

What is the Fundamental Nature of Consciousness?

On the contribution of parapsychology to consciousness research

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"It is almost an absurd prejudice to suppose that existence can only be physical. As a matter of fact, the only form of existence of which we have immediate knowledge is psychic. We might as well say, on the contrary, that physical existence is a mere inference, since we know of matter only in so far as we perceive psychic images mediated by the senses."

Carl Jung (*Psychology and Religion: West and East*, p. 12)

Abstract

The nature of consciousness is fundamental to philosophy of mind and cognitive science. Science has made very promising progress on the "easy problem" (Chalmers, 1996) - the working out of the neural mechanisms of behavior and physiological correlates of mental states. However, despite thousands of years of philosophy and over a hundred years of hard science, the "difficult problem" - the issue of how first-person experience, and the raw feels of awareness can accompany the physical processes of neurobiology - remains intractable. A crucial aspect of this problem in the philosophy of mind is the question of ontology. Does mind or consciousness exist as a real feature of the world? Materialism asserts that only matter and energy comprise the universe, and all phenomena are products of their interactions. In contrast, dualism asserts that the universe also contains "mind", which cannot be reduced to matter or energy, and is responsible for consciousness. Which (if either) of these basic theories is true is an issue that is crucial to the way we understand normal and pathological human cognition, and the nature of the psyche. The data of parapsychology has direct relevance to these and other issues in cognitive science. In this paper I discuss the contribution that parapsychological research can make to the study of consciousness. Besides promising approaches to the "other minds" problem, and possible applications to the evolutionary origins of consciousness, the greatest contribution of parapsychology consists in what it has to say about materialism vs. dualism. I briefly mention a few arguments against materialism from the mainstream sciences, and then focus on the powerful implications of parapsychological research, some of which are very telling against the sufficiency of materialism as a framework within which to explain consciousness. The paper concludes with major problems which parapsychology must address to flesh out its contribution to ontology.

Introduction

The question of whether cognition, consciousness, and the human "mind" in general, are a by-product of the physico-chemical processes in the brain is a fundamental issue in philosophy of mind (see Churchland, 1988; Dennett, 1991; Foster, 1991; Hodgson, 1991; Lockwood, 1989; Madell, 1988; Penrose, 1991; Robinson, 1993; Smythies and Beloff, 1989). Modern science generally embraces materialistic monism, which promises to explain everything in terms of the interactions of matter/energy. However, considerations of mental phenomena such as consciousness and the raw feels of experience ("qualia") seem to suggest that in addition to matter/energy, "mind" might be a real component of the universe; it may not be reducible to matter/energy, and would be responsible for thoughts, intentionality, consciousness, and experiences. This basic position is called dualism, and is popularly associated in the West with Descartes (1997), who held that the soul is the seat of reason and thought, and interacts with, but is independent of, the mechanical physical body. This idea is likewise widespread in many Eastern traditions, and has been supported by modern scientists including John Eccles and others.

Currently, the issues of consciousness are (somewhat) addressed by the field of cognitive science (Churchland, 1986; Churchland, 1988; Ornstein, 1974). This comprises philosophy of mind, neurobiology, psychology, and artificial intelligence. Needless to say the nature of individual consciousness is a basic concern to the study of transpersonal psychology. I will not attempt to define consciousness here, but it should be clear that by consciousness I mean the raw feels of experience (qualia), and the first person perspective we all (including the solipsists) enjoy. This is to be contrasted with any questions of behavior, computational states of the brain, and problem solving algorithms. The latter issues are called the "easy" problem, and are the province of everyday neurobiology; in contrast, the question of how first-person conscious experience could possibly arise from (or accompany) purely physical processes in the brain is called the "hard problem" (Chalmers, 1996).

