

PSI IN SCIENCE

by SUSAN BLACKMORE

What follows is the prize essay in the Imich competition for the best answer to the question: 'What more does the scientific establishment require to accord parapsychology full recognition?'

—Editor

INTRODUCTION

Parapsychology is a small field, with little funding and few researchers. Some argue that, if only the subject could achieve 'full recognition' by the scientific establishment, then all would be well and parapsychology could progress to its rightful place within science. The lack of recognition is often blamed on prejudice or a closed-minded attitude amongst scientists themselves and the question is asked—what more is required of parapsychology?

I think this question hides some misconceptions and I would like to explore these further.

First it is assumed that there is a 'scientific establishment' consisting of more than the sum of scientists and their work.

Second it is assumed that that establishment can choose to accord or not accord recognition to areas of science.

And third it is assumed that parapsychology does not have the recognition that other sciences have.

I shall question all of these assumptions. In the process I shall argue that it is funding which is crucial to the progress of any science and parapsychology has singularly failed to attract stable funding for its work. I shall discuss what it is about good scientific research which attracts such funding and ask why parapsychology has failed to do so. Only then can I return to ask the question in a slightly different way. 'What more do the funding bodies require before they will give parapsychology some money?'

THE SCIENTIFIC ESTABLISHMENT

Science is a process. Its key feature is that it deals with observables and their relationship to theories. Theories are proposed, tested, modified and tested again. What distinguishes science from other endeavours is its insistence on looking at the evidence. However, even this distinction is not absolute. The demarcation problem between science and pseudoscience has long been an active question and has often been applied to parapsychology (see e.g. Kurtz, 1985). Also no-one would propose a strict border between science and mathematics or even science and philosophy. So science proceeds through the work of thousands of scientists, none of whom could say precisely what it is.

These scientists create an infrastructure. There are committees and organizations, journals and conferences. But there is no 'establishment' outside or beyond the scientists themselves. In this sense the 'scientific establishment' cannot choose or not choose to accord recognition to any science. If we are to ask about recognition it must be recognition by individuals and groups within this changing and developing system.

Perhaps we should ask from whom we want this recognition. I would say from scientists in general, from the organizations which they form, from the media and also from the general public who, to an extent, also define what is considered as science.

Next we must ask what sort of recognition we require.

WHAT CONSTITUTES RECOGNITION?

There are several things which could be considered signs of recognition—things which most areas of science achieve and which are taken both by scientists and by the public as signs of being part of science. Although this is not an exhaustive list (indeed none is possible) it might include the following:

1. *Peer-refereed journals.* Publishing the results of scientific work is crucial to the progress of science and peer-refereeing is crucial to publishing. This is because science progresses by criticism. However good your experiment or piece of research, others can probably find holes in it or give your results a different interpretation. When a piece of work is submitted to a scientific journal it is usually sent out by the editor to two or three referees. They are other people working in the same field who have a good knowledge of the area. They are not paid for this work, it is considered part of the process of doing science. They assess the merit of the work, write a critical statement about it and recommend whether it should be published as it is; with minor changes, major changes or not at all. The editor then takes the referees' comments into consideration in making the decision. This way nothing gets published which has not been through at least some peer review.

Journals vary a great deal. Authors even have to pay to publish in some of them (and none pay the authors!). But the critical point, as far as the scientist is concerned, is to publish in a refereed journal.

Parapsychology has four refereed journals. They are the *Journal of the Society for Psychical Research* (our own journal), the *Journal of the American Society for Psychical Research*, the *Journal of Parapsychology* and the *European Journal of Parapsychology*. Parapsychological research has also been published in many other refereed journals, some of them of high standing, such as *Nature* (e.g. Tart, Puthoff & Targ, 1980), *Science* (e.g. Price 1955), *Brain and Behavioral Sciences* (e.g. Rao and Palmer 1985) or *Perceptual and Motor Skills* (e.g. Rao, 1979). To this extent it has the recognition accorded other sciences.

2. *General Science Magazines.* In addition to refereed journals other sciences are reported in magazines like *New Scientist* or the *American Omni* which publish general articles about science but not primary research reports. Articles and book reviews on parapsychology have been published regularly in both of these. To this extent parapsychology is considered a science by the editors and readers of general science magazines.

3. *The Media.* To a large extent public perception of science is dependent upon television and radio coverage of its work. In this country important science programmes include *Science Now*, and *All in the Mind* on Radio 4, *Horizon*, *Antenna*, and *QED* on BBC 1 and 2 television and *Equinox* on Channel 4. Parapsychology has been featured in all of these programmes (e.g. *Horizon* September 1983,

Antenna March 1988, *All in the Mind* February 1990, *Science Now* April 1990, *Equinox* November 1990) in addition to having many programmes devoted exclusively to it. To this extent it is treated as any other science and accorded the same recognition.

