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# **ARE SCEPTICS AND BELIEVERS BOTH WRONG?**

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ONE OF THE REASONS for being interested in parapsychology is the astonishing conflict of opinion about it. How can there be such a wide divergence of views among intelligent, well-educated, people? Both sides think they are forming rational judgements on the evidence available, yet they reach totally incompatible conclusions. Surely there must be something wrong with the way we form our beliefs if this can happen. You may point to similar differences in religion — but that's largely because people are brought up in different ways. Similarly with politics — but that's largely because different people have different interests. I can't see any easy explanation with parapsychology, so I want to look at what might be wrong about the ways that both sceptics and believers form their beliefs.

I'm not going to be concerned here with the question whether believers and/or sceptics are right or wrong in particular cases. That requires a lot of detailed information, different in every case, and now is not the time to attempt it. I'm concerned with how each side reaches its conclusions, and especially the possible reasons for each side being mistaken. And I'm going to start with believers, because I think we can agree about some of the problems here.

### **Some of the mistakes of some believers**

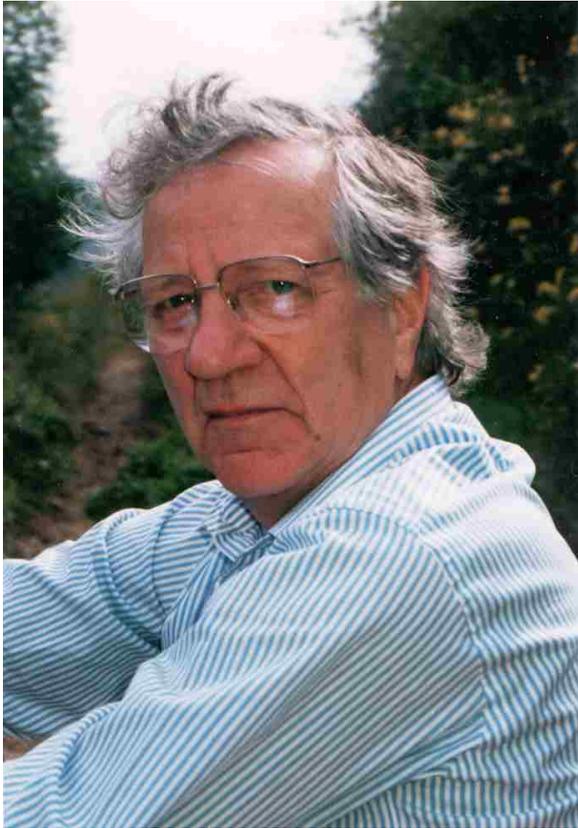
MANY PEOPLE SIMPLY don't understand that the truth or otherwise of a statement or claim can often be tested. Instead they think that making a judgement is just a matter of pulling out a check list of what is true and false, and deciding accordingly. Unfortunately they are often right in this alternative view, but still it is important to know that beliefs can be tested. Let me this illustrate with an anecdote:

Princess Diana visited the Physiology Lab in Cambridge a few years ago because one of the charities she was interested in was supporting a new lab being set up in it. During the course of her visit she mentioned that she had consulted her horoscope that morning, and the stars predicted the success of the lab. But she then apologised, saying "but of course I have forgotten that you scientists don't believe that astrology can predict anything at all", and then added "but I never understand why you believe that the moon predicts the tides if don't believe the stars can predict anything".

Actually I wish we had more such saucy and provocative thoughts from our own students, but at least she knew, or said she knew, that she did not understand the difference between horoscopes and predicting tides. She did rather indicate that academics only accept an attribution of causality if the postulated cause is on a check list of acceptable causes, but the important thing is that the princess seemed to be completely unaware that it is possible to check if predictions are correct or not. We should not blame this on her, for the education reserved in this country for our future princesses probably lacked instruction in testing the accuracy of theoretical predictions. Furthermore we should not really blame this on the educational system either because, until recently, all education would have lacked it.

Probability theory is only a few centuries old, and statistics have only been widely used in the last century — and there are still controversies about its basis among the experts. I was not taught any statistics at school, and thinking statistically was rare among my teachers when I was an undergraduate. It's not surprising that large sections of the educated public have no idea at all about the technical or mathematical aspects.

