

**ESSAY**

**The Mind-Brain Problem**

JOHN BELOFF

*Department of Psychology, George Square, University of Edinburgh, Edinburgh EH8 9JZ, Scotland*

Abstract — The mind-brain problem, which is still with us, raises the question as to whether the mind is no more than the idle side-effect of our brain processes or whether the mind can, in some degree, influence behavior. Here we rehearse the arguments on both sides plus some desperate recent attempts to eliminate mind altogether.

**What is the Problem?**

However contentious, the philosophical problem, as distinct from the physiological problem, can be stated quite simply as follows: What, essentially, is the relationship between events in the brain and those private, subjective, introspectible experiences that together constitute our inner mental life? We need not assume here that consciousness is synonymous with mind—consciousness may well be no more than just one aspect of mind—but, with respect to the problem at issue, it is the existence of consciousness that is critical.

Stated thus, the problem admits of only three basic answers: (1) Events in the brain, operating in accordance with the laws of physics, determine completely both our behavior and our subjective experiences. (2) Mental events may be elicited by events in the brain or they may, in turn, elicit brain events and so influence the course of our behavior (I use here the word 'elicit' rather than 'cause' advisedly since the kind of causation here envisaged is so unlike familiar causation of the physical kind). (3) There are no such things as private, subjective, introspectible, sense-data or qualia (e.g. that red patch that I am now staring at in the center of my visual field). Hence there just is no problem. All that exists, in the last resort, are the physical events underlying the information-processing, color-coding or whatever such as any sophisticated computer or automaton could, in principle, be programmed to perform. It follows that there is no mind-brain problem for humans or animals any more than there is for robots or other artificial intelligence.

There are, of course, innumerable alternative formulations. The most salient, historically, is the Idealist position according to which the brain, along with all other physical contents of the universe, is just a creation of mind. But, despite the eminence of some of their proponents, these other options are too strained, too evasive, or just too incoherent to detain us here and I shall take the liberty of ignoring them. Regarding the three contenders I have enumerated, I shall call (1) Epiphenomenalism, Double-Aspect, or just Weak Dualism;

(2) Interactionism, Radical or just Strong Dualism and (3) Monistic Materialism or Functionalism. I shall argue that (3) is so flagrantly counterintuitive that, although widely endorsed at the present time by so many of the foremost philosophers, psychologists, physiologists and exponents of artificial intelligence, we have the right to reject it and reaffirm that there is a mind-brain problem. Accordingly, our only serious options are (1) and (2). I shall not attempt to disguise my own preference for (2).

### Background of the Problem

Before the Scientific Revolution of the 17th Century, the distinction between the mental and the physical was vague and very little was known about the workings of the brain. Even so, it was taken for granted that there was a private world of thoughts and feelings which was different from the public world in which we all live out our lives. The boundary, however, was vague because perception was not yet understood. Thus, it was generally assumed that colors, sights, sounds and all that go to make up our phenomenal world belong to the *objective* public world out there. Indeed, such 'naive realism' is still widely shared today by those who are either philosophically unsophisticated or, in some instances, philosophically *super* sophisticated! The formulation of the mind-brain problem as it has come down to us could, therefore, be said to commence with René Descartes (1596-1650).

The special feature of Descartes' formulation of the problem lies in his taking an epistemological stance. Anything whose existence we can, in principle, doubt belongs *ipso facto* to the objective external world of matter. Likewise, anything whose existence we cannot, even in principle, doubt belongs to the subjective world of mind. Thus, I can always doubt that the objects I *seem* to perceive belong to the external world, since I might, after all, be having an hallucination (we all dream). On the other hand I cannot doubt the sense-data that I am now contemplating even if I alone experience them. Furthermore, since there must be some entity that is doing the contemplating, I also cannot doubt my own existence (*cogito ergo sum*). On the other hand the existence of a material world—and that includes the brain—must be taken on trust. It is, after all, *logically* conceivable that some demon might be playing a trick on us and that in reality there is no external world, indeed, no other people (Idealism and Solipsism have always been philosophical temptations)!

Descartes, let us not forget, was a physiologist, as well as a philosopher and a mathematician, and he was keenly interested in the workings of the brain. His hypothesis that mind and brain might interact via the pineal gland is, however, of historic interest only, as is his insistence that mind was indivisible and unextended—despite the obvious fact that the phenomenal world (which, on his own reckoning, belongs to mind) is both extended and divisible. His epistemological arguments, on the other hand, have never been refuted in spite of numerous attempts to do just that.

