Psychic Experiences: Psychic Illusions

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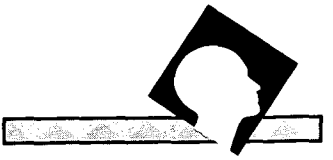
Why do so many people believe in psychic phenomena? Because they have psychic experiences. And why do they have psychic experiences? Because such experiences are an inevitable consequence of the way we think. I suggest that, like visual illusions, they are the price we pay for a generally very effective relationship with a massively complex world.



Psychic experiences are the inevitable consequence of the way we think. They are comparable to visual illusions.

The latest Gallup poll (Gallup and Newport 1991) shows that about a third of Americans believe in telepathy and about a quarter claim to have experienced it themselves. Rather fewer have experienced clairvoyance or psychokinesis (PK), but still the numbers are very high and have not been decreasing over the years. Previous surveys have found similar results and also that the most common reason for belief in the paranormal is personal experience (Palmer 1979; Blackmore 1984).

A "psychic experience" is here defined as any experience interpreted by the experient as requiring a psychic or paranormal interpretation. The question of whether such a hypothesis is required is not addressed. Rather we are attempting to understand how such experiences come about even if no genuinely paranormal phenomena occur. It should be noted that many experimental studies of psi (such as guessing long strings of targets) do not produce psychic experiences in this sense, although they may produce evidence of the paranormal. Others (such as ganzfeld studies and remote viewing, perhaps) do, but the experience is a separate issue from the question of statistical significance or evidence for psi. We are here concerned with experience and belief, not the evidence for psi.

My hypothesis is that psychic experiences are comparable to visual illusions. The experience is real enough, but its origin lies in internal

processes, not peculiarities in the observable world. Like visual illusions they arise from cognitive processes that are usually appropriate but under certain circumstances give rise to the wrong answer. In other words, they are a price we pay for using efficient heuristics.

In the case of vision, illusions arise when, for example, depth is seen in two-dimensional figures and constancy mechanisms give the answer that would be correct for real depth. The equivalent in the case of psychic experiences may be the illusion that a cause is operating and an explanation is required when in fact none is. In other words, psychic experiences are illusions of causality. I shall discuss five types of illusion.

1. Illusions of Connection

Experiences of telepathy, clairvoyance, and precognition imply a coincidence that is "too good to be just chance." This is so whether the experience involves dreaming about a person's death and that person dies within a few hours, feeling the urge to pick up one's partner from the station and in fact he was stranded and needed help, or betting on a horse that later wins a race.

Some people's response to such events is to say, "That was just a chance coincidence"; while others' is to say, "That cannot be chance." In the latter case the person will then look for a causal explanation for the coincidence. If none can be found, a "cause," such as ESP, may be invoked. Alternatively, some kind of noncausal but meaningful connection may be sought, such as Jung's "acausal connecting principle" (Jung 1973).

There are two possible types of error that may be made here. First, people may treat connected events as chance coincidences, thereby missing real connections between events and failing to look for explanations. Second, they may treat chance events as connected and seek for explanations where none is required. In the real world of inadequate information and complex interactions one would expect errors of both types to occur. It is the latter type that, I suggest, gives rise to experiences of ESP.

This is comparable to classical signal-detection theory. Figure 1 shows two distributions. For any given stimulus strength there could be just noise or noise plus a signal. At low signal-to-noise ratios, it is not possible to be a perfect detector. Mistakes are inevitable and may be either in missing a true signal or in thinking there is a signal when there is not. I am suggesting that believers in the paranormal (called "sheep" in psychological parlance) are more likely to make the latter kind of error than are disbelievers (called "goats"). In signal-detection theory, this is described in terms of a variable criterion. As the payoffs change, people may use a different criterion, making more of one kind of error and fewer of another. Their sensitivity (d') may not change when their criterion does (see Figure 2). It is not a question of right and wrong but of which kind of error you would rather make, given you have to make some.

One prediction of this approach is that those people who more frequently look for explanations of chance coincidences are more likely to have psychic experiences. Therefore, sheep should be those who underestimate the probability of chance coincidences.