Of course lack of such academic under-standing does not prevent people making sound and wise judgements from their own experience; indeed for many purposes, using one's own powers of observation and one's native wit is better than statistical testing, because it can be done much more rapidly and applied to a much wider range of possible hypotheses. But there has been a revolution in understanding the basis for judgements of this type. Because of the Newtonian revolution in understanding celestial mechanics Laplace said, about the role of God in the motions of the heavenly bodies, "I see no need for that hypothesis". In the same way there is now no need to postulate any mysterious or hidden processes in making sound judgements: it is a matter of collecting the relevant evidence, estimating prior probabilities, and deciding in accordance with probabilities correctly calculated from this information. There is, however, a snag in doing this that I'll come to in a moment.



Professor Horace Barlow

Many of you are knowledgeable, critical, and take a great deal of trouble to form such critical judgements, so, common though it is, failure to understand the statistical basis for decision making certainly does not account for all belief in the paranormal. I think there is a basic weakness in the formation of all our beliefs, but this applies equally to the sceptical viewpoint, so I want to consider next a very general defect of the sceptic's argument that arises from the snag alluded to above.

### **The sin of the sceptics**

THE SCEPTICS MAIN mistake is their pathetic faith in the validity of the rationalist approach. Reason may be the best guide in an uncertain world, but it does not lead to infallibly correct decisions, simply because we never have enough evidence to reach infallible decisions: you have to fill the gaps with assumptions. I think it has long been recognised that you never have enough evidence for absolute certainty, but the severity of the problem has only quite recently become clear. Let me illustrate with some evidence that has recently come to light through computational efforts to simulate perception.

Almost all of you will have experienced the immediate sense of three dimensional depth that you obtain by looking at a pair of images in a stereoscope. One of the fascinating lessons learned from computational attempts to interpret stereo-pairs is that you cannot reconstruct a 3-D representation from two such images without making quite drastic assumptions about the nature of the 3-D world you are trying to reconstruct, for there is simply not enough information in the images themselves to enable this to be done. In spite of this the brain unhesitatingly provides the assumptions that make it possible, while we are totally unaware of this step. I think this has important implications for many beliefs that we think are based on rational thought: they often require assumptions that cannot be justified by the evidence presented, but which our brains none-the-less automatically adopt, while we are quite unaware of it doing so.

You may say that the assumptions are justified because they do actually apply to the real world. But surely no card-carrying rationalist would like to admit that his beliefs rest on assumptions he does not know about, that he inherited these assumptions with his brain, and that he cannot justify them with the evidence before him.

Not all rationalists make this mistake of overconfidence. I like the story about Niels Bohr and the horseshoe. He apparently had a cottage in the woods where he retired at weekends, and he invited a

visiting American to see him there. When this visitor arrived he was horrified to find a horseshoe nailed to the door for good luck, and he expostulated with Bohr “Surely you don’t believe that superstitious nonsense”. “No”, said Bohr, “but they say it works whether you believe it or not”.

Actually there is, or should have been, a rather interesting change in the sceptics approach over the last decade or two. I can illustrate this by a witty remark once made by William James, whom many regard as the wisest of the founding fathers of Psychology. He said, scornfully “Many people think they are thinking when they are merely rearranging their prejudices”. But he should not have been scornful. Prejudices can be regarded as subjective estimates of prior probabilities, often ones with extreme values close to 0 or 1. Surely it is not foolish to reevaluate prior probabilities from time to time, and indeed we should probably spend more time thinking about this and doing it. The Bayesian revolution means that we have a way of incorporating prior probabilities into our decision making, and I think this makes a big difference.

If someone says to me “I once saw a man walk through a closed door without making a sound”, I don’t now have to call him a liar. I can explain, rationally and I hope inoffensively, that I attach an extremely low prior probability to that actually having taken place, so before accepting it I must examine alternative explanations for what he thought he saw.