Until the present century the duality of mind and brain was never in question except, that is, to the adherents of various Idealist or Phenomenalist doctrines which, in defiance of common sense, insisted that matter was just a construction of mind and had no ontological independence. What was at issue was whether the brain was self-sufficient and operated on a purely physical basis or whether mind could intervene in its operations so as to ensure one overt action rather than another. Determinists insisted that the brain was a machine and so mental events could have no influence on behavior, they were mere 'epiphenomena.' Libertarians, on the contrary, i.e. those who clung to the common-sense belief in free will, took their stand with Descartes and insisted that a two-way interaction operated between mind and brain.

During the 19th century great progress was made on the physiology of the brain and, more especially, of the special senses. New sciences, psychophysics and experimental psychology, sprung into existence. Wilhelm Wundt (1832-1920) a physiologist by training who is generally regarded as the father of experimental psychology insisted that the crucial distinction between experimental psychology and brain physiology lay in their characteristic methodology: physiology depended on observation, psychology on introspection. Essentially, the two were concerned with the *same* set of phenomena, the difference lay in their approach. Hence, Wundt regarded himself as a 'parallelist' with respect to the mind-brain problem: our mental life must be seen as the obverse of its corresponding neural machinery. This echoes Leibniz' doctrine of a 'pre-established harmony': there is no mind-brain interaction, the mental and the physical are destined to correspond like two clocks that both keep perfect time even though they are unconnected. The weakness of the parallelist thesis, however, is that it is by no means clear that the series of mental events, unlike the series of brain events, forms a continuous, self-contained sequence. Consciousness, after all, is notoriously sporadic. So much that we associate with our mental life appears to operate below the threshold of consciousness.

Not surprisingly, therefore, the view that prevailed among scientists of the late 19th century was to look for the causes of our behavior in the brain alone. It was Thomas Huxley (1825-1895) who coined the term 'epiphenomenalism' in an article he wrote for the *Fortnightly Review* of 1874. In so doing Huxley willingly sacrificed the notion of 'free will' as an illusion despite its deep embedment in our language and commonsense. For the epiphenomenalist, the brain was a machine, like everything else in nature, and the mind no more than a passive reflection of its activity. During the present century, various attempts have been made to refine the epiphenomenalist formulation. Thus the so-called 'mind-brain identity' theory, associated with Herbert Feigl in the United States and with Bertrand Russell in Britain, which flourished during the 1950s, insisted that the mental events we associate with consciousness just *are* the relevant brain events but viewed, as it were, from the inside rather than the outside. Whether such a formulation is even tenable, I am still very doubtful

(Beloff, 1965); it begs the question as to whether two entities that have entirely different properties could, ontologically, be regarded as one and the same. Be that as it may, from our present point of view we can take it as just another affirmation of weak dualism, the dualism which denies any autonomy whatsoever to mind.

Our third solution, which denies that there *are* any distinct mental or subjective events that need explaining, is a purely twentieth century development and it stems from four quite different sources that have very little connection with one another. The first, in point of time, arose among psychologists of the first decades of this century who sought to make psychology the study of behavior, human or animal, and, in doing so to discredit introspection that was previously taken to be the distinctive technique of psychology as a science. We may call this 'Watsonian Behaviorism and its offshoots.' The second, in point of time, arose within Anglo-American philosophy and I shall call it 'Linguistic Behaviorism.' Its classic statement is to be found in Gilbert Ryle's *The Concept of Mind* (1949).<sup>1</sup> The third was likewise a product of Anglo-American philosophy (if that can be stretched to include Australia where some of its most vocal proponents taught philosophy) and we could call it 'Strict Materialism,' i.e. the doctrine that there are no private sense-data, only brain-events and their associated behaviors. D. M. Armstrong's *A Materialist Theory of Mind* (1968) may be cited as a classic text. This has today largely been superseded by the doctrine known as 'Functionalism.' Functionalism differs from previous materialist theories of mind by insisting that mental events need not be identified exclusively with brain events; if computing machinery made from wires, transistors, etc. can serve the same *functions* as our brain in mediating between inputs and outputs, then mental events may be predicated of *any* such system that possessed the necessary information-processing capacities. Functionalism was a late twentieth century doctrine that obviously owed its existence to the rise of Artificial Intelligence. Its most compendious exposition today is a book with the question-begging title, *Consciousness Explained* by Daniel C. Dennett (1991).