It has long been known that probability judgments can be extremely inaccurate. Kahneman and Tversky (1973) have explored some of the heuristics, such as "representativeness" and "availability," that people

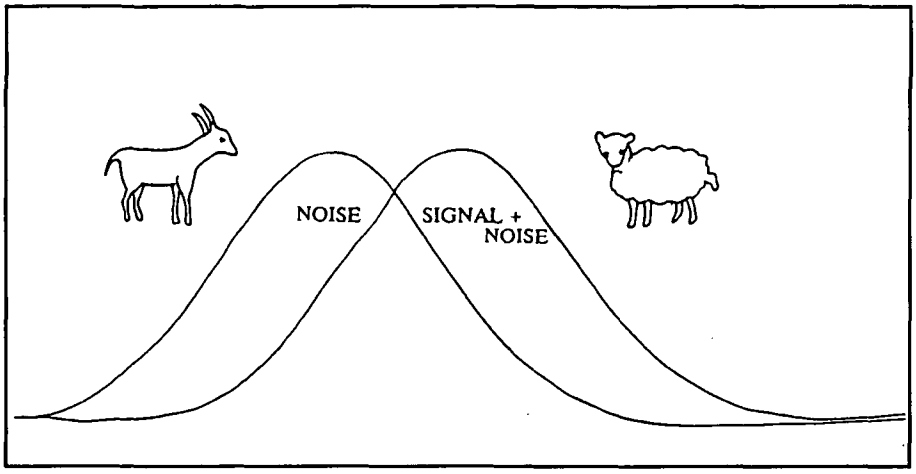


FIGURE 1. Sheep (believers in the paranormal) can be seen as more likely than goats (disbelievers) to decide that a connection is meaningful, a series of events nonrandom, or a form present in ambiguous images.

use to make judgments and that can give rise to serious errors. In addition, people have great confidence in erroneous judgments, even in the face of contrary evidence (Einhorn and Hogarth 1978). Falk and collaborators have investigated what makes people find coincidences surprising (Falk 1982; Falk and McGregor 1983). Adding specific but superfluous details can make coincidences seem more surprising, and things that happen to subjects themselves seem more surprising to them than the same things

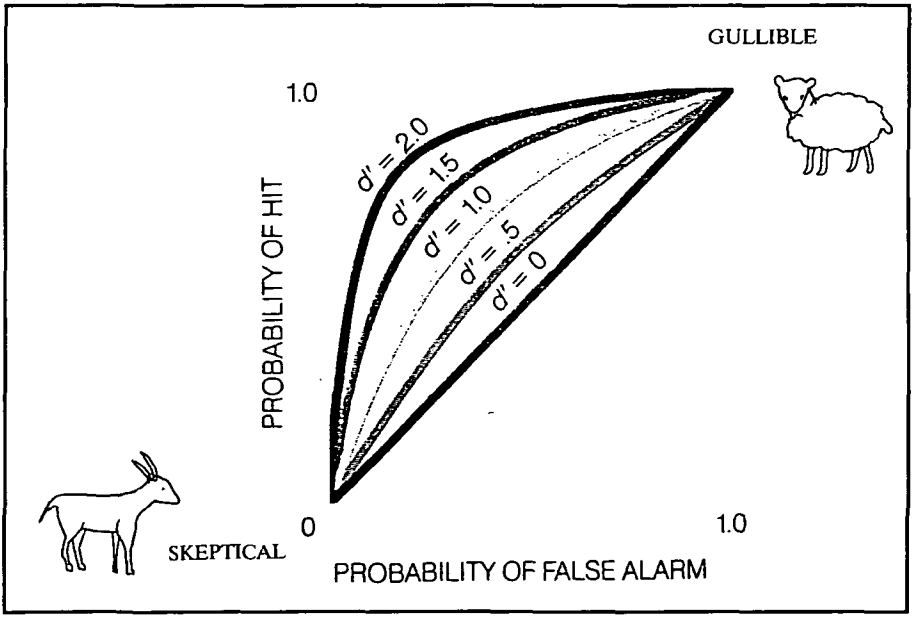


FIGURE 2. In an analogy with signal-detection theory, sheep and goats might have the same sensitivity (d') but differ in criterion.

happening to other people. Diaconis and Mosteller (1989) have reviewed some ways of studying the psychology of coincidences and have provided models for calculating probabilities.

