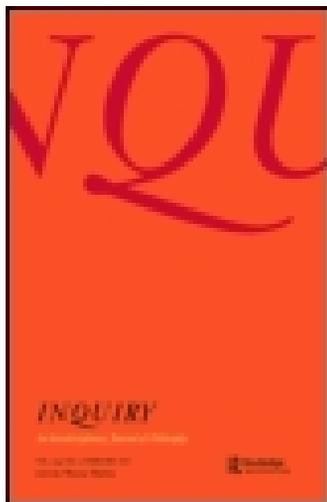


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Robert L. Morris ^a

^a Department of Psychology , University of Edinburgh , 7 George Square, Edinburgh, EH8 9JZ, Scotland

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Parapsychology and the Demarcation Problem

Robert L. Morris
University of Edinburgh

Many writers have attempted to develop criteria to demarcate between competent science and pseudo-science. Such attempts can be aimed at sizeable, organized endeavours, such as mesmerism and astrology, or at the level of individual practice. The latter is seen by some, such as Lugg, as more likely to be feasible and useful. This paper argues that parapsychology, due to its complexity and diversity, illustrates some of the problems of attempting to develop demarcation criteria for extensive endeavours. It is also suggested that parapsychology may offer a productive ground for testing whether demarcation criteria can be successfully applied to practices in respect of predicting which will succeed and which will not. The conclusion is that, for demarcation efforts to be useful, they should pass some of their own criteria, such as falsifiability.

I. The Demarcation Problem

The demarcation problem, most broadly phrased, asks whether we can demarcate between those areas of endeavour that represent productive scientific practice, the sciences, versus those that merely caricature the sciences and are actually bogus endeavours of no scientific value, the pseudo-sciences. Phrenology and mesmerism are widely cited examples of the latter. The demarcation issue took shape as it became increasingly evident that there were many such endeavours, often well organized and with many intelligent adherents, that seemed to mimic science in superficial ways, generating concepts, findings, and practice, but which at the same time seemed not quite right and were eventually discarded by all but the most faithful as irrelevant to the growing corpus of knowledge being developed by other disciplines. The problem was not trivial. During their times of extensive acceptance, these 'pseudo-sciences' could consume considerable material and human resources; they could serve as a source of 'noise' to mainstream concept development; and could result in occasional social, psychological, and medical harm. It was hoped that such waste could be avoided by devising ways to characterize pseudo-science, demarcating it from real science, so that the former could be spotted in its earlier stages and dealt with before the harm became too great. It was also hoped that by searching for demarcation criteria, we would further our understanding of the scientific process itself.

Approaches to demarcation have varied. Some such as Karl Popper's emphasize single criteria.¹ Popper, at one time an associate of the psychoanalytic theorist Alfred Adler, became disaffected with Marxist economic theory and Freudian and Adlerian psychoanalytic theory, because they always seemed to account after the fact for whatever happened, and thereby had no selective predictive value. This, in Popper's view, decreased their usefulness and scientific value. At the same time, Einstein's relativity theory had been propounded along with specific hypotheses that could be tested, such that if they were not verified, then Einstein would himself admit that his ideas were wrong or at best incomplete. Thus Popper came to develop the demarcation criterion of falsifiability, that a set of ideas could be regarded as adequately scientific if in fact they led to hypotheses capable of being falsified. Such single-criterion solutions to demarcation developed problems, however, in the form of counterexamples drawn from areas of obvious real science.

At the other end of the scale, philosophers such as Mario Bunge argue for multiple criteria,² with demarcation not exclusively tied to any one of them. Bunge proposed eight criteria: (1) Use of a subjectivistic theory of knowledge, with some aspects accessible only to the initiated; (2) a modest formal background, employing little mathematics or logic; (3) production of hypotheses that are both untestable and in conflict with a larger body of knowledge; (4) use of methods that are neither checkable by alternative methods nor justifiable in terms of well-confirmed theories; (5) absence of overlap with other fields of research; (6) no specific background of well-confirmed theory; (7) presence of an unchanging body of belief; and (8) a world-view admitting elusive immaterial entities. Such lists of criteria have also failed to win general approval, with disagreement over the applicability of the individual items, availability of counterexamples to each, and concern that such a complex list is not effective in sorting major endeavours into the distinct categories of science and pseudo-science. Although Alcock has tried through specific examples to make a case that parapsychology meets all eight criteria,³ his arguments have been challenged by others more familiar with parapsychological research.⁴