### Evaluating the Three Proposed Solutions

Let us start with the third of these which takes its stand on the denial of private experience in general and of *qualia* in particular. Suppose someone were to deny that there is a chair in my room. I could easily and uncontroversially refute that assertion by pointing to a sample chair. But suppose, now, some party were to deny that my seeing a chair involves my having an image or percept of a chair in my visual field. What could I say to disabuse them? It would be pointless to urge them to look in the direction of a chair and confirm the presence of images or precepts in their own field of vision for they are committed in advance to denying the existence of any such entities and they would in-

---

<sup>1</sup> For a fuller discussion of the various kinds of behaviorism, see my article 'Behaviorism' in *The Encyclopedia of Language and Linguistics* (Oxford & New York: Pergamon Press).

sist that *all* that they *could* mean by 'seeing a chair' is covered by some behavioral story involving an actual chair (or, in the peculiar case of an hallucinatory experience, involving some putative chair).

To adopt a different ploy, suppose that, after getting nowhere with respect to chairs or chair-like sense-data I were, out of sheer exasperation, to strike my interlocutor and then shift the argument to the blow that I have just inflicted on him and to the pain which he, presumably, now feels (gallantry forbids me to write he or she!). Now, if the behavioral aspects of pain did, in fact, comprise the whole of what we mean by pain we could all, no doubt, aspire to being stoics! The crux of the pain problem—what makes some of us cowards—is precisely the nature of pain *qualia*. Even so, a determined behaviorist, like Howard Rachlin (1994 pp. 146-148), can brazen it out without conceding that there is such a thing as a private or subjective dimension to pain.

Thomas Nagel (1974) in his much cited paper, put forward an argument which, if valid, eliminates at a stroke our third solution. If, he suggests, an entity is conscious then, no matter how alien that consciousness may be to us, it always makes sense to ask what it would be like to be that entity. Hence it is at least meaningful to ask ourselves what it would be like to be, say, a bat whereas it would not even make sense to ask ourselves what it would be like to be a computer (though, in terms of the sort of things we humans do, we have far more in common with our personal computers than we do with bats or even our pets!)

But materialists and behaviorists are not stupid. They are as much aware as we are that what they are saying is outrageous, in the sense of defying something deep rooted in our thought and language, it is just that they are undeterred. Dennett, at the outset of his lengthy treatise, warns us that his efforts at "demystification," as he calls it, will be viewed by many as an "act of intellectual vandalism." But, if we cannot formally refute the materialism or functionalism that we have called our third solution, neither can its proponents persuade us to deny or overlook that red patch that refuses to go away. In dismissing the third solution from further consideration, I can do no better than John Searle (1992) when he says (p.8), ". . . if your theory results in the view that consciousness does not exist, you have simply produced a *reductio ad absurdum* of your theory . . ." Let us turn, accordingly, to our first two proposed solutions both of which can muster cogent arguments.

### Weak Dualism

Granted, then, that we cannot get rid of subjective experience the best that an orthodox, reductionist, physicalist thinker can hope to achieve would be to persuade us that such experience plays no role in determining our behavior, that, from the scientific angle, it is dispensable, that nothing, indeed, would change in the real world if tomorrow everyone suddenly ceased being conscious, always provided they continued to behave as if they were! If such a conclusion sounds extravagant, it has, we must insist, weighty reasons behind

it. It is, after all, common knowledge that mind is dependent on brain. As the brain develops in infancy, so does the mind; when the brain suffers injury, whether through accident or disease, the mind, too, is affected; when the brain starts to deteriorate and decay with age, so does the mind; finally when the brain dies, the mind (we presume) ceases to exist. On top of these commonplace observations, brain research and psychopharmacology have made impressive strides in recent years and each new advance seems to confirm this dependence of mind on brain. In his latest book, Francis Crick (1994) even goes so far as to suggest that it may soon be possible to identify specific neurons in the brain that serve to mediate consciousness.