The easy problem is a very difficult one as scientific problems go, but the hard problem is infinitely harder because we do not even know what a possible solution might look like. There are several positions within cognitive science as regards the status of consciousness. Functionalism (Dennett 1981, 1991) asserts that the hard problem does not exist, and that consciousness and the sense of self is an illusion. Various identity theories deny the existence of anything but matter/energy, and hold that consciousness is identical with physical processes in the brain, or their functional relationships to each other. Epiphenomenalism, the position tacitly assumed by most working psychologists, asserts that conscious experience exists (in some vague definition of "existing"), and somehow accompanies physical processes, but that mental states are completely determined by physical states of the brain, rendering free will an illusion. Interactionist dualism, a minority opinion, holds that conscious minds are a fundamental building-block of the universe, exist as surely as rocks and magnetic fields do, and that their workings cannot be reduced to processes of matter or energy.

The sense of being conscious and experiencing sensory impressions as well as emotions, thoughts, and exercises of the will, is our primary datum, and perhaps the oldest object of wonder for man. The contents of our mind seem so clearly and fundamentally different from the third-person, objective descriptions of behavior and material processes studied by science. On the other hand, perhaps we really are mistaken. A conscious self doesn't feel like a billion electrons fuzzing around a network of neurons; but then again, who knows what a billion electrons in such a system would feel like, from the inside?

The question of ontology is a crucial one to all science and philosophy. It strikes at the most basic issue of all inquiry: how many *basic*, fundamental, irreducible things make up the world? Its ramifications to fields from physics to sociology are clear. Specifically, psychology and neurobiology have to address the fundamental nature of the mind, and know whether higher-level cognition and behavior is generated, or merely altered, by normal brain architecture, illness, drugs, and surgical intervention. A clear understanding of what “person” is a necessary part of trans-personal studies. Social issues, such as the ramifications of the nature vs. nurture debates in moral theory would likewise be deeply affected by these questions. Finally, and perhaps most importantly, personal issues pertaining to the meaning of physical existence and death, rest in part on the solution to the problem of ontology.

In the remaining text, I will first briefly go over several important scientific arguments that argue against the sufficiency of materialism in explaining important features of the world. For some, this will not be nearly enough detail to build any force in arguing against the powerful mainstream materialist paradigm. For others, who are already convinced (perhaps through personal experiences of transformation) of the immateriality of mind, this may be icing on the cake. I bring up these considerations to show that there are already cracks in the materialist program that have nothing to do with parapsychology and that perhaps its data will dovetail nicely with some progress going on in other sciences.

Most importantly, I argue that parapsychology provides the most forceful arguments of this nature, and strongly supports a dualistic world-view. Because of space limitations, the evidence for the various phenomena will not be dealt with here. In this paper, I assume that parapsychological results are generally true (i.e., I will not discuss the skeptical position, nor rehash the evidence for the existence of phenomena such as telepathy etc., as this has been done ad nauseum). Instead, I will deal with the implications of these data for the study of consciousness. Materialism is thought to potentially apply to whatever science discovers, and it is often asked what kinds of results, in principle, would be enough to cast doubt on this world-view. Thus, even if one takes an extremely skeptical position towards the results of parapsychology, it is interesting to consider whether, as I argue below, these data represent an example of findings which would be incompatible with materialism.

It should be noted that there is another possible alternative besides dualism and materialism. Idealism is the position that there is indeed only one kind of stuff in the universe, but instead of matter/energy, it is mind-stuff: the universe and everything in it is taken to actually be the content of a mind (whether your mind, or God's mind). Here, I ignore idealism, because while it may possibly be true, it is a sterile view to hold. Reality obeys coherent rules, and it is profitable to discover these rules (i.e., do science) whether or not they are actually just the dreams of some super-being. It just doesn't seem to matter, as long as we are embedded in them anyway. Also, it is unfalsifiable: if someone claimed to have broken out of the grand illusion into some other greater reality, how does one know that this too is not an aspect of the illusion? Finally, I should make it clear that the problems of consciousness are not restricted to the verbal, voice-in-the-head we all hear. Faculties of Psi are most likely to be sub-conscious in processing, and perhaps super-conscious in source. The important point is that parapsychology provides useful data relevant to issues of ontology, which are crucial to the question of what consciousness really is.

