

The Paranormal vs Science

The scientific process is designed to incorporate the following processes:

1. Develop a theory and therefore, predict the anticipated results;
2. Test the theory by experimentation, eliminating any possible contaminants;
3. Analyse the results and compare with theory;
4. Change the theory if agreement is not observed;
5. Repeat this flow process until good agreement is achieved between theory and experiment.

The only human inputs to the above procedure are those that require intelligence (steps 1,2,4 and 5) and deduction (step 3). The paranormal world is almost exclusively human-based observations. This is crucial: the human body is a terrible judge of environmental conditions, and must, if possible, be completely divorced from the data gathering process. Humans are prone to hallucination, drunkenness, drug usage, persuasion, personal beliefs, fatigue etc., which makes any of our observations questionable. In a court of law, forensics is always placed before eyewitness testimony.

Of course, a theory is only as good as the knowledge available; Newton's ideas on gravity remained intact for over two centuries until it was superseded by Einstein's General Theory of Relativity earlier last century. Likewise, ideas incompatible with contemporary scientific dogma and politics eventually entered mainstream existence, for instance, meteors, ball lightning, and evolution theories.

Likewise, with regard to theory, it is sometimes stated that theories are easier to disprove than prove. This is sensible, which is why most results must form a reasonable agreement (allowing for experimental errors etc.) with theory. However you need to have theories that can be disproved by experimentation otherwise they are not science. However, it is very important to note that a null result (i.e. one that disproves a theory) is just as important as a confirmatory one.

The paranormal investigative process seems to follow the notion that: "Observations are made of certain phenomena". Any explanation of these phenomena is done, not on an evidential, argumentative, discursive basis, but on a belief led system. However, in science, there is nothing wrong with data collection - and reporting, in the hope that one day a theory will emerge to describe the observations. However, these collected data must be credible - not anecdotal. But it is not customary to start with an observation and work backwards to a premise - which is exactly what we would have to do with ghosts. This is unsatisfactory as there may be a large number of factors that could influence observations.

Scientific theories and supporting evidence is meant to be repeatable - that is, in laboratory (controlled) conditions, and are peer reviewed. In layman's terms, this means that any scientific reports are submitted to review by fellow scientists, also experts in the

field. Gaps in logic, and flaws in the theory and experiment are discussed, and hopefully, may be clarified, or a fresh experiment must be attempted before such "new" knowledge is accepted. But any new evidence and research must have some basis in previous work - even if this means only using the most fundamental of scientific principles. I suspect that most parapsychology groups at Universities only study aspects such as ESP, precognition etc. because they CAN be controlled in a lab.

The usage of controlled environments - as described above, is a serious matter to prevent fraudulent results; obviously in spontaneous cases (ghosts), this can be very difficult, if not impossible to achieve and provokes criticisms of paranormal investigations. Also, the notion that any results can, and MUST be repeatable and reproducible are very difficult to reconcile with paranormal theories, as ghosts do not seem to be able to be summoned at will.

Both sets of observers - scientists, or paranormal investigators may rely on the politics of the time; and these may be personal or may be imposed by their research team-mates. There is nothing wrong with this, as long as it does not distract from the research effort, and peer review will remove those biased comments and opinions so as to ensure fair, and open-minded research is performed. There is none of this in the paranormal world, as there is just too much acceptance, and not enough questioning of the data that are available. There is also a lack of awareness of technological aspects, their limits and capabilities etc.

Finally, one statement issued by a scientist to retort against the lack of a scientific approach by paranormalists goes as follows: "If the sceptics don't like a theory, then it is up to THEM to come up with an alternative, and test it if necessary." Extending this maxim, it is also fair to say that any theories upon which new theories rely must also be testable - which, sadly, in the paranormal world, is lacking. How does one test for ghosts? What does one measure? How do you qualify it (explain it) or quantify it (put numbers to it)?

Theories vs. Science

The body is today thought of as nothing more than a collection of chemicals, firing off electrical impulses that govern our movements and thoughts. The brain is more complex and is not fully understood, but it is believed to operate on a similar electro-chemical process. But if that's all it is, then where is intelligence, thought, memory etc. stored? Does it simply rot away when we die? The common theory trotted out by Paranormalists is that "Energy cannot be destroyed or created, it can only change forms". This is true, but in the case of the body decomposing, the energy simply ebbs away in terms of stored chemical energy; also, the process of Entropy is invoked to describe the energy is a system that is unobtainable due to the random, disordered nature of the system. For instance, an ice cube goes from an ordered state (in a regular lattice of water molecules - low disorder - low Entropy) to a state of liquid water (random movements - high disorder - higher Entropy). Entropy tends to increase: this is the 2nd law of Thermodynamics. So,

how can a ghost suddenly reassemble itself into a visible form without breaking this universal law?