4. *Organizations.* Many areas of science have their own professional organizations, such as the British Psychological Society, the British Medical Association, and so on. These arrange meetings, publish books and journals and keep researchers in touch with each other. They also aim to keep standards high and sometimes to set ethical criteria for members' behaviour and research.

Parapsychology is no different. The Parapsychological Association is its professional body. It fulfils all these functions and has about 250 members, who have to meet certain criteria of publication or research to join.

Perhaps an even more important consideration is that most such scientific organizations are also members of general science groups such as the American Association for the Advancement of Science (AAAS) or the British Association for the Advancement of Science (BAAS). The PA, admittedly amidst controversy, was admitted to membership of the AAAS in 1979.

5. *Conferences.* A lot of scientific work is done through conferences. Here researchers report their ideas, methods of research and findings to each other. Conferences are a forum for information and criticism (and much faster than can be done through journal publication). Like scientific papers, presentations at scientific conferences are refereed by others in the field, as compared with business conferences or events like weekend courses or training conferences.

Parapsychology has several scientific conferences of this kind. Most important is the Annual Convention of the Parapsychological Association (usually referred to as the PA Convention). This usually takes place in the United States with one conference in four being held in Europe. Papers are refereed and abstracts published in the yearly *Research in Parapsychology*.

There are also general science conferences where papers from many scientific disciplines are given. An example is the Annual Conference of the BAAS; an opportunity for British scientists to present their work to the public and the media. Parapsychology is often represented at such conferences. For example, last year the BAAS invited myself and Dean Radin to present an evening session on the arguments surrounding the recent evidence for psychokinesis. Parapsychology is clearly considered by the organizers of this event to be a legitimate scientific area.

6. *Departments in Universities.* Most of the larger areas of science have whole departments devoted to them. Many areas are really subsets of larger ones and their research takes place within those departments—such as psycholinguistics as part of a psychology department or neuroanatomy as part of anatomy.

Parapsychology is the same. In this country there is one Chair of Parapsychology, at Edinburgh University, and other researchers who work within psychology, electrical engineering, or criminology departments.

It has to be said, however, that parapsychology has very few researchers in Universities, or indeed anywhere else. This is related to the final point, which concerns funding.

7. *Science Funding.* Most scientific research is funded by the Universities (through the University Grants Committee) or by the Research Councils. Here

we see what is, I think, the only example of parapsychology not being afforded the same recognition as other sciences. It does not attract such funding.

Here at last we come to the crux of the question. Why does parapsychology get no money?

Let us consider what are the criteria for funding. A good example is the Research Councils. The Research Councils publish a booklet each year which explains how to apply for grants and what criteria are applied. Again, applications are refereed by other workers in the same field. The booklets state that applications are scored as alpha, beta or reject. To be given alpha by the Economic and Social Research Council the research must be 'of such merit that it is likely to make a significant contribution to the subject' (ESRC, 1988, p. 7). Similarly the Medical Research Council defines alpha research as

'Research of high scientific merit, i.e. of such novelty or timeliness and promise as is likely to make a significant contribution to knowledge and/or clinical practice' (MRC, 1988, p. 23).

I think this gives us a clear yardstick by which to ask what more is required of parapsychology. Let us then ask:

- (a) Does research in parapsychology fulfil these criteria and if not why not?
- (b) What more could it do to fulfil them?

Let us consider each in turn.

Novelty

Here we can see immediately the nature of parapsychology's problem. There is very little in parapsychology that is truly novel. I do not mean that no progress is made but progress is extremely slow. Indeed I have argued elsewhere (Blackmore, 1988) that very little progress has been made in over 100 years of research. Without progress there is no worthwhile kind of novelty.

I would like to compare parapsychology with three other areas which have some similarity with parapsychology. That is they are concerned with human experience and have previously been thought to lie outside the borders of usual science or psychology. They are lucid dreaming, the role of consciousness in deliberate spontaneous actions and the effects of meditation.