Admittedly, brain science cannot yet provide the answer to all our problems, there are, for example, still many gaps to be filled concerning the neurological basis even of such fundamental functions as memory or perception but, given the complexity of the problems, this is hardly surprising.

There are, however, at least three good reasons for doubting the epiphenomenalist thesis. In the first place, it is profoundly counter-intuitive; in the second place its implications lead to absurd conclusions; in the third place there exist certain anomalous mental phenomena which are inexplicable given the known properties of the brain. Let us discuss each of these objections.

For an epiphenomenalist, it can be only a brute fact that consciousness supervenes when the cortex of the brain is appropriately innervated. There is no conceivable reason why this should happen for it serves no purpose that would favor it from an evolutionary standpoint. Nothing whatsoever that makes a difference to what goes on in the real world follows from the supervenience of the mental upon the cerebral. We might just as well have evolved, therefore, as totally insentient automata. Thus, when we ourselves design artificial intelligence, however sophisticated, we do not reckon on their becoming conscious. Moreover, if, at some future time, we were to make contact with intelligent aliens from another planet, we would have no grounds whatever for assuming that they, too, were conscious, no matter how knowing or sympathetic they might appear to us. For, given the fact that consciousness arose during the course of evolution on *this* planet, no inferences could be drawn with respect to evolution on some other planet—it being a sheer fluke that we ourselves happen to be conscious. Hence, if epiphenomenalism is true, we are forced to conclude that, but for this one unaccountable freak in our evolutionary origins, the whole of human history *could* have proceeded exactly as it has done but without anyone, anywhere, ever being aware (in the full sense of awareness) of anything that ever happened! One is almost tempted at this point to paraphrase Searle's dictum to the effect that any doctrine having such implications is its own *reductio ad absurdum*.

As if this were not enough, we must note that epiphenomenalism necessarily sacrifices the concept of 'free-will,' a concept which permeates so profoundly all talk of 'justice,' 'merit' and 'morality.' For, clearly, the commission of a crime is as much the outcome of impersonal brain processes as is altruistic behavior. Hitler is no more blameworthy for his misdeeds than he is for his reflex-

es, both ultimately being products of his brain, essentially just a complex electro-chemical machine. The best that the epiphenomenalist can plead in this connection is that the concept of 'free-will' is obscure on *any* analysis and so is not obviously safeguarded on any alternative theory of the mind-brain relationship.

Let us turn next to our third reason for challenging the epiphenomenalist position. What parapsychologists call 'psi phenomena' are, by *definition*, inexplicable in terms of what is known about the brain or nervous system; it is that, indeed, that justifies our calling them 'paranormal.' Now, there is abundant evidence in the literature that both humans and animals are sometimes cognizant of matters about which they could not have had any sensory information and that, likewise, they can sometimes influence physical events or processes in the external world without using any known physical means. Since such phenomena are very difficult to demonstrate and are notoriously elusive, not to say evasive, most scientists feel at liberty to discount them. That option is still possible without exposing oneself to the charge of being a bigot or an ignoramus but, with accumulating experimental evidence of high quality, it is a position that is becoming increasingly precarious. Insofar as epiphenomenalism is open to empirical refutation, it is to the parapsychological evidence that we must look for the most telling counter examples (Beloff, 1989).

Before we leave this weak form of dualism that we are calling 'epiphenomenalism' it is worth considering a position put forward by John Searle which he calls 'biological naturalism.' This, he claims, avoids the absurdities of both materialism and epiphenomenalism but without making any concessions to dualism which he regards as anti-scientific. The key to this remarkable claim (which so far seems to have won few adherents) lies in the concept of 'emergence' but *not* emergence as the epiphenomenalist had assumed, i.e. as something radically different from brain processes, but "in the same way as solidity and liquidity are emergent features of systems of molecules." (Searle, 1992 p.112). This analogy, however, gives the game away. We have, after all, a coherent physical theory which connects the motion of molecules with such macroscopic properties as solidity, liquidity, heat, etc. The whole point of calling consciousness 'epiphenomenal' is that there is no conceivable theory which connects the contents of our private phenomenal experience with what, with suitable instrumentation, can be observed to occur in our brain. Searle, nevertheless, persists with his misconceptions. Thus he writes: "The fact that mental features are supervenient on neuronal features in no way diminishes their causal efficacy. The solidity of the piston is causally supervenient on its molecular structure, but this does not make solidity epiphenomenal; and, similarly, the causal supervenience of my present back pain on micro events in my brain does not make the pain epiphenomenal" (p.126). Again, the analogy breaks down at the very point where it begs the question at issue. Physical chemistry can explain why "the solidity of the piston is causally supervenient on its molecular structure"; there is no equivalent theory which explains why the experience of pain should supervene on "micro events in the brain." Those