Then there is the matter of sentience; if this is stored in the brain, then how can it survive death? As a soul? To be acceptable to science, this needs to be explained (note: NOT explained away), understood, and then experiment can test for it, but even so - what do we measure exactly? Intelligence? How do we do that?

There are other problems attached to ghost sightings too. If a ghost is supposed to be the imprint of the last few moments of someone's life (left by some violent action) upon the environment, then why do so many ghost sightings seem so mundane, such as a serving maid walking across a room in the dead of night? Also, if some ghosts are recordings, then why do they wear clothes? And what about those stories of inanimate objects, such as aircraft?

This brings us to the concept of the Stone Tape Theory; that spirits are somehow stored in the fabric of a building and are played when conditions are right. This interesting theory - which does not explain sentience - has been in existence for about a century, but has not been conclusively proven experimentally, and it is unclear how one could do so. Iron ores in the floors and walls of some old buildings may contain magnetic material as found in audio and video tapes, but even so, the mechanism behind full audio and visual playback are unknown at the moment.

With respect to recording such data using equipment; sometimes visual and audio "evidence" is recorded, but more often as not, it not picked up. This makes many sceptics feel that such phenomena exist solely in the mind. But if so, this may mean that advances in neuroscience could help to describe a lot of sightings in terms of brain chemistry. Already work in this area has suggested that people with abnormal amounts of the neurotransmitter dopamine in their brains are more prone to belief in such things as the paranormal.

There are some tantalising theories about the proximity of ghosts to fault lines, and that micro-tremors may lead to a rise in sightings. Again, one of the theories relies on the electricity so generated during the movement of the Earth's plates to affect the human brain into hallucinations. It may be that sensitive seismometers, plus measurements of the fluctuation in the Earth's magnetic field may enable some correlation to be made with ghost reports.

There are not many theories that can be tested against science; one that may is the notion of the cold spot. Sometimes these are measurable, sometimes not - the latter case implying that the human body is reacting to something, and it may be negative ions. Laser-pointer thermometers are good for immediate results, but they have a disadvantage that they only measure what the laser contacts, so unlike a thermometer, it can't measure air temperature.

Infrasound is a recent, tested theory that proves that low frequency sound waves can disrupt the human body into feeling uneasy. Again, with equipment, this is measurable, but does not provide proof for the paranormal.

Finally, dowsing, pendulums, crystals etc. are to be avoided. If you want to investigate in terms of science, NEVER try to explain one unknown in terms of another. Another motto to remember: if something seems mundane.... Then it probably is. No need to conjure up images of ghosts to explain those troublesome trivial clicks heard in the night as the house cools down and settles.

Scientific Experiments

Many of the experiments that might be attempted are beyond the reach of small amateur groups; the equipment is either very specialised, very expensive and/or very difficult to interpret. For instance, the sensitive magnetometers (sensitive enough to measure the fields that can affect the human brain) used by ASSAP require a laptop to run. Incidentally, faulty electrical wiring has been reported as a possible cause of some paranormal experiences (namely, the effect on the human brain).

Relaxation techniques may be a good pre-investigation exercise; if the theory is true that ghosts are more prevalent during periods of distraction, or in a less focussed mental state, then this would help to prompt their appearance. This would be valuable, because the effect of relaxation on the human brain is known, and this would provide good data on a possible brain-environment connection.

Some possible measurements that could be performed are detailed in the "theories vs. science" section. But it is very important to realise that, the greater the human participation, the more dubious the results. As explained, human observations are suspect, and it is standard these days to have automated experiments, as equipment is deemed to be faster, more precise, can measure more variables simultaneously, and is less prone to making mistakes (which would be picked up during testing and diagnostics - not something that the human brain could avail itself to!). If many of the above described parameters - temperature, electromagnetic fields, ion count etc., could be measured and correlated with someone's sighting of an apparition, it would, in my opinion, go some way towards describing a ghost's signature - even if it can't explain them.