There is, however, little research relating these misjudgments to belief in the paranormal or to having psychic experiences. Blackmore and Troscianko (1985) found that sheep performed worse than goats on a variety of probability tasks. For example, in questions testing for responsiveness to sample size, sheep did significantly worse than goats. The well-known birthday question was asked: How many people would you need to have at a party to have a 50:50 chance that two have the same birthday? (See Diaconis and Mosteller 1989 for a general model for this type of question.) As predicted, goats got the answer right significantly more often than sheep.

Subjects also played a coin-tossing computer game and were asked to guess how many hits they would be likely to get by chance. The correct answer, 10 hits in 20 trials, seems to be rather obvious. However, the sheep gave a significantly lower mean estimate of only 7.9, while goats gave a more accurate estimate of 9.6.

Further research is called for here. It would be interesting to test whether sheep and goats differ in the probability they assign to various kinds of coincidences happening both in laboratory tests and in assessing probabilities of real-world events.

2. *Illusions of Control*

Where the coincidence is between a person's own action and an event external to them, the same effect may be at work but the assumed cause will be personal control; or in the context of psi, it will be PK. This has been called the "illusion of control" by Langer (1975). Sheep have been found to show a greater illusion of control than goats in a psi task (Ayeroff and Abelson 1976, Jones et al. 1977; Benassi et al. 1979).

One might argue that if PK occurs then the perception of personal control in such tasks is not an illusion. This is less likely, given that no PK was found in these experiments. However, to rule out this as an explanation for the difference, Blackmore and Troscianko (1985) used a covert psi task. There was no evidence of PK and a greater illusion of control for sheep than for goats.

3. *Illusions of Pattern and Randomness*

Pattern and randomness cannot be unambiguously distinguished. In a long enough series of events, any combination or string of events is likely to occur by chance. However, the process of extracting pattern from noise is central to all sensory processes. As in the case of coincidences, two kinds of error can occur. One is the failure to detect patterns that are there; the second is the tendency to see patterns that are not there. We are arguing that the second type of error will make people search for a cause and that, since there is no cause, they may turn to paranormal explanations.

This predicts that people who make this type of error are more likely to have psychic experiences (or experiences they interpret as psychic) and hence to believe in the paranormal.

It has long been known that people are bad at judging randomness. In particular, when asked to generate a string of random numbers (subjective random generation, or SRG), people typically give far fewer repetitions of the same digit than would be expected by chance (see reviews by Budescu

1987 and Wagenaar 1972). This is related to the "Gambler's Fallacy," whereby some people think that a long string of reds must be followed by black. ESP experiments are often equivalent to SRG and show the same bias.

Blackmore and Troscianko (1985) found no differences between sheep and goats in SRG for strings of digits 1 to 5 or in the ability of sheep and goats to discriminate random sequences from biased ones. However, Brugger, Landis, and Regard (1990) did. They argued that the same variables affect ESP scoring and SRG in the same direction—variables like task duration, stimulant and depressant drugs, and age. They even suggest that many laboratory ESP findings may be explained by correspondences between target sequences and human biases. Although there is some evidence for this in studies giving immediate feedback (Gatlin 1979; Tart 1979), this cannot easily explain results obtained without feedback and with adequate target randomization.

They tested the relationship to belief in the paranormal in three experiments. SRG was studied in a telepathy experiment with five symbols to choose from. Sheep produced significantly fewer repetitions than goats did. Subjects intermediate in belief gave intermediate repetitions. There was no evidence of ESP occurring and no sheep-goat effect (i.e., sheep did not do better at the ESP test).

In a second experiment, SRG was studied in mimicking the roll of dice (6 choices). The same effect was found. Third, subjects were shown dice sequences with different numbers of repetitions and asked which was more likely to appear first by chance. Of course all strings were equally likely to occur, but subjects

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tended to choose the string with fewer repetitions. Sheep did so more than goats, and the intermediate group was in between. These results appear to be highly consistent and to show the expected greater bias in sheep.

To test this further, Katherine Galaud, at Bristol University, carried out an experiment to compare SRG for different numbers of choices. It might be argued that most people can predict or calculate likely sequences when only two choices are involved but that the real world typically involves multiple choices and low probabilities. Perhaps SRG would be even less random when more choices are possible. Furthermore, differences between sheep and goats may be more extreme where more choices are available. This experiment studied the variation in results with different numbers of choices available.