Two contributions of parapsychology to consciousness research

Before discussing the main contribution of parapsychological research to ontology in philosophy of mind and cognitive science, two other roles for parapsychology should be mentioned. The first has to do with the evolutionary origin of consciousness. We can all agree that human beings are examples of conscious entities (in the extreme solipsistic view, at least You are a conscious entity). We all suppose that rocks and the robots on an automotive assembly line are not conscious beings, but rather fully mechanical objects. However, whether chimps, dolphins, elephants, etc. experience conscious states is a debatable issue; in general, it is interesting to wonder where in the chain of life from the simplest, almost chemical quasi-living things (such as viruses) to Homo sapiens, does consciousness appear. If indeed sensitivity to psychic information/influences is a concomitant to consciousness however dim (Turing, 1950), then perhaps parapsychology has something to say on this subject. For example, there has been some research done on mental influence on protozoa and other lower life forms (Richmond, 1952; Randall, 1970). If it were possible to differentiate an information-sensing ability from a psychokinetic effect on the microorganisms, perhaps a lower bound on conscious experience can be estimated, which might support a panpsychist view (Charon, 1986) or perhaps a more human-oriented complexity view (Popper and Eccles, 1977).

Another place where parapsychology may resolve crucial issues in consciousness research is in the "other minds" problem of epistemology. All that one knows (or thinks one knows) about the thoughts, feelings, and intentions of other people is inferred from observing their behavior. Having no first-person access to their minds, how does one know that they even have minds, and aren't just properly-behaving automatons with no internal experiences at all? Scientists in general would argue that whatever gives rise to consciousness in yourself would surely do so in others, given our shared physical and biological structure. Functionalists would deny that we even have any special "consciousness", aside from the workings of the information-processing brain, so the problem is again a non-problem. Nevertheless, our primary datum is our own consciousness, and all scientific evidence is perceived secondarily; thus it makes sense to wonder about the privileged access we have to our own consciousness, and to ask whether it is really impossible to know first-hand what some other mind is experiencing. Some phenomena studied by parapsychology may be directly relevant here. Direct mental empathetic contact, and the sharing of states of consciousness, has been reported in many spiritual traditions and in some spontaneous cases. While this phenomena has been little studied by lab parapsychology, the existence of mind-mind contact which is not at all dependent on inference from outward behavior, and allows the perception of another being's consciousness with as much privileged first-person access as one has to one's own, gives hope that perhaps parapsychology can move the other minds problem from the realm of philosophical speculation.

Anti-materialist arguments in the sciences

The mind-body problem, and the closely-related question of whether minds and mental contents exist in the same sense as matter and energy exist (and thus should be a fundamental part of our ontology), is a very basic issue in science and philosophy. Parapsychology has had a special relationship with this problem, because it is commonly (though not unanimously) thought that it is the one branch of science which actively supports a dualistic world-view. For example, Beloff (1985) argues that the existence of psychic phenomena would support dualism. Conversely, some dualists do not accept the reality of psychic phenomena (J. Eccles, for example). Among many

scientists who do accept the data of parapsychology, there is the feeling that materialist explanations can be found for such occurrences.

Most working scientists never consider the question of ontology at all; this is a defensible methodology in most specific cases, since progress is most readily made if one assumes one's concepts and tools can explain a given phenomenon, until proven otherwise. The question of whether there is an immaterial soul is simply outside the scope of the day-to-day activities of a bench physicist or neurobiologist. When asked, however, a majority of scientists would balk at the possibility and maintain that the world only contains physical things. Since dualism is such a scientifically unpopular view, it may seem that interpreting parapsychological data to suggest dualist paradigms is a disservice to parapsychology, and will make it even less palatable to mainstream science. However, a wider look at the various sciences clearly indicates that there are cracks in the materialist program.