Recently, writers such as Andrew Lugg⁵ have argued that emphasis should shift from demarcation of large-scale conceptual and methodological endeavours to a consideration of the specifics of how people arrive at various conclusions, e.g. their practices. As Lugg would say, practices become constellations of problem-solving techniques, standards for appraising claims about the world, and criteria for evaluating solutions. Such a shift in emphasis from categorizing complex endeavours to evaluating specific practices avoids many of the problems inherent in attempts to sort such endeavours into two mutually exclusive piles. It acknowledges that many areas of science, while they have occasionally resorted to sloppy

practice and weak concepts, have nonetheless evolved bodies of knowledge that are now quite commonly accepted. It also allows for the fact that good scientific practice may occasionally be deployed in areas that will eventually come to be regarded as a waste of time. In any event, if we are evaluating a new area of research, we may well find that some aspects will be fruitful and others not. By focusing on individual practices we can be of help to an endeavour while it is in progress, perhaps enabling it to clarify and improve its component practices. This would seem more productive than the process of attempting to form an overall judgment on a whole grouping of practices, assigning the entire endeavour to one of two value-laden categories, real science or pseudo-science. If we do the latter, we will inevitably make errors at the level of practice and may prematurely take what we consider the failure of an important part to be sins of the whole.

II. Parapsychology as a Candidate for Demarcation

Parapsychology is now a sizeable endeavour with a history of concept, method, and findings, and with an abundance and diversity of practices as defined above by Lugg. Like most areas, its participants can argue over the wording of its definition. A reasonably representative definition of parapsychology, one espoused by this writer, is: 'the study of apparent new means of communication, or transfer of influence between organism and environment.' Thus formulated, it is charged to investigate a wide array of phenomena and claims and can be regarded as an interdisciplinary problem-area. Yet it has often been identified strongly with various beliefs, such as a belief in survival of bodily death, that were of central importance to its early investigators. As a result, there has been quite a mix of people involved with parapsychology, ranging from those primarily interested in the specifics of the anomalous claims and experiences themselves, and the data bearing on them, to those who start with a theory or belief and seek validation for it. Since parapsychology has been linked to certain beliefs or claims about its theoretical implications, it has promoted interest by many who hold counterbeliefs, or who espouse theories endangered by parapsychology's claimed implications. As a result, there has been much debate and dispute, often excellent, often of rather poor quality. Dispute ranges from the purely methodological to basic conceptual issues. Charges and countercharges abound, about who is doing good science, bad science, proto-science or pseudo-science. Thus parapsychology would seem to offer many examples for considering the viability of the demarcation concept.

Since I am not at all trained in the philosophy of science, it is with considerable hesitation that I venture beyond the rather general statements made above. 'Best to let the experts handle the details', perhaps. In the

spirit of adventure, however, I will offer some ideas that have occurred to me in reflecting on parapsychology's relevance for demarcation criteria, and vice versa.

III. Demarcation at the Level of Whole Endeavour

In my opinion, parapsychology supports the notion that demarcation criteria are better applied at the level of practice than of an entire endeavour, unless that endeavour involves very few people and very few practices. Consider the difference among three sets of claims that could be made regarding parapsychology: (1) Parapsychology is a science/pseudo-science; (2) parapsychology falls within the category of science/pseudo-science; and (3) parapsychology often practices science/pseudo-science.