One hundred twenty students were given the Belief in the Paranormal Scale (BPS) (Jones, Russell, and Nickel 1977), a randomness questionnaire, and a probability questionnaire. The probability questionnaire consisted of three questions based on the "taxi problem" (Kahneman and Tversky 1972) manipulated to give correct answers of 20, 40, and 80 percent. The randomness questionnaire asked subjects to generate strings of random numbers, choosing from the digits 1 to 2, 1 to 4, or 1 to 8, with expected numbers of

repetitions being 12, 6, and 3, respectively. No differences were found between sheep, goats, and intermediates (Blackmore, Galaud, and Walker, in press).

There are two differences between this experiment and Brugger's that might account for the different results. One is that Brugger et al. timed the generation of digits with a metronome. It could be that, given time to think about randomness, people can to some extent compensate for their biases and that untimed and unpressured responses like those in the present experiment cannot reveal them. However, it could also be argued that in real-life situations there is not usually time pressure. Another difference is that they used only one question on ESP to divide subjects into sheep, goats, and intermediates. Further experiments now under way at Bristol are trying to find out if these factors are responsible.

4. *Illusions of Form*

Object recognition can entail the same two types of error. A conservative approach means missing interesting forms that are there. A less cautious approach means seeing things that are not. Possibly, those people who are more likely to see forms when none is present are also more likely to see apparitions or ghosts or to seek paranormal explanations when none is required.

In a second experiment at Bristol, carried out by Catherine Walker (Blackmore, Galaud, and Walker, in press), we tested this and a related question. If sheep are more willing to see forms in noisy displays, is this an error compared with goats, or are goats more likely to miss forms that are present. This is the familiar question of accuracy versus criterion. Sheep might simply have a lower criterion for seeing forms than goats, with the same accuracy for discriminating forms, or they may actually make more errors altogether.

Fifty subjects were given the Belief in the Paranormal Scale and tested on an object-identification task. The stimuli consisted of four sets of seven pictures each; ranging from barely identifiable blobs to clear outline shapes (see Figure 3). The final shapes were two leaves, a bird, a fish and an axe. They were presented for 10 milliseconds each, with a mask of black dots on a white background shown between presentations. The four least identifiable stimuli were shown first, progressing through the series with the four at each level being randomized for order. The subjects were asked whether they could see any shape; and, if they could, what shape it was.

It was predicted that sheep would report seeing forms earlier in the series than goats but would not be any more accurate in identifying the forms. In other words, they would have a lower criterion for identification. This is exactly what was found. BPS scores did not correlate with the number of pictures correctly identified but did correlate closely with the number of incorrect identifications and the tendency to say there was a shape but not identify it. In other words, the sheep were more likely to make wrong guesses but were no worse at detecting the pictures that were there. Goats, although willing to say there was a shape, were less willing than sheep to guess at identifying it.

This confirms that sheep are more likely to claim to see identifiable forms in ambiguous stimuli, but there are many possible reasons for this. For example, creativity may correlate with belief in the paranormal and with tendency to see forms. Whatever the