micro-events could obtain even if the experience of pain did not exist. In short, Searle fails to distinguish between higher-level properties which can be dealt with by a physicalistic analysis and epiphenomenal properties or qualia whose existence we must acknowledge but which manifestly resist any such explanation.

### Strong Dualism

We must turn now to the only remaining valid alternative to epiphenomenalism, the radical dualism or interactionism that we called our second solution. This postulates the existence of a World II of Mind as well as the World I of Matter (to adopt Popper's terminology) and it insists that these two worlds can and do interact. Now Searle may dismiss this as "anti-scientific" but it is not inimical to science as are, for example, superstition, obscurantism or pseudoscience. It is, however, anti-physicalistic and, in this sense, it can be said to go beyond science, like metaphysics, but does not conflict with it.

The advantages of this solution are, roughly, the same as the disadvantages of epiphenomenalism. It reaffirms what, intuitively, we seem to know, namely that we are autonomous beings, not the playthings of our physiology. Furthermore, on this solution, we are spared the thought that, on another planet, there might be rational beings exactly like us except that they would be 'zombies' (their brain-activity would have no conscious accompaniment). The disadvantage of radical dualism, on the other hand, and it is serious enough to deter most contemporary theorists, is that there is no clear answer as to where the mind comes from and how it first becomes attached to the brain, be it in the fetus or the neonate. The fact is that, leaving aside mythical and religious cosmologies, the position of mind in nature remains a total mystery. It could be that there exists some sort of a cosmic mind, perhaps co-eval with the material universe itself, from which each of our individual minds stems and to which each ultimately returns. All we can say is that it looks as if a fragment of mind-stuff becomes attached to an individual organism, at or near birth, and thereafter persists with this symbiotic relationship until that organism perishes. Then, either it reverts to this cosmic pool or it persists for a time in some kind of discarnate state (as spritualists believe) or it reincarnates in a new body and a new cycle of life commences (Stevenson & Samararatne, 1988; Haraldsson, 1991; Stevenson, 1987). At present there is no agreement even as to what would count here as decisive evidence.

Two arguments have often been put forward by sophisticated critics who ought to know better, which purport to rule out radical dualism as a non-starter. Neither, as we shall see, stands up to examination, but their continued popularity is a clear indicator of the desperation of its critics. The first, which troubled even Descartes, is that, if mind and matter have nothing in common, how can they even interact? Now the implicit assumption behind this objection can only be some such principle or axiom as: if A and B are cause and effect then A and B must have something in common (over and above their belonging to the

same causal sequence). The question then arises: is such a principle a logical necessity, a necessity of thought? Or is it a universally valid empirical truth? Now, so far as I can see, no logical necessity is involved. For example, if an event A never occurred without being preceded by some other event B, we would surely want to say that the second event was a necessary condition or cause of the first event, *whether or not* the two had anything else in common. As for such a principle being an empirical truth, how could it be since there are here only two known independent substances, i.e. mind and matter, as candidates on which to base a generalization? To argue that they cannot interact *because* they are independent is to beg the question.

The second spurious argument concerns the dualistic interpretation of perception. If, as is alleged, we require a self or subject to scan the phenomenal field and make sense of it, then, surely, we need a second self or homunculus to monitor the experiences of the first self or subject and are thus launched upon an endless regress. Dennett calls the model we are here defending 'the myth of the Cartesian Theater' (Dennett, 1991, Chapter 5). But, whatever may be the shortcomings of the traditional view of perception, the endless regress argument does not apply. If perception is a process which requires both an object and a subject, so be it. What we then have is just a two-term relationship. This no more lends itself to an endless regress than any other two-term relationship. For example, the fact that I need to have my passport stamped in order for it to be valid, does not imply that the stamp, in turn, has to be validated by being stamped and so on ad *infinitum*. Perception, like 'authorization,' just is a two-term relationship.