The first claim, dealing with whether parapsychology is a science or a pseudo-science, seems to assume that it represents a fairly well-organized, cohesive, integrated, and definable endeavour, both institutionally and in its practices. Yet such organization and cohesion seem at present to be lacking. Parapsychology is not easily defined by a community of practitioners. There is an international professional association, the Parapsychological Association, which only admits to membership those judged by its governing body to be actively involved in the advance of parapsychology. This organization includes individuals with a wide range of attitudes and beliefs (including strong scepticism), areas of expertise, and levels of involvement. Some major researchers, especially from physics and engineering, have not joined. The same could be said of groups with less restrictive membership criteria, such as the Society for Psychical Research and the American Society for Psychical Research. Some organizations are advocacy groups, or groups sharing a fairly cohesive philosophy, such as the College of Psychic Studies. Conversely, there are counteradvocacy groups such as the Committee for Scientific Investigation of Claims of the Paranormal, whose membership includes people who have written extensively about parapsychology, almost always from a critical or debunking point of view. They, too, regard themselves as expanding knowledge and understanding of the claims of parapsychology. This diversity of people share little in common and do not communicate through a shared social network. Their practices vary greatly in sophistication, representing a continuum from experimentalist to lay person. Each could be regarded by some as at least a part-time practising parapsychologist, yet many would deny it. It is hard to regard parapsychology as a community with consensually-shared criteria for who (and whose practices) should count, in any evaluation of whether parapsychologists in general practice science or pseudo-science.

One could, instead, look for cohesion and organization in terms of definition of problem area. I have given my own definition above, or at least an abbreviated but representative version thereof, yet there are many who would disagree. For some, the problem area is defined empirically – certain classes of events appear to take place which are not readily explained by our current models of knowledge. The kinds of events of importance to a specific practitioner can vary considerably, e.g. in terms of whether or not an organism must be involved. Or, the problem area can be defined phenomenologically, in terms of classes of experiences reported which are not readily explained. Once again, there can be variation among practitioners in the kinds of experiences considered to be within the domain of parapsychology, e.g. some would include a variety of transpersonal experiences and others would not. Both of these groups of practitioners would be defining parapsychology in terms of the events they seek to explain, without necessarily prejudicing the nature of the explanation to be sought. Yet a third group of practitioners may be more theory-driven, starting with a set of concepts or beliefs of importance to (though not necessarily ‘believed in’ by them), and proceeding to collect observations that they interpret as supporting or disconfirming these. Within parapsychology, several clusters can be identified, which may shade into each other: (1) Synchronistic models, which posit that the universe (or parts thereof) has some sort of deep structure which impels it to produce patterns which are then noticed and labelled synchronistic events; (2) parapsychical models, which posit that new principles of physics are at work which, when discovered, will integrate parapsychology with an expanded version of present-day knowledge; (3) metaphysical models, which posit the existence of some aspect of mind that transcends physics and biology, in some versions capable of existing after bodily death, and which is responsible for the mediation of psychic events, or which posit the existence of suprahuman intelligences of some sort, which mediate psychic events; and (4) models based on present-day physics, biology, and psychology, which posit that psychic phenomena can all be explained without recourse to any major new concepts whatever.

There are many researchers who are a mix of the empirical, phenomenological, and theory-driven approaches. Researchers in parapsychology are far more diverse in their attitudes and approaches than is generally realized, and it would seem impossible to define parapsychology in terms of a cohesive, consensually-shared problem area.

One could also try to define parapsychology in terms of a set of shared practices. Yet, given the diversity described above, it would seem impossible to specify a set of practices shared by all parapsychologists and not by researchers in other areas. Practices can be described at several levels, ranging from specific experimental protocols or fieldwork techniques and

tools of analysis linked to same, through strategies for drawing inferences from data or from prior sets of inferences, to strategies of concept-formation and theory-construction.