Due to space constraints it is impossible to do justice to these arguments here, but it is instructive to see that evidence for dualism crops up in almost every field of science (Dossey, 1989). In mathematics, it has been argued based on Gödel's theorem that the human mind is able to perform functions which no physical machine can (Lucas 1961, 1968, 1970; MacKay, 1960; Penrose, 1991). In neuro-psychology (see Wald, 1984), cases such as fully functional patients with drastic reductions in brain mass (Lorber, 1981) and autistic subjects who perform mathematical feats without prior training (Smith, 1983) cast doubts on the assumption that all abilities truly reside in the physical brain. The strongest support for a non-physical substratum for consciousness comes from physics. Wigner spoke of a return on the part of most physical scientists to the spirit of Descartes' 'Cogito, Ergo Sum' (Wigner, 1979). Likewise, David Bohm commented on the abandonment of modern physics of its earlier mechanical basis, and the irony of the fact that just when physics is moving away from mechanism, biology and psychology are moving towards it (David Bohm, in Randall, 1975). Consciousness most clearly figures in quantum theory (Davies and Brown, 1986; Globus, 1998; Walker, 1977; Wigner, 1979). Such quantum-theoretic considerations have led to interactionist models whereby the non-material consciousness affects wave-function collapse of critically-poised quantum effects in the synaptic vesicles of neurons (Bass, 1975; Popper and Eccles, 1977; Stapp, 1985; Wolf, 1985). Besides quantum theory, it is not usually appreciated that the primacy of a non-physical observer also figures in equivalent teleological formulations of various physical laws, as well as in thermodynamics, relativity (Popper, 1956), quantum chemistry (Margenau, 1944), and cosmology (Barrow, 1989).

Parapsychology and dualism

What kind of data would really count against materialism? In a sense, materialistic monism is infinitely elastic. As we have seen in physics, one is free to postulate the existence of all kinds of bizarre things (such as empty space with a defined geometry, waves without a medium to wave in, spaces with an infinite number of dimensions as in quantum theory, etc.). However, in the cases I describe below, the modifications needed to materialism would result in a world-view so wildly different from that which materialism is used to, that "materialism" would lose all meaning as a term. To avoid the charge which is often leveled against dualist theories (that the concept can be stretched to accommodate any possible objection), it seems reasonable to label as "materialist theories" those theories which operate with basic concepts (such as causality, locality, various conservation principles, etc.) as science knows them. This seems all the more a good choice of definition since one of the main reasons people often disapprove of dualist theories is that they

introduce extra ontological or epistemological elements into the very successful framework of modern science. A true "dualistic" theory is one which deals with a substance that is radically different from anything which present-day science studies, whether it is A) because of its radically different properties, B) because of a completely different methodology being necessary for its study, or C) because there are two clearly demarcable sets of laws, each of which pertains to, and only to, one of the two types of substances.

Unlike the scientific arguments for insufficiency of materialism, parapsychology specifically points to the need for a non-physical substratum (Levin, 1995). While physical models of many such experiments exist (for example, Dobbs, 1967; Forwald, 1969; LeShan, 1969; Marshall, 1960; Zohar, 1986), they generally miss the mark because they focus on the energetics and physics of the situation while ignoring its even more intractable informational aspects (Beloff, 1970).

The first problem concerns the symbol groundings for the telepathic process. That is, if telepathic information is to be transmitted by some modulation of an energy (as in the basic "mental radio" model), then one has to show how it is that a person learns the meanings of the different signals (i.e., the code for different concepts). Since a particular modulation of some energy wave does not in itself bear any connection to any mental concept (it is an "arbitrary" code, in contrast to pictographic languages), one has to learn (via example, trial-and-error, or a meta-language) the mapping of symbols to concepts. The same is true even for vision.

As Beloff points out, this problem is solved for the modality of sound (for example) in early age, when a child, by instruction, associates various particular modulations of sound waves with other stimuli and concepts already learned. The question is, if telepathy propagates as information carried on some physical energy, how is it that a person knows what the various aspects of the signal represent? This problem is sharpest when non-emotional, propositional information is transferred, because then universal, inborn, hard-wired "standard" representations can be ruled out.

The second problem Beloff brings up involves the selective properties of ESP. Specifically, since telepathy (for example) seems to involve no obvious attenuation with distance, how is it that a sensitive subject is not swamped with the thoughts of trillions of the members of the biosphere, and is able to pick out the thoughts of some specific individual?