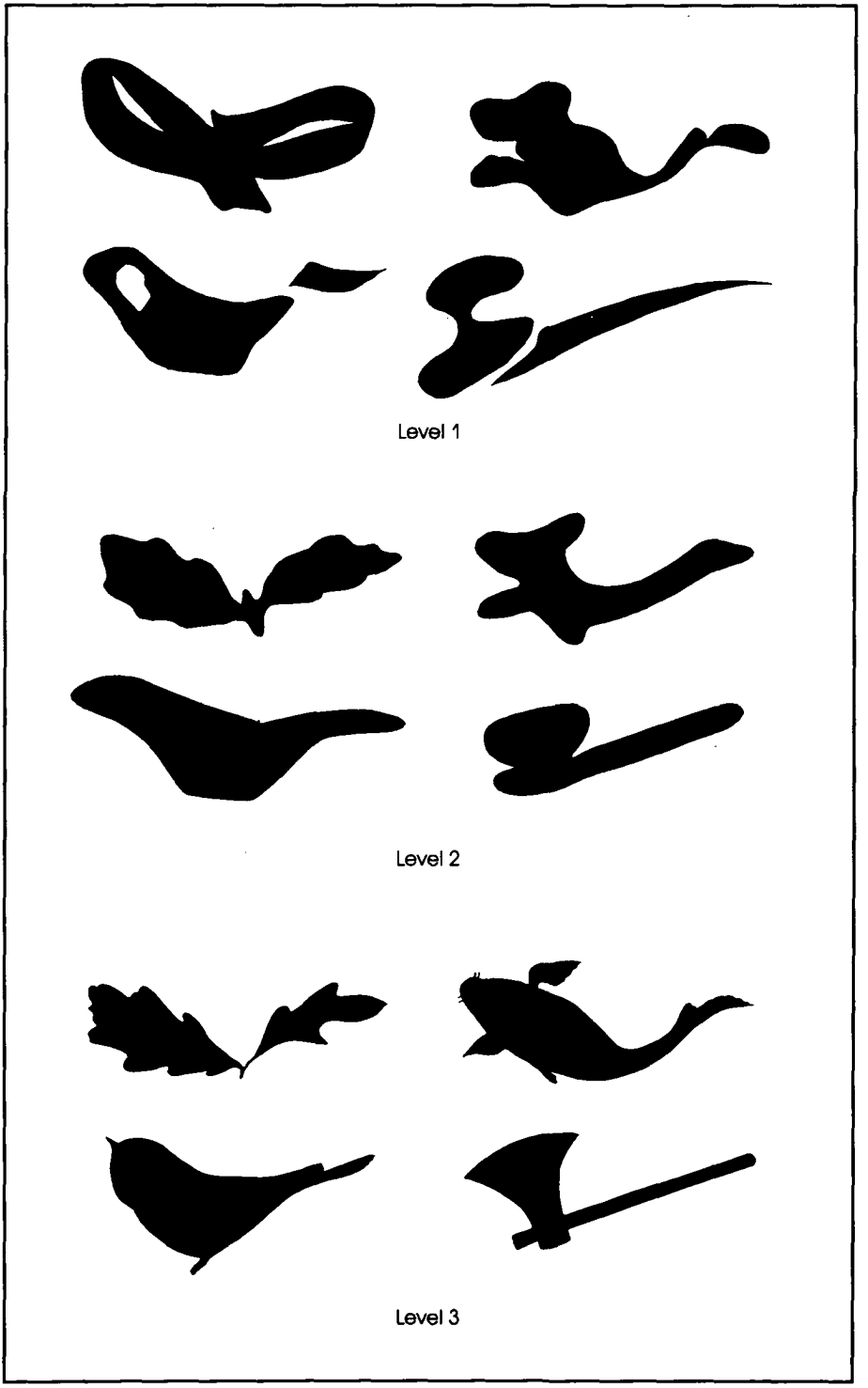

FIGURE 3. Examples of stimuli taken from Blackmore, Galaud, and Walker, in press. For each of the four forms there are seven levels of detectability. Three levels are shown here.

"Human beings, in trying to make sense of the world, must make mistakes. They miss things that are there and invent things that are not."

origins of the tendency, the findings fit with the idea that paranormal belief may be encouraged in those who more often see form in ambiguity.

5. *Illusions of Memory*

In addition to all the processes above, selective memory may make coincidences appear to occur more often than they do in fact occur. Hintzman, Asher, and Stern (1978) demonstrated selective remembering of meaningfully related events. Fischhoff and Beyth (1975) showed that people misremember their previous predictions to conform with what actually happened.

We might predict that people who are particularly prone to such memory effects are more likely to seek paranormal explanations and therefore to have psychic experiences and believe in the paranormal. If so, these effects would be greater for sheep than for goats, but this has not been tested.

The popularity of fortune-tellers may also depend to some extent on selective memory. Selective recall of meaningful coincidences and true statements about the person will add to the Barnum effect, or the tendency to accept certain kinds of personality readings as true of oneself but not of others (Dickson and Kelly 1985). If this is so we would expect the people who frequent fortune-tellers to be more prone to this kind of selective memory. Again this has not been tested, but a project is now underway at Bristol to investigate it.