Lucid Dreaming

A lucid dream is one in which you know at the time, during the dream, that it is a dream. You seem to be quite conscious and aware and yet still deeply asleep. The dream seems then to be under your control. A breakthrough occurred in this area in 1978 when, more or less simultaneously, Keith Hearne in England and Stephen LaBerge in California, discovered a way to signal to the outside world that a person was dreaming (Hearne, 1978; LaBerge, 1985). The problem was always that lucid dreamers were convinced they were conscious in their dreams, but dream researchers said they could not be and that they must be having the experience as they woke up or in the hypnagogic state. Signalling cannot be done by speech or even waving a hand or foot because all the skeletal muscles are paralysed in dreaming sleep. An exception, however, are the eye muscles. These are active and moving rapidly in REM (rapid eye movement) sleep in which

dreams mostly occur. The trick was to signal by deliberate side to side movements of the eyes. These could then be recorded on a polygraph.

Once this had been achieved the basic point was proved; lucid dreams do occur during REM sleep and not the waking state. But, and perhaps much more importantly, this made lucid dreams into a new research tool for answering questions about dreams and sleep in general; questions like 'How long do dreams last?' 'What parts of the brain are active when doing different tasks in a dream?' 'Do eye movements in sleep correspond to what is happening in the dream?' and even 'Do dream orgasms correspond to real ones?'! All these questions and more have been answered by the new techniques arising out of lucid dream research (see e.g. Blackmore, 1990; Gackenbach & LaBerge, 1988; LaBerge, 1985). There is plenty of genuine novelty here.

Consciousness

A fascinating question for anyone interested in consciousness has been what role it plays in the initiation of spontaneous actions. Is it necessary? Does a conscious decision, as it appears to introspection, initiate the series of events leading to action? This is an empirical question (or at least has finally become one) and has been addressed by Benjamin Libet (1985) at the University of California at San Francisco. He asked subjects to flex their wrist or fingers at any time of their own choosing, i.e. spontaneously. With electrodes on the scalp he was able to detect the 'readiness potential' which has long been known to precede physical movements such as these. His question then was, does the conscious decision to act come before or after the start of the readiness potential? He timed this moment by asking subjects to report the position of a revolving dot at the time they decided to act. In this way he showed that the readiness potential comes first and is followed by the conscious decision, i.e. it is not the conscious decision to act which initiates the series of events. This work is controversial, like parapsychology, but the difference is that it makes progress. A whole series of papers in *Brain and Behavioural Sciences* have been devoted to the issues involved. Whatever verdict scientists later give on this work it certainly shows extraordinary novelty in addressing a question which was previously outside of empirical science.

Meditation

My third example is research on meditation. Many claims have been made for the effects of meditation, from its powers to reduce stress and transform perception to its ability to lead to enlightenment. There has been an enormous amount of recent research (see West, 1987 for several reviews) which has clarified some of the issues. Evidence suggests that meditation is no better and possibly even worse than other relaxation techniques for reducing stress. If people want to meditate it should not be because they want to cope with stress, rather the reverse that they want to become more alive and alert to everything in the moment. The search to understand whether this means anything has led to genuine novelty in research and unexpected findings.

Timeliness and promise. Can timeliness ever be said of a subject which makes so little progress? If you read research reports in parapsychology from 20 years ago you will not be amazed by the transformation in the subject. Important as they

are to parapsychology's database, the experiments of Helmut Schmidt (1974) carried out over 15 years ago are not so very different from the latest ones, although the controls used have become much more stringent (Schmidt, Morris & Rudolph, 1986). Experiments on psi in the ganzfeld began nearly twenty years ago (Honorton & Harper, 1974). Since then there has been detailed and useful debate about the method (see the whole issue of *Journal of Parapsychology* March 1985) but in other ways nothing has changed. New experiments ask slightly different questions about what makes for good and poor performance but basically they are using the same methods in very similar ways (e.g. Stanford, Frank, Kass & Skoll, 1989). The attempt at Princeton to automate the entire procedure has been very important for convincing some critics and the automated procedures are producing highly significant results (Honorton *et al.*, 1989). But this important success does not change the point I am making, that there is little timeliness and promise about a subject whose methods change so very slowly. The methodological problems besetting research in parapsychology are the same ones as before; sensory leakage, randomisation of targets, ensuring the hypotheses are specified in advance and trying to guard against experimenter or subject fraud well enough to persuade at least most of the critics that cheating is not a useful accusation to make.

By contrast my three chosen areas have been totally transformed. Lucid dreaming has gone from an obscure fringe interest of a very few psychical researchers to a topic contributing to mainstream sleep research. Research on the role of consciousness has only just begun. The word itself was more or less exhumed from psychologists' vocabularies in the hey-day of behaviourism but now it is a rapidly expanding and popular area. Finally, research on meditation, which began in the 1950s with electrophysiological research on yogis (e.g. Bagchi & Wenger, 1957), is now an expanding area with publications in many different psychology journals (see West, 1987).