Experimental and field techniques vary considerably. Some, such as various free response procedures, are original to parapsychology, and others, such as psychophysiological monitoring techniques, are borrowed from existing disciplines. Some are obviously pseudo-science (e.g. complete absence of controls), some are good science procedures but poorly implemented (e.g. use of shielding between psychic and target that has not been checked recently for effectiveness and which may have acquired faults through time), some are good procedures misapplied (e.g. use of inappropriate statistical models), and many appear to be reasonable procedures appropriately applied. A similar spread may be observed at higher levels of concept-development and theory-organization, ranging from complete charlatanism (e.g. the deliberate generation of untestable theories that will have mass appeal), through pseudo-science by Popper's criterion (e.g. the offering of psychically mediated observer/experimenter effects to account for all failures to produce psychic functioning in experiments), to the generation of vague but interesting theoretical concepts that may well just need further development, and finally to fairly sophisticated models capable of generating extensive research programmes and producing falsifiable hypotheses (e.g. the Intuitive Data Sorting models of May, Radin, and Hubbard,⁶ or the human information-processing models for ESP of Irwin).⁷

In summary, various ways of defining parapsychology as a cohesive endeavour provide a picture of considerable diversity, institutionally, in scope of problem area, and in range of practice. Statements that parapsychology as a whole can be regarded as either science or pseudo-science in accordance with either single or multiple criteria would seem quite problematic. It is hard to say that parapsychology is a science – it does lack a cohesive theoretical framework and a well-organized body of knowledge with consensus standards. Conversely, it is difficult to regard parapsychology as a pseudo-science – it is too diverse to qualify. Additionally, for that set of researchers who regard parapsychology as an interdisciplinary problem area, examining the full range of human communication through exploring apparently new means of communication, it becomes evident that there is nothing inherently pseudo-scientific about its problem domain, and that many accepted strategies for studying communication should apply and are being applied. Debate on the last point must centre on a detailed analysis of the techniques actually being used in recent research; critics who take the time to do so⁸ find themselves acknowledging that reasonable techniques can be used and have been used, at least in certain segments of research.

IV. Demarcation at the Level of Practice

Let us consider now the second of our three kinds of demarcation claims, the claim that parapsychology is within the domain of science/pseudo-science. This question does not assume organizational cohesiveness. Nor does it necessarily evaluate whether the endeavour in question has an integrated body of theory, an organized body of knowledge, or an accepted set of standards. It focuses instead on the set of practices employed by the endeavour, and asks whether, when taken collectively, these practices are seen to be consistently within the domain of practices that could be regarded as scientific, or within the domain of practices that could be regarded as pseudo-scientific. If the former, then one might consider an additional alternative, already proposed by several writers,⁹ that parapsychology may be regarded as a proto-science. A proto-science is an endeavour that seems to be using solid tools of science, has a legitimate area of inquiry, and has taken some reasonable initial steps towards defining a methodology, developing a database, and generating some crude theoretical models. Criteria such as falsifiability are seen as less important (but only temporarily so), since the endeavour is in its early stages.

Bearing our earlier discussion in mind, it would be difficult to classify parapsychology as wholly within science or pseudo-science. Certain of its practices would clearly fall in one domain or the other, and some of its practices may at this stage be hard to categorize. It could be argued that a subset of parapsychological endeavour may qualify as a proto-science, that there are groups of researchers who do agree on standards of measurement and general features of methodology; that there are areas of partial replicability which are thematically cohesive and reasonably consistent and therefore constitute the beginnings of a database; and that the development of theoretical models is well under way. Assessment of these claims in detail is outside the scope of the present paper, but should provide fertile ground for the philosopher of science who takes the trouble to read either the primary literature or any of several good summaries.¹⁰

If one defines parapsychology as presented above, separating out thereby a subset of parapsychological endeavour that has tended to employ the more scientific practices, then one may have a specimen candidate for parapsychology as a proto-science. It can even be taken a step further in that it can include information about the strategies by which we can be misled by ourselves or others into thinking that something psychic has taken place. In so doing, one can incorporate considerable factual information from various branches of psychology, a bit of biology, physics, and anthropology, and organization of the strategies by which mentalists and conjurers fake special mental powers. From my perspective, these all belong as a legitimate part of parapsychology, in addition to being part of their original

disciplines. If this additional body of information is included, then parapsychology when defined as the study of apparent new means of communication would seem to meet the criteria for a proto-science.