Conclusions

Five types of psychic illusion have been explored. They may be the basis for many spontaneous psychic experiences that generate belief in the paranormal. The tendency for sheep to show many of these effects to a greater extent than goats tends to confirm this hypothesis.

This conclusion does not apply to many kinds of psi experiments, especially those giving no feedback and using sound randomization techniques. It therefore has no bearing on the issue of whether any laboratory experiments provide evidence for psi. Also in life outside the lab these processes may operate to produce psychic experiences and belief in the paranormal quite independently of whether genuinely paranormal phenomena ever occur.

These findings are therefore not so much evidence against the occurrence of paranormal phenomena as a suggestion that we should expect to find a high incidence of psychic experiences and widespread belief in the paranormal whether or not psychic phenomena ever occur.

The Nature of Skepticism

The whole basis of this approach is that human beings, in trying to make sense of their world, must make mistakes. On the one hand, they miss things that are there and, on the other, invent things that are not. This applies as much to simple signals as to complex correlations and to scientific theories as well as to perceptual ones. I have tried to show some of these in Figure 4.

In everyday life the equivalent of the sheep is someone who will see something interesting in everything. The problem is that they may be seeing things that are not there. The

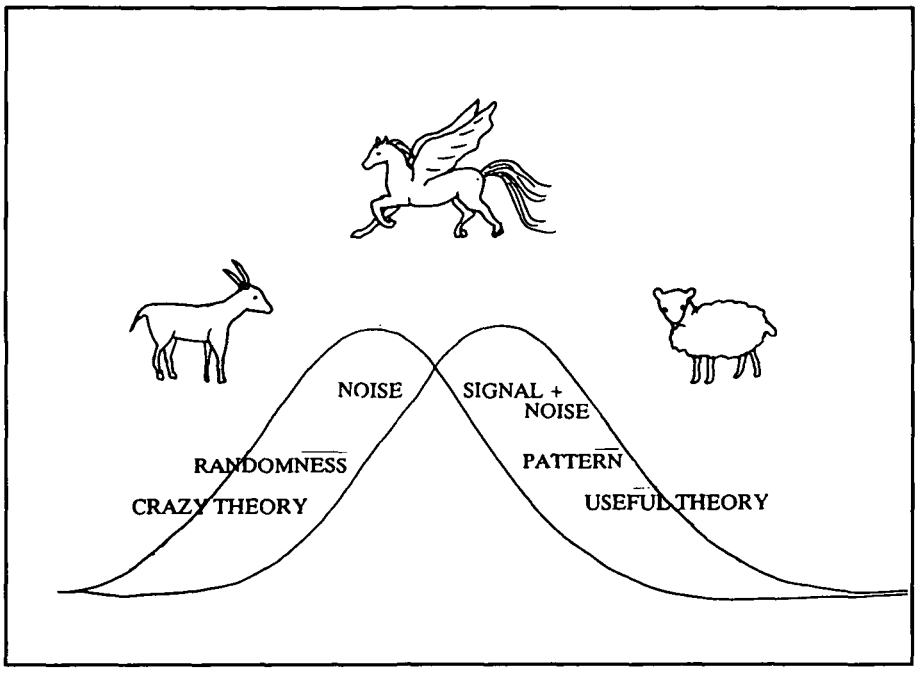

FIGURE 4. The true skeptic is not entrenched at one end of the spectrum.

equivalent of the goat is someone who needs lots of evidence before seeing or experiencing anything. They are likely to miss out on a lot of fun!

Similarly, in science the equivalent of the sheep is someone who enjoys every crazy theory and follows every faint lead. The problem is that they may easily be following a false lead. The equivalent of the goat is someone who takes no interest in wacky theories and sticks only to the conventional. They may be safe but are likely to miss the really exciting new theory when it comes along.

You takes your choice and with it the consequences—fun or boredom, fear of failure or love of novelty. But what of skepticism? I do not think the true skeptic is the goat. The true skeptic does not always stick to one end of the spectrum but can shift criteria as the circumstances demand. The true skeptic is as skeptical of the goat who denies everything as of the sheep who embraces everything (as is John Palmer's [1986] "progressive skeptic"). True skeptics can drop their fear of looking silly or curtail their love of the novel as appropriate; can apply caution or stick their neck out according to their understanding of the issues. The true skeptic is not the ultimate goat but something more like a flying horse.

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