Significant contribution to knowledge

Here I suppose we finally come to the nub of the problem. What would it mean for parapsychology to make a significant contribution to knowledge? What more would it have to do to achieve that—for I think my arguments lead me to conclude that this is what is at stake.

The universe is full of possibilities, at least from the point of view of any observer. Knowledge is what narrows down the possibilities; to find out that some things are not so; that some theories don't work; that certain things will not happen. This has been more elegantly put by Ralph Estling (1989).

The difference between science and codswallop is real, if not always that evident. Science is what impels us to find out if something might be or clearly isn't the case. Codswallop is what tells us that things can just as easily be one thing or another and there's no telling which and so we might just as well forget about it and believe whatever pleases us the most.

There has been nothing significant found in parapsychology which contributes to knowledge in that sense. The basic finding (if it is valid) of a paranormal effect sounds mind-boggling. It opens up untold possibilities but it does not shut any down. It appears at first sight to threaten the whole of physics, to make

double blind, or indeed any controlled experiments impossible and to undermine the basis of all the assumptions that scientists regularly make. Parapsychology provides some apparent evidence for this but what difference does it make? Certainly it does not make us give up our assumptions—they work pretty well. Nor does it make us stop doing double blind experiments—they are effective for disentangling the effects of a drug from that of a general placebo effect (for example). Indeed this finding, of an anomaly, does not change anything we do. It appears to make all sorts of miraculous sounding things possible. But it does not make anything impossible (or even less likely). Therefore, as far as science is concerned it carries no useful information; however wildly disturbing the basic claim appears to be.

What about more specific findings? The sheep-goat effect (Schmeidler & McConnell, 1958; Palmer, 1971) appears to be of interest in showing that the subject's belief affects their psi scores. But what effect does this have on anything else? What theories or possibilities does this rule out as far as any other scientist is concerned? No psychologist will abandon a trait theory of personality because of it. None will start trying to control for the effects of the subject's belief in every experiment. Rightly or wrongly they would see no benefit in doing so. I would predict that if they tried it would not make the experiments any more reliable.

The decline effect is another often-quoted finding in parapsychology. Does it help any other scientist to know that psi scores have often been found to decline from the start of the experiment or run? I don't think so. I don't think it would make any difference to learn that psi ganzfeld scores are claimed to correlate with extraversion. If it helped in understanding the basis of extraversion by ruling out one theory instead of another—or if it led to new predictions about personality—then it would be different. But so far this has not been the case.

For parapsychology to make a significant contribution to knowledge it will have to find out something which actually changes the way other scientists do their experiments or form their theories. It will have to find out something which other scientists actually want to know, something which cuts down the vast universe of apparent possibilities and guides us towards the genuinely likely ones.

Can we think of any examples? Here let me speculate wildly about what might conceivably be found in future research.

What if research in parapsychology found that when two lucid dreamers both claim to be in the same state together they can communicate paranormally, but when only one is they cannot. This would not only be an interesting finding in its own right but would hold out hope of an objective measure of the lucid state. In other words you could test someone's claim to be lucid by testing them for ESP with another lucid dreamer. Since we have no objective measure of whether someone is actually lucid (nor indeed whether they are having an OBE or even a mystical experience) this would make an enormous contribution to research.

What if a parapsychologist developed a scale of levels of consciousness and then showed that at a certain point in the scale psychic phenomena appeared. The psychic phenomena would then become an indicator of that type of awareness. It might even be possible to apply the test to animals or even computers and so find out whether they were conscious or not (a question which appears completely unanswerable at the moment).

What if research on psi in meditators found that most had no psychic powers, more advanced meditators were able to lift their own body by levitation but not to affect anything else, the next most advanced group could do ESP and that a very few could do PK on other objects as well. Such measures, if reliable, might make possible an objective scale for progress in meditation which at the moment we do not have. Most researchers on meditation are studying psychological changes and consider the search for psychic signs a side-issue. Research such as I have imagined would prove them wrong.

These are fanciful ideas but they all illustrate ways in which parapsychology might contribute to other areas of science. I would suggest that if findings like this ever are made then parapsychology's role will change dramatically.

Then the fellow scientists judging the novelty, timeliness and promise of their proposals will want that research to be done and will recommend funding it. Only then will our subject have done enough to merit the funding it so badly needs. Only then will it really feel, whatever the truth of its position now, that the scientific establishment has accorded parapsychology full recognition.

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Below we publish the references which should have been appended to the above article, which we printed in our April issue. We apologise to the author and to our readers for this oversight.

—Editor

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