It says something about the desperation of those who want to dismiss radical dualism that two such phony arguments should repeatedly be invoked by highly reputable philosophers who should know better. At all events, seeing that radical dualism cannot be refuted or wished away, we must now look elsewhere for evidence that may help us to decide between the respective merits of weak or strong dualism.

### **The Relevance of Parapsychology**

Physicalism is the doctrine that everything that happens in the real world could, ultimately, be explained by the laws of physics plus the state of the universe at the time the event in question occurs. Epiphenomenalism, as we have noted, is simply physicalism as applied to mental events. If physicalism could be shown to be false then we would have to dismiss epiphenomenalism or weak dualism, and settle for interactionism, that is to say for strong or radical dualism.

In calling an event or a phenomenon 'paranormal' we mean simply that it cannot be explained, even in principle, by the known laws of physics. The question at issue is: are there any genuine paranormal phenomena or can all such putative phenomena be explained away without invoking anything incompatible with physics as currently understood (to say that such phenomena

will *eventually* yield to a normal explanation is to beg the question and to reduce epiphenomenalism to an unfalsifiable dogma)? The kind of paranormal phenomenon that has a direct bearing on the mind-brain problem is now properly referred to as a 'psi phenomenon' and parapsychology may be defined as the scientific study of psi phenomena. Two broad categories of psi phenomena may be distinguished: 'psi gamma' better known as ESP or paranormal cognition and 'psi kappa' better known as PK (psychokinesis) or paranormal action (mind over matter). Evidence for such phenomena has been accumulating over the centuries (Beloff, 1993) but the founding of the Society for Psychical Research in London in 1882 is often taken to mark the first concerted attack on this perennial problem.

The relevance of parapsychology to the mind-brain problem that is here our concern should be obvious enough. For, if it is true that, in exceptional cases, we may come to know things to which we have no sensory access, and could not have known by inference, we have at least an analogy for the way in which, in normal perception, the mind might extract information directly from the sensory cortex of our brain. Likewise, if it is true that, in exceptional cases, we may come to influence events in the external world to which we have no physical access, we have again an analogy for the way in which, in normal motor action, the mind might control the motor cortex of our brain. Essentially, the parapsychological evidence exhibits mind as an efficacious factor in the real world, not just as an idle epiphenomenon, and thereby calls into question the physicalist position.

Not surprisingly, a tremendous effort is made to discount and discredit the parapsychological evidence and so ward off the threat it presents to physicalism. Organizations like CSICOP (Committee for the Scientific Investigation of Claims of the Paranormal) which has many distinguished supporters among the scientific community reflects this unease. Much of this campaign is of a political nature, that is to say, irony and ridicule is freely used to discredit proponents of the paranormal. On the other hand I would not deny that, as things stand today, the skeptical position can still be rationally defended (Beloff, in press). As I have already said, psi phenomena are notoriously elusive and hence difficult to confirm in a way that science has come to demand in the case of questionable or marginal claims. It is not, of course, unique in this respect. It is only in the hard sciences that strict replicability is feasible. In the behavioral and social sciences, it is the exception rather than the rule. There are some psychological phenomena that are universal and invariable, for example the optical illusions, but these are the exceptions. As we move further away from psychophysics into the realms of personality and social behavior, the harder it becomes to satisfy the criterion of strict replicability on demand. Parapsychology is notoriously prone not only to experimenter effects but to the whole cultural ambiance of the time (Beloff, 1994). Even so, with the recent growth of meta-analysis, all the basic phenomena of experimental parapsychology, ESP, PK, Precognition etc., have been statistically vindicated (Utts, 1991).

It may be that, in the coming century, parapsychological research will have advanced to the point at which it will no longer be possible to ignore its findings. However, as of now, an intellectual is still free to argue and speculate as if psi phenomena demanded no more credence than flying saucers. Dennett and Searle were, as we have seen, unable to agree about the nature of consciousness but both felt comfortable in showing a total disregard for parapsychology. One might have thought that, since both are concerned to vindicate physicalism, they should, as good Popperians would, pay special attention to claims that directly falsify physicalism, as psi phenomena appear to do. Unfortunately they prefer the easier option which is simply to ignore them.