The mechanism of psychometry (the obtaining of information about the past events concerning some physical object) lacks any convincing physical theory. For a straight-forward physicalist model to explain this, one would have to postulate a field of energy around every object which carries information on not only things which happened in its vicinity, but things like what certain people thought of the object, etc. This hardly seems like a materialist theory, not because of a ghostly field of information (which abound in quantum physics anyway), but because the information is contained based on a semantic relationship to the object, as opposed to being selected on the basis of some physical property such as spatial location (for example, when a metal bears traces of magnetic fields it had encountered through physical proximity).

The best evidence for dualism is provided by cases suggesting personal survival of death, and in general, non-physical intelligences lacking any body whatsoever (Stevenson, 1974, 1997). Poltergeists are not a very good candidate, as they are usually associated with an adolescent, and most likely represent a PK effect on his/her part. Mediumistic effects suggest but do not necessitate such an explanation (distinguishing information obtained from spirits from that obtained from the minds of those present is at the very least, difficult). Cases of hauntings (of the intelligent entity type) and OBEs (out-of-body experiences) are more interesting. For example, many cases of people

voluntarily (or more frequently, involuntarily, during operations, where they later report the activities of the relatives they visited while they were under the knife) leaving their bodies and floating around the physical world have been reported. This can be interpreted as an illusion surrounding simpler telepathy, but an interesting series of experiments contradicts this. In some pilot studies (Alvarado, 1982; Moss, 1974, Tart, 1967), it was shown that OBE practitioners can "travel to" and report upon waking a target outside the lab. The interesting twist was that when the target was actually a mirror reflection of the real target, telepaths guess the number (it is usually a sequence of digits) the way it really is, while most people who report themselves visiting the site out of their physical body describe the target as it would be seen by someone facing the reversed mirror image (although this result is not universally found in all such studies).

Clairvoyance is another difficult phenomenon to incorporate into a physicalistic framework (Mundle, 1965). While there have been few experiments specifically designed to separate pure clairvoyance from telepathy and other paranormal abilities (a formidable task), there have been some attempts (for example, Tyrrell's experiments described in Mundle, 1965). A physical theory of clairvoyance must explain 1) how the carrier medium (radiation, whatever) can penetrate all known barriers, and yet still transmit visual information about objects (i.e., be affected and meaningfully modulated by parameters that affect light waves), and 2) why all objects except brains do not impede the "radiation" (since it is apparently not absorbed by anything except brains), but all objects seem to "radiate" it. Even more troublesome for physicalism is the semantic nature of the targeting. That is, it would seem that for certain remote-viewing clairvoyance experiments, information on a target can be obtained by a subject who has never been there, nor knows how (physically) to get there. The connection is made *semantically* (the target is described to the subject in enough detail to enable him to know what he is to try to observe). This is completely alien to any other form of energy-mediated information gathering, which always involves a specific spatio-temporal relationship between subject and target.

Biology also speaks against mechanistic explanations of Psi phenomena (Levin, 1996). If psi abilities were of the same status as the physical senses (that is, derived from the physical phenotype of the organism and thus subject to Darwinian evolution), they would be greatly favored, would be selected for in any population, and we would be observing many more successful psychic events in the animal kingdom than we do now. The objection that psi is an evolutionary novelty is met by the studies showing that very primitive animals and even plants are sensitive to "mental" influences. This provides ample evolutionary time for such a useful talent to develop. The dualist would suggest that different laws are operating with respect to evolutionary time-scale changes of the mental capabilities of beings, that are not described correctly by the Darwinian theory which governs physical bodies.

Precognition often exhibits negative-time causality, which is troublesome to say the least, from the viewpoint of physics as well as logic. Faster-than-light tachyons can translate backwards through time, but they are prohibited from carrying information (Herbert, 1988). Precognition directly contradicts science's notion of time and causality (although it is far from clear that this cannot be fixed up - Broad, 1923, Feinberg, 1974). Such phenomena may be due to the fact that the mind is processing information outside of the normal fabric of physical space-time.

