bulletins, newsletters and the like, often unavailable in libraries and frequently short-lived. Thus, there is little if any contact with academic disciplines that might have something useful to say about a particular anomalous claim.

More fundamentally, as long as something remains an anomalous phenomenon, one does not know which disciplines might be relevant. In the case of astrology, for instance, it is typically assumed that astronomy is the relevant science that embodies information needed to **assess** astrological

contentions. But astronomy deals only with planetary and stellar phenomena, whereas astrology makes assertions about human behavior as well. The fact that even Nobel laureates in physics and astronomy assert that there is no conceivable mechanism by which astrology could work need not be taken as decisive (Westrum, 1976); those of empirical bent want first to know, do any correlations exist that seem to parallel astrological conjectures? It turns out that some such correlations appear to exist (Gauquelin, 1983), and to explore the validity and significance of these data calls for expertise in social science and in statistics, not in astronomy or in physics. How adequately were the samples of individuals chosen for whom the correlation was found? How appropriate was the statistical analysis used? Are there any factors whose periodicity is at all similar to that of the planetary positions—even only approximately for a couple of generations, the period covered by the lives of the people sampled? And that last question takes one—as all such series of questions do, sooner or later—to the limits of human knowledge: there exists no discipline that knows about periodicities as such, and the attempt to decide whether or not a given set of data shows periodicities easily becomes controversial (Hoffman, 1985; Raup, 1986). (So far as biological periodicities go, or such correlations as between health and weather, the effects spoken of by individual meteorologists and doctors still remain to be codified.) The point is not only that astronomy is not per se qualified to pronounce upon astrological claims: it is not even clear that any combination of disciplines could presently mobilize all the needed understanding.

In practice, of course, what one takes to be relevant to a given anomaly is influenced by one's preconceptions, about that anomaly and also stemming from one's training: physicists tend to regard **psychokinetic** claims as calling for careful observation and measurement of objects, whereas psychologists or magicians tend to regard **psychokinetic** claims as calling for careful observation and control of claimed psychics.

The investigation of anomalies, therefore, suffers some of the dilemmas and difficulties inherently involved in any interdisciplinary effort (Bauer, 1984, pp. 288–295). One can never be certain that some field or other does not know something that could be directly relevant; one can never be sure that a deeper understanding of some subject might not provide an answer; one cannot know which experts in which fields to approach. To give just one instance: "angel hair" purportedly associated with UFOs turned out to be spiders' webs (Story, 1981, pp. 95–98), but who other than an **arachidnologist** knew—or needed to know, for that matter—that certain spiders migrate thousands of feet up in the atmosphere? How many biologists of various specializations knew that? And why should a **UFOlogist** ever feel the need to consult a biologist in the first place, let alone an arachidnologist?

Thus, with anomalous phenomena, serendipity is an even more desirable eventuality than it is in science. Further, the study of anomalies—as interdisciplinary efforts in general—can usefully bring to our attention the **sub-**

stantial areas of ignorance that subsist at the edges and interstices of established knowledge.

Classifying Anomalies

Just as one cannot know, for a given anomaly, what disciplines might be relevant, neither can one be sure which anomalous phenomena might be related to one another. It follows that there are potential dangers (as well as advantages) in asserting that certain anomalies are related to one another.

Cryptozoology encompasses the possibility of unexpected creatures of all sorts—Bigfoot, Nessie, sea serpents, and so forth (Greenwell, 1985; Heuvelmans, 1982, 1986). That grouping can be heuristic, since all such searches have to be concerned with human testimony and with purported references in folklore, and expertise about those matters can be usefully shared. On the other hand, such association could also mislead: despite similarities in sorts of evidence, specific items pertain only to a single anomaly. If Nessie turns out to exist and thereby to vindicate her eyewitnesses, that will not mean that eyewitnesses for Bigfoot should then be thought to have been vindicated; or that the legendary kraken turned out to be the real giant squid does not entail that other creatures described in similar detail in similar literature must also exist or have existed.

In some cases, the implicit assumption that certain anomalies are related amounts to accepting them as real and even asserting, albeit only vaguely, an underlying explanation or mechanism or theory; that parapsychology is taken to include clairvoyance, telepathy, and psychokinesis appears not to be disputed, yet even the unquestioned existence of each of those effects would not demonstrate that they are sensibly related—no more than sight and hearing are. Again, that some people include spiritualism or reincarnation within parapsychology bespeaks a preexisting belief about the nature of those matters.

The cultural *Zeitgeist* obviously influences what is regarded as being anomalous at any given time (**heliocentricity**, say), but it also influences how a particular anomaly is thought or talked about (Hufford, 1982). Thus UFOs led to speculation about airships in the late 19th century whereas after World War II they have supported speculation about spaceships; there are myths appropriate to the space age (Cohen, 1965). When everyone **was** a religious believer, anomalies were interpreted **as** miracles; in the age of science, anomalies are seen in the light of science—as "alternative," valid science by some and as pseudoscience by others. And every spectacular advance in science seems to spawn unorthodox claims **as well as counter-theorists**: during the 19th century, electrical and magnetic bases were asserted for quack medicines; at the turn of the century, the discovery of X-rays and radioactivity was accompanied by spurious discoveries of radiations and quack radiation cures; Newton provoked **antigravitationists**, and Einstein produced antirelativists.

Attempts to find neutral characterizations for anomalies could help in the study of specific ones. Thus, it is well to be aware at the outset that the strength of evidence called for increases in proportion to the improbability of the claimed anomaly (that extraordinary claims call for extraordinary proof is continually stressed by **Truzzi**, 1987, for example); and it is salutary to recall just how stringently that applies within science (**Trefil**, 1983). The distinction between "crypto" and "para" claims is germane here, between mere claims of the existence of unexpected objects and by contrast assertions of unorthodox theoretical connections (**Truzzi**, 1977). A particular class of **crypto-type** phenomena is that of "hidden events" (**Westrum**, 1982): certain things happen but are not spoken or written about, which makes it possible to believe that they do not occur, the battering of children is a remarkable instance. In those cases in particular as well as with anomalous matters in general, the frequency of occurrence bears little relationship to the frequency of reporting (**Westrum**, 1982, and references therein): the publication of reports is influenced by societal attitudes that are quite apart from the phenomenon itself. In those respects, the study of anomalous phenomena offers similar difficulties to those encountered by students of mental illness or sexual behavior, for example.

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