### **Can Psi Phenomena be Reconciled with Physicalism?**

We come finally, to the possibility that perhaps, despite appearances to the contrary, psi phenomena are not, after all incompatible with physics or, at any rate, if not physics as now currently understood, then at least the physics of tomorrow or the day after tomorrow. Should that prove to be the case then it follows that what we are now calling 'paranormal' would cease to be so and parapsychology would become a subdivision of physics rather than an extension of psychology. It is worth noting that some of the most prominent and enthusiastic experimental parapsychologists at the present time not only take seriously such a denouement but see themselves as promoting this goal. Nor is this anything new. Many of the pioneer psychical researchers of the nineteenth century were themselves physicists, like William Crookes or Oliver Lodge, who earnestly considered that these unorthodox studies might lead them to new discoveries in the realm of physics. For a long time theorists toyed with the idea that psi communication might prove to be explicable in terms of electromagnetic radiation, perhaps of extra low frequency, but no one any longer takes such an idea seriously. For one thing the evidence for precognitive psi is not much inferior to that for contemporaneous psi.

With the advent of quantum theory, however, with its non-locality and other counterintuitive implications and paradoxes, the situation changed radically. If physics itself could be so mind-boggling, surely, it was suggested, parapsychology need no longer feel apologetic. The current attempt to reconcile psi and physics centers on the so-called 'Observational Theory' which takes its cue from the Copenhagen Interpretation of quantum mechanics. This stresses the role of consciousness in determining the outcome of a given quantum event. That is to say, prior to an observation, the particle in question has no determinate set of values, it is only when the particle is observed that it assumes one value rather than another. In orthodox quantum theory, however, the observer has absolutely *no influence* as to the particular value that the particle will assume. The starting point of Observational Theory is that, where certain observers are concerned, i.e. those whom we may call a 'psi source,' there will

be a statistical bias with respect to the values of the particles involved such that the outcome of the psi experiment may attain statistical significance.

Thus, according to Observational Theory, the psi process only commences at the terminal point when an effect is observed. The fundamental psi phenomenon is psi-kappa rather than psi-gamma, i.e. PK rather than ESP. Thus, in a guessing experiment designed to test for ESP, it is only when the subject is given feedback at time  $t_0$  when the target is displayed, that a retroactive process is brought into play causing the subject to guess that target at time  $t_1$ . (Observational Theorists have some trouble coping with ESP experiments where the subject receives no feedback.) The case of precognitive ESP can readily be dealt with by the same logic. As regards experiments specifically designed to test for PK, for which nowadays the use of electronic random-event-generators represent the staple methodology, Observational Theory is very much at home. One of the classic experiments in this field comes from Schmidt's work with prerecorded random digits (Schmidt, 1976). If this technique could be further developed, we would, for example, have the perfect cast-iron defense against insinuations of cheating. For it means that the critic can be given in *advance of the experiment*, safekeeping of the relevant target-sequence which the subject then has to try and influence (Schmidt et al., 1986)!

Helmut Schmidt, who, by common consent, must be considered one of the outstanding leaders of contemporary experimental parapsychology, has recently published in this Journal his own reflections on the question we are here considering, i.e. the connection between parapsychology and physics, in an article he calls 'Non-Causality as the Earmark of Psi' (Schmidt, 1993). By the term 'non-causality' Schmidt is referring to the phenomenon of backward causation of the kind we mentioned as fundamental to Observational Theory. Schmidt, for one, and his word is not to be taken lightly, is in no doubt that parapsychology and physics can merge. As he puts it, "As soon as a larger number of clever theorists become aware of the existence of psi and its quite real challenge to current physics, the outlook may brighten" or, again, "From the view of the optimistic physicist psi should be explainable in terms of some yet unrecognized law of nature applicable to animate and inanimate nature alike."

If Schmidt is right—and I have the highest regard for his authority—then the thesis we have here been advancing, namely that parapsychology provides the critical empirical falsification of physicalism (the doctrine that everything that happens in the real world could in principle be explained by the laws of physics, with the implication that mind is irrelevant) falls by the wayside. Observational Theory is still, of course, far from having established its case even among those best qualified to judge. But, if Schmidt's "optimistic physicist" is vindicated, would not that settle the argument?