There have been several studies showing that mental volition can affect quantum phenomena, in the context of affecting statistical properties of binary bit streams generated by particle decay (Honorton, 1979; Jahn and Dunne, 1987); this perhaps lends support to the models (see above) whereby mind interacts with matter at the quantum level. Interestingly, in some experiments, the device "decided" (as determined by a quantum element) within 10^{-7} seconds

whether a certain quantum event was going to count as a 0 or a 1. The brain works at time scales of milliseconds (10^{-3} seconds). Thus, it would appear that the physical brain simply is not fast enough to sense the switch and effect a proper response. Even more fundamental is the fact that the device is being affected despite a complete lack of understanding of its workings by the subject. This has led to an "equivalence hypothesis" (Schmidt, 1974; Schmidt, 1997 and references therein), which points out that the physical construction of the random number generator is irrelevant. This suggests that the influence is not based on the physical characteristics of the systems involved, but is rather of a teleological nature, directed by the outcome *intended* by the subject.

Homeopathy, the treatment of maladies and the psychological adjustment brought about by means of ultra-high dilutions of various substances is likewise troublesome for materialism (see also Harald, 1999). This is not because of the efficacy of solutions which have been diluted to the point where no molecules of the active ingredient remain in the sample, since physicalist models involving ordered water etc. have been proposed (Endler and Schulte, 1994). The real problem for materialist explanations of homeopathy is that it uses dilutions of simple compounds to treat psychological imbalances such as "rudeness" and "feelings of bad luck" (Bailey, 1995). It is not physically plausible that such elaborate psychological characteristics can be affected by simple compounds through biochemical pathways. The rule of "like treats like" is also unlikely to admit of a reasonable chemical explanation.

Finally, consider dowsing and other radionics instruments (Maby and Franklin, 1956; Russel, 1973). Many energy-transfer models have been formulated to explain how a rod being held by a dowser walking over an underground cache of water or minerals might be caused to move. The problem is that it has been seen that this process works just as well when the dowser is working on a map of the territory as opposed to the territory itself. Once again the connection between the dowsing rod or pendulum and the target object is not a physical one but a *semantic* one (made by the symbolic map which the dowser sees). The same phenomenon has been observed with radionics devices: they work equally well regardless of what materials constitute the schematic of the device. Thus, it isn't a precise physical material configuration which matters (as it does in physical devices such as radios) but rather the abstract functional structure and interrelationship between the parts (White and Krippner, 1977).

Of course, new progress in the sciences of physiology, neurology, etc. will have much to say about biological (i.e., physical) correlates of paranormal phenomena. Finer resolution analyses with modern, non-invasive tools such as MRI and PET scanning during OBEs and other instances of paranormal cognition are bound to be informative. For any PSI process to occur, there must, somewhere, be an interface (be it energetic, informational, or other) between the postulated non-physical reality and the physical organism. Thus, we can expect advances from modern techniques about the physiological side of this equation. However, I have argued that by their very nature, such approaches cannot tell the whole story.

In summary, the characteristics of paranormal information transfer are directly opposite those which we assign to physical signal carriers (see Mitchell, 1974 for descriptions of several representative studies, as well as Beloff, 1974; Sheldrake, 1985; Sheldrake, 1989; Smythies, 1967; White and Krippner, 1977). Tart (1969) and Krippner (1977) present many experiments which are supportive of that view. Almost all psi experiments are more easily explained within a dualist framework, and some (like the Stevenson cases which support rebirth and hauntings and apparitions) point quite directly to the existence of non-physical entities. It is seen that problems with the information coding/decoding aspects of telepathy render hopes for an energy-transfer explanation unlikely. Moreover, all physical materialist models are based on the fundamental

"primary qualities" of physics: position in space and properties such as chemical composition, mass, etc. The semantic nature of remote-target clairvoyance, psychometry, homeopathy, and dowsing demonstrates that some phenomena are best explained by interactions not based on the physical location and properties of the objects involved, but rather on the semantic role they play in the mind of the participant. This is echoed in Jung's concept of synchronicity - "meaningfully but not causally related events", once again, referring to mental properties as opposed to physical ones. Finally, the time-paradoxical aspects of precognition, the lack of evolutionary spread of psi abilities throughout the biosphere, and the ability of subjects to affect devices of unknown construction at speeds far beyond that of biological neuronal processes (discussed above in the context of quantum bit generators) also point to the possibility that the mind is a non-physical entity.