Sceptics and believers have widely different prior probabilities about many things. At first this seems no more than a restatement of my starting point, namely that there is an astonishing divergence of opinion about the paranormal. However if we freely indulge in the kind of thought William James was so scornful about, and re-evaluate prior probabilities as the evidence comes in, in true Bayesian fashion, then perhaps we can take a step in tracking down the source of the divergence of opinion, and by re-evaluating the prior probabilities we might even decrease them.

### **The grip of herd instincts and tribal beliefs**

NOW I’VE SO FAR mentioned three mistakes that people make when looking at evidence for the paranormal:-

- failure to realise that the validity of predictions can be tested against experience;
- failure to understand the logic of statistical decision making;
- failure to appreciate the role of prior probabilities in this process and to focus attention on them when appropriate.

I’m now coming to a fourth, which I think is more interesting. It stems from the following fact: humans can, at least to a limited extent, report the reasons for their actions and beliefs to others. This may seem obvious and not very important, but I think it is remarkable, and crucial to the way we form our beliefs. Note to begin with that computers usually can’t do it. They can reason better than us, and guide complex actions better than us, but they cannot usually explain the basis for their actions. In contrast if someone asks me why I bought sausages for supper I can tell them what made me decide on sausages rather than chicken legs, and if I ask the man why he thought he saw someone walk through a closed door, I expect him to be able to elaborate on his experience, and he expects me to expect that and expects to be able to satisfy my request. Of course computers can be programmed to meet such requests, and they actually do so in a limited and often unsatisfactory manner, but it is not an essential feature of human-computer intercourse, as it is of human-human intercourse.

Our ability to report on the causes of our actions to other people, and our frequent use of this ability, means that the mechanisms creating our conscious thoughts must be largely preoccupied with the creation of such explanations, and this is surely likely to interfere with the process of forming accurate and valid beliefs about the objective world.

I’m afraid this is coming dangerously close to the problem of consciousness, and it’s much too late in the evening to go into that. But one thing I want you to notice is that this capacity for reporting the causes of one’s beliefs and actions has a profound effect on our social behaviour. Without it, a meeting like this one would be absurd and could not take place at all. And just try to imagine living in a society where people could not explain the reasons for their actions and did not expect others to be able to do so. Surely this capacity is the basis for our whole social structure and an important factor, maybe the main one, for humans being a very successful biological species and over-running the earth. But what is the relevance of this to belief or scepticism about paranormal phenomena?

I said that we can report on the functioning of our own brains, and I think this not only seems to be true, but is actually true - in part. However I think the accuracy and depth of these reports is very much more limited than it seems to be. Apart from the fact that the mechanisms creating the reports must be

preoccupied with explaining the brain's actions to other people, many of the causes of our actions and beliefs are not accessible to our conscious minds, and therefore cannot be communicated to others. And this is especially true for what might be called tribal beliefs - ones we share with those we grew up with and whose society we seek. Within the tribe there is no need to communicate them, because everyone has them already, so it is not surprising from an evolutionary point of view that we are unable to do so. William James was optimistic in thinking that prejudices could be rearranged, and I was optimistic in likening prejudices to prior probabilities: but we have to admit that some prejudices are simply unchangeable, and this may apply to an uncomfortably large proportion of the prior probabilities we use all the time.

But even this has its cheerful side. It means that one can rationally conclude an argument by saying "I am sorry, we have reached a point of conflict between your prejudices and mine, and if one or other or both of these prejudices are unchangeable, as so many are, then we can proceed no further."

### **How to reach agreement**

LET ME CONCLUDE by suggesting four steps that might decrease the striking divergences of opinion about paranormal phenomena. The first two, appreciating that predictive methods can be tested against experience, and mastering the logic of decision making, have already been taken by most of you, though not by the public at large.

The third is to take a Bayesian view when assessing the truth or otherwise of paranormal phenomena, and be willing to adjust your prior probabilities in the light of experience - and of course I especially commend this course of action if your set of prior probabilities differs substantially from my own!

Finally, we probably have to admit that some of these prior probabilities are determined by tribal beliefs that are virtually impervious to change by evidence. For these I recommend Niels Bohr's attitude, for many false beliefs are innocuous; fierce argument should be reserved for the cases where we are sure that they are not.