The answer is: no. Observational Theory has been criticized on logical grounds—i.e. the only reason why I guess correctly is that I shall later observe that I have guessed correctly—but I shall not pursue that argument here

(Braude, 1979; Millar, 1988). I want only to point out that Observational Theory has arisen from, and is applicable to, what has been called weak or statistical psi, that is, micro-PK and forced-choice ESP as known in the laboratory. As regards the strong phenomena, macro-PK, and experiences of a self-evidently paranormal nature, as known in ordinary life or with specially gifted subjects, Observational Theory does not even begin to make sense. Yet to dismiss all the strong phenomena as spurious, while insisting on the genuineness of laboratory data is, I submit, grossly unhistorical. Card-guessing experiments did not begin in earnest much before the 1930s and PK using dice arrived on the scene even later. Are we to suppose that, when William McDougall initiated the laboratory at Duke University under J. B. Rhine, he did so without having any grounds for supposing that there were or ever had been any paranormal phenomena? And, likewise, are we to suppose that J. B. Rhine, whose wife, Louisa, spent her life collecting spontaneous cases, never intended his findings to have any implications beyond the laboratory? There may be a case for dismissing all claims of the paranormal (Beloff in press) but to argue that only laboratory findings are real is, indeed, special pleading!

It may be that future attempts to bring the paranormal within the purview of physics will be more successful but, should that prove to be the case, it looks as if such a physics of the future would be so far removed from physics as currently understood that physicalism itself would mean something quite different from the reductionist doctrine that it now signifies. For the universe would then begin to resemble that holistic conception which flourished among the Hermeticists (Beloff, 1993) before the advent of the Scientific Revolution.

### Conclusion

One lesson that should be clear from the foregoing discussion is that there just is no comfortable solution to the mind-brain problem. Weak dualism, as we have seen, is bound to be paradoxical and counterintuitive while strong dualism remains shrouded in mystery. As for the monistic position, even though it has been defended by some of the most powerful intellects of the past hundred years, it must be dismissed as sophistry.

### References

- Armstrong, D. M. (1968). *A Materialist Theory of Mind*. London, Routledge.
- Beloff, J. (1965). The identity hypothesis: A critique. In J. R. Smythies (ed.) *Brain and Mind*. London, Routledge.
- Beloff, J. (1989). Dualism: A parapsychological perspective. In J. R. Smythies & J. Beloff (eds.) *The Case for Dualism*. Charlottesville, VA, University Press of Virginia.
- Beloff, J. (1993). *Parapsychology: A Concise History*. London, Athlone. New York, St. Martin's Press.
- Beloff, J. (1994). Lessons of history. *Journal of the American Society for Psychical Research*, 88, 7.
- Beloff, J. (In Press). The skeptical position: Is it tenable? *The Skeptical Inquirer*.
- Braude, S. E. (1979). The observational theories in parapsychology: A critique. *Journal of the American Society for Psychical Research*, 73, 349.

- Crick, F. (1994). *The Astonishing Hypothesis: The Scientific Search for the Soul*. New York, Simon & Schuster.
- Dennett, D. C. (1991). *Consciousness Explained*. New York, Little, Brown & Co.
- Haraldsson, E. (1991). Children claiming past life memories: four cases in Sri Lanka. *Journal of Scientific Exploration*, 5, 233.
- Millar, B. (1988). Cutting the Braudian loop: In defense of observational theories. *Journal of the American Society for Psychical Research*, 82, 253.
- Nagel, T. (1974). What is it like to be a bat? *Philosophical Review*, 83, 435.
- Rachlin, H. (1994). *Behavior and Mind*. New York, Oxford University Press.
- Ryle, G. (1949). *The Concept of Mind*. New York, Barnes & Noble.
- Searle, J. (1992). *The Rediscovery of the Mind*. Cambridge, Mass. The M.I.T. Press.
- Schmidt, H. (1993). Non-causality as the earmark of psi. *Journal of Scientific Exploration*, 7, 125.
- Stevenson, I. (1987). *Children Who Remember Previous Lives: A Question of Reincarnation*. Charlottesville, University of Virginia Press.
- Stevenson, I. & Samaratne, G. (1988). Three new cases of the reincarnation type in Sri Lanka. *Journal of Scientific Exploration*, 2, 217.
- Utts, J. (1991). Replication and meta-analysis in parapsychology. *Statistical Science*, 6, 363.