SGHA Articles

Expanding knowledge through disseminating information.

Pseudoscience is a term applied to a body of alleged knowledge, methodology, belief, or practice that is portrayed as scientific but diverges substantially from the required standards for scientific work or is unsupported by sufficient scientific research. Unfortunately, ghost hunting and paranormal research is often immersed with it.

The purpose of this article is to define and identify what pseudoscience is and how it affects paranormal research and ghost hunting. By developing a understanding of this, it may become possible to avoid the pitfalls and move towards a more scientific approach and methodology.

1. Anecdotal evidence is not useful.

All an anecdote tells you is what happened in one case. It tells you nothing about the general population and you cannot draw any general conclusions from it. You must have well-designed and controlled experiments to get enough data to reach real conclusions. In ghost hunting, anecdotal evidence initially surfaces as "witness reports", the reported phenomena that is experienced by individuals at a particular location. it is important to understand that "witness reports" cannot be used as evidence by themselves. Direct connections must be made between reported incidents and measurable scientific data. This also includes "experiences" that occur to the ghost hunters' themselves.

2. You need more than scientific language.

Words and phrases must have precise operational definitions. Simply put, a ghost hunter or paranormal researcher must have a hypotheses that defines what he or she is looking for and why they are looking for it. If one hypothesizes that ghosts are composed of (or radiate) electromagnetic energy, then the hypothesis must define this. Why? What is its origin? What is it composed of?

3. Extraordinary claims need extraordinary evidence.

Extravagant claims require a lot of evidence. The boldness of a claim does not make it true. A extravagant claim will not be accepted until it has been successfully tested many times. The bulk of evidence must support it. So what makes a claim extraordinary? The major culprit is the violation of known laws and or applying those laws in ways which are not constant with the theory that formed them.

4. Radical (heretical) claims can be wrong.

Surely the Wright brothers got laughs concerning their attempt to fly. Alfred Wegener was scorned when he proposed that Earth's continents actually move around. These ideas survive because they stood the test. The Wright brothers' airplane actually flew, and a mass of evidence has shown that Wegener was right. But - there is a large number of other radical claims that did not withstand the tests and have been forgotten.

In ghost hunting this assumes many forms. The popular belief that spirits are more active from midnight to 3:00am because it is the "witching hour". This belief is based on folklore and superstition and has no true validity. Other superstitious injections include the belief that ghosts can harm people, cannot cross running water and that mirrors are "gateways" to the "other side". All of these have a initial basis in folklore. Attempting to differentiate between ghosts and spirits is yet another flaw because neither has been proven yet.

5. Where is the burden of proof?

Who must prove what? The person making an extravagant claim must prove, via experiments and evidence, that the new claim is actually more valid than current ideas. The new hypotheses must make better predictions and successfully explain more phenomena better than current theory. The current experts and not obligated to prove that their idea is better.

6. Rumors are not necessarily real.

You have almost certainly heard some wonderful story and later wondered if could really be true. Large numbers of such stories fall into the category of "urban legends," meaning that they never really happened. It is wise to take these stories as amusing fiction until you can find some confirmation of them. Generally speaking, if it seems to good to be true, then it generally is false.

7. Unexplained does NOT mean not explainable.

The fact that you have never seen or cannot explain some phenomenon does NOT mean that it must be some unexplained supernatural thing. It would be quite arrogant to assume that you know everything. You can only investigate something to the limits of your ability.

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This is a major component in ghost hunting. Unexplainable noises and smells are often not analyzed to a sufficient degree to locate their source. The rationale of "its not explainable, therefore it is a ghost" is then utilized without realizing that nothing has been proven at all.

8. Watch for rationalization of failures.

Pseudoscience cannot tolerate failures; they will be rationalized or explained away in some manner. True science must accept negative results as part of the search for the truth.

9. Look out for "post hoc, ergo propter hoc" reasoning.

If event B follows event A, that does NOT prove that A caused B. Event B could follow A purely by chance. You must have well-designed and controlled experiments to show that B always follows A. A single occurrence is not sufficient.

10. Beware of coincidence.

Truly random behavior can produce some interesting coincidences. Causal relationships do not always exist. Some interesting combination of events may be nothing more than chance. The fact that you have never heard of it before may mean simply that the probability of it is very low and you don't expect to see it often.

How often have ghost hunter taken a unusual photograph when a EM field was present? What was the frequency of the EM field?

11. Check the misses as well as the hits.

Is the thing you are looking at really representative of its population? If one prediction of a "psychic" appears to be correct, how many others were not correct? We tend to remember the hits and forget the misses.

Using the situation listed above, how many times has a ghost hunter taken a unusual photograph and no EM fields were present?

None of this is intended to say that there are no problems in real scientific thinking.

1. Theory influences observations.
What you see is often influenced by what you expect to see. Observations will be interpreted according to current knowledge, which can obscure important implications of the observations.

2. Observations change the observed quantity.
The classic example of this is found in the measurement of the motion or position of a subatomic particle. The process of measuring perturbs the particle.

3. Instrumentation influences results.
The basic idea here is this: that which your instruments cannot detect does not exist. Spectacular advances in knowledge often occur when detection capabilities improve so that previously unseen things or phenomena can be seen.

Science	Pseudoscience	comments
The primary goal of science is to achieve a more complete and more unified understanding of the physical world.	Pseudosciences are more likely to be driven by ideological, cultural, or commercial goals.	Some examples: UFO-ology (popular culture and mistrust of government), Creation Science (attempt to justify Biblical interpretation)
Most scientific fields are the subjects of intense research which result in the continual expansion of knowledge in the discipline.	The field has evolved very little since it was first established. The small amount of research and experimentation that is carried out is generally done more to justify the belief than to extend it.	The search for new knowledge is the driving force behind the evolution of any scientific field. Nearly every new finding raises new questions that beg exploration. There is little evidence of this in the pseudosciences.
Workers in the field commonly seek out counterexamples or findings that appear to be inconsistent with accepted theories.	In the pseudosciences, a challenge to accepted dogma is often considered a hostile act if not heresy, and leads to bitter disputes or even schisms.	In science, the person who shows that a generally accepted belief is wrong or incomplete is more likely to be considered a hero than a heretic.
Observations or data that are not consistent with current scientific understanding, once shown to be credible, generate intense interest among scientists and stimulate additional studies.	Observations or data that are not consistent with established beliefs tend to be ignored or actively suppressed.	Have you noticed how self-styled psychics always seem eager to announce their predictions for the new year, but never like to talk about how many of last years' predictions were correct?
Science is a process in which each principle must be tested in the crucible of experience and remains subject to being questioned or rejected at any	The major tenets and principles of the field are often not falsifiable, and are unlikely ever to be altered or shown to be wrong.	Enthusiasts incorrectly take the logical impossibility of disproving a pseudoscientific principle as evidence of its validity.

time.		its validity.
Scientific ideas and concepts must stand or fall on their own merits, based on existing knowledge and on evidence.	Pseudoscientific concepts tend to be shaped by individual egos and personalities, almost always by individuals who are not in contact with mainstream science. They often invoke authority (a famous name, for example) for support.	Have you ever noticed how proponents of pseudoscientific ideas are more likely to list all of the degrees they have?
Scientific explanations must be stated in clear, unambiguous terms.	Pseudoscientific explanations tend to be vague and ambiguous, often invoking scientific terms in dubious contexts.	Phrases such as "energy vibrations" or "subtle energy fields" may sound impressive, but they are essentially meaningless.

Sources: "Why People Believe Weird Things", written by Michael Shermer

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