For sake of argument, however, let us return to parapsychology as a whole, and move on to the third demarcation claim proposed, that parapsychology often (or primarily) practises science/pseudo-science. This claim, although the weakest and most flexible of all, clearly focuses attention on the specification and evaluation of individual practices. Although the above discussion has noted that parapsychology is diverse enough to include some practices that would be consensually acknowledged as scientific and others that could be consensually regarded as pseudo-scientific (although some might prefer another term), we have side-stepped the issue of how to categorize the majority of parapsychology's practices. We have saved the toughest until last, because now we must confront the question of whether or not we can successfully apply demarcation criteria to the full range of individual practices available and, if so, whether or not we will learn something productive about science by so doing.

To provide a detailed discussion of the development and application of demarcation criteria is beyond the scope of this paper. In the main, I will be satisfied if I have succeeded in persuading philosophers of science that parapsychology is worth considering as a fertile ground for testing various demarcation criteria at the level of individual practice, and that parapsychology provides at the same time a good illustration of why attempts to demarcate sizeable endeavours will often run into problems. However, though bearing in mind my previously confessed *naïveté* regarding philosophy of science, I would like to offer some tentative comments on applying demarcation criteria to individual parapsychological practices.

Parapsychology has borrowed considerably from the methods of extant branches of science. Thus, one strategy would be to use accepted scientific practice as our criterion, and comb through existing practices to see where the points of departure arise, and in what sense they represent departures. This can be done both for methodology and for strategies of theory-construction. We can use existing scientific techniques, judged to be successful by their users, as our point of departure. But if we are to be useful, and learn something new about science, we must now estimate their relevance for the new area of parapsychological inquiry.

Perhaps techniques regarded as bad science in the past may turn out to be productive when placed within the context of parapsychology. For instance, it has generally been regarded as poor practice to talk of results that cannot be replicated by researchers with negative attitudes, as though those attitudes themselves could influence or bias the result. Yet there may be both productive and unproductive forms of the above concept. An unproductive version might go as follows: any time an experiment fails to

produce positive evidence for psi, we invoke the concept of experimenter/observer effect to explain the failure, claiming that apparently the experimenter or a crucial additional observer did not have an adequately positive attitude. Unfortunately, by invoking the concept after the fact, we deny the opportunity to test it; we only decide that the attitude was inadequate once we have seen the results. A more productive process would be to develop a specific model of experimenter (or other observer) psi effects, specifying the circumstances under which such effects may be more likely to occur (e.g. different degrees of linkage of the observer with the experiment, different levels of awareness by the observer of the existence and nature of the experiment, and different numbers of observers with certain attitudes) and the measures of attitude to be taken. A programme of systematic research could be developed which would involve the testing of hypotheses and falsification of incorrect hypotheses. Such research could evaluate observer effects and, if they are real, lead to ways of taking them into account or reducing their contribution to results. Thus the concept that certain experimenters or other observers may bias results could be taken into account to produce a stronger picture, eventually, of the phenomena under investigation.

Conversely, some strategies regarded as good science in many respects may turn out to be less valuable for parapsychology, at least in the short run. For instance, in its desire to follow the example of hard sciences, parapsychology may in some cases have rushed through the descriptive stage too quickly, moving on to controlled laboratory conditions before having an adequate descriptive picture of the phenomena to be investigated. A fuller picture should lead to studies that will provide more powerful tests of the actual claims put forth by psychic practitioners. It could even be argued that, if true psychic phenomena do not exist, our most significant failures still lie ahead. Thus parapsychologists may have been using some good scientific tools, but applying them prematurely, in ways detrimental to the overall scientific endeavour.

Additionally, some parapsychological practices may be seen as new, as not clearly like procedures applied in the past. How are they to be evaluated? If they seem to be totally new, then perhaps it will be difficult to sort them into scientific v. pseudo-scientific practices at this stage. Would one then wait to see 'how they work out', to see which new practices seem to be associated with eventual scientific progress? And would one be able to extract a clear-cut measure of progress and measure of degree of involvement of a given practice in that progress? It could be argued that the question may not arise, in that we have a sufficient array of past scientific practices, so that any practice that appears new can be shown to resemble existing practices in salient ways, such that a tentative judgment can be made on the worth of a particular practice based on its resemblance to past

practices whose worth has already been argued upon. Yet, since the context of that practice may be different when applied to parapsychology, any such judgment about a practice may have to be regarded as an hypothesis until the practice's eventual worth can be evaluated.

If the demarcation problem comes to involve the forming of hypotheses about the scientific worth of various practices, then we can ask whether such hypotheses can be tested. For instance, can they be expressed in falsifiable form? Perhaps various parapsychological practices can be used to test the worth of specific demarcation criteria, to see which criteria if any can predict which parapsychological practices will eventually be regarded as having contributed productively, and which will be considered to have been detrimental, at some time in the future when there appears to be a consensus. If the demarcation effort is to have value at the level of practice, it should be able to generate successful predictions, and it should itself be able to pass some of its own criteria, such as falsifiability. Unless it is capable of making such predictions, the demarcation effort becomes a passive, postdictive exercise in description of little value. Should the task of generating predictions be seen as problematic, then we may be able to learn something about the demarcation endeavour itself from considering the nature of those problems. Perhaps we can judge the demarcation effort best in terms of some of its own criteria, and an area such as parapsychology may provide an ideal test case.

NOTES

- 1 K. R. Popper, *The Logic of Scientific Discovery* (London: Hutchinson, 1959).
- 2 M. Bunge, 'Demarcating Science from Pseudo-science', presented at a symposium on *Beyond the Fringe of Science*, at McGill University in 1980. Bunge developed his eight criteria further, adding two more in 'Demarcating Science from Pseudoscience', *Fundamenta Scientiae* 3 (1982), pp. 369-88.
- 3 J. E. Alcock, *Parapsychology: Science or Magic?* (Oxford/Paris: Pergamon, 1981).
- 4 See, e.g., my 'Review of *Parapsychology: Science or Magic*, by James E. Alcock', *Journal of the American Society for Psychical Research* 76 (1982), pp. 177-86.
- 5 A. Lugg, 'Pseudoscientific Practices - Some Similarities and Differences', in Rachel Laudan (ed.), *Working Papers in Science and Technology. Vol. 2: The Demarcation between Science and Pseudoscience* (Blacksburg, Virginia: Virginia Polytechnic Institute and State University, 1983).
- 6 See E. C. May, D. I. Radin, G. S. Hubbard, B. S. Humphrey, and J. M. Utts, 'Psi Experiments with Random Number Generators: An Informational Model', *Proceedings of the 28th Annual Parapsychological Association Convention* (1985), Vol. 1, pp. 235-63; and D. I. Radin and E. C. May, 'Testing the Intuitive Data Sorting Model with Pseudo-random Number Generators: A Proposed Method', *Proceedings of the 29th Annual Parapsychological Association Convention* (1986), pp. 537-54, for a discussion of the intuitive data sorting model.
- 7 See H. J. Irwin, *Psi and the Mind* (Metuchen, New Jersey: Scarecrow Press, 1979) for Irwin's information-processing model.
- 8 See esp. the writings of Ray Hyman, Marcello Truzzi, and Charles Akers.
- 9 For a discussion of the concept of proto-science, see R. G. Weyant, 'Protoscience, Pseudoscience, Metaphors and Animal Magnetism', in M. P. Hanen, M. J. Asler, and R. G.

Weyant (eds.), *Science, Pseudo-Science and Society* (Waterloo, Ontario: Wilfrid Laurier, 1980).

10 See, e.g., H. L. Edge, R. L. Morris, J. H. Rush, and J. Palmer, *Foundations of Parapsychology: Exploring the Boundaries of Human Capability* (London: Routledge & Kegan Paul, 1986), or S. Krippner (ed.), *Advances in Parapsychological Research. Vols. 1-4* (New York: Plenum Press, 1977, 1978, 1982/Jefferson, N. Carolina: McFarland, 1986).

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Robert L. Morris, Department of Psychology, University of Edinburgh, 7 George Square, Edinburgh EH8 9JZ, Scotland