Conclusion

I have attempted to show that parapsychology provides a wealth of phenomena which complement some arguments from the traditional sciences in pointing out that materialistic monism is ontologically incomplete. As important as that conclusion may be, it is only half the puzzle. After all, a materialist might object that dualism doesn't help at all. Given the existence of a ghostly non-physical substance, one is still left wondering how it escapes all of the scientific arguments levied against normal matter. If matter does not seem to provide the substratum for consciousness, qualia, first-person perspective, etc., how does the mind?

In order to be a viable theory, useful for parapsychology, philosophy, and cognitive science, it must contain positive, constructive models. Aside from showing that materialism is insufficient, dualists must provide coherent, testable models of how an immaterial substance can accomplish what they argue matter cannot (for example, circumvent the problems of the Lucas argument, and in general, discover what it is that enables "mind" to perform that for which matter has been shown insufficient). This is not trivial, and is a problem usually ignored by some dualists who blithely resort to "the soul" when troublesome phenomena are presented. Simple one-soul-one-body Cartesian dualism also needs to be made more sophisticated to embrace data from split brain patients (Gazzaniga, 1978; Marks, 1981), multiple personality cases (Braude, 1995), and a wealth of other data (White, 1991, and see discussion in Dennett, 1991) which suggests that our view of ourselves as coherent, monadic consciousnesses is in need of amendment.

Dualists are thus badly in need of a theory of how mind-stuff is able to have (or produce?) several kinds of mental phenomena. One is the issue of intentionality: if a materialist claims that a particular part of your brain is identical with your memory of an event or your knowledge or belief of some proposition, one might argue that this piece of neural net may be responsible for your behavior consistent with this proposition, but it is hardly possible for a piece of matter to, in and of itself, to instantiate a belief or be about something. But the same problem seems to affect the immaterial mind. How can a piece of "astral body" be about something? Other issues which need to be addressed by dualist models are the related problems of first-person perspective (why your internal view as subject is fundamentally different from objective descriptions of other objects) and indexicality (the question of why you are the particular person you are, when from a scientific, third-person perspective all have equal status as objects).

Finally, it would be nice if we had a dualist model for free will (a free will worth having, as Dennett says). So far our choices seem to be a complete physical determinism, a physical determinism joined to limitations on our ability to predict this determinism (chaos theory), or

ultimate (but random!) unpredictability given by quantum theory. None of these alternatives seem to capture what we mean by free will (which is not simply about unpredictability, nor about purely random choices). Perhaps a related issue is that of ethics and moral theory. Do dualists have anything to say to those who argue that no intrinsic moral values are possible in a purely physical universe?

Emergence is a powerful concept in the physical sciences (magnetic fields, superconductivity, correlated states, etc.) as well as biology (e.g., complex behavior of the anthill which derives from the relatively simple behavioral repertoire of the individual ants). Functionalists and other materialists in the cognitive sciences argue that behavior and mental processes emerge from the function of many nested low-level information processing routines, none of which are in and of themselves conscious. A good dualist theory may be an emergent one, but it may also turn out that consciousness, experience, and indexicality are first-order, intrinsic properties of Mind (as position for example is a fundamental property of matter), and are not synthesizable in terms of any lower-level concepts.

Other problems remain for dualism, and addressing them is best done within the context of parapsychology. One of the strongest arguments against dualism concerns the precise locus of interaction between the material and immaterial realm. Of course, purely material causation is equally mysterious (Hume), but a very specific question is whether interactionism violates conservation of energy laws (see Morowitz, 1987, but also Averill and Keating, 1981, and Larmer, 1986).

It is thus seen that while dualism is quite likely to be more the more appropriate ontology, the burden is on it to do much for what materialism has been shown to be insufficient. I would like to suggest that the modern techniques of parapsychological research, coupled with theoretical insights from the more analytical of the old dualistic traditions (Besant, 1904; Long, 1948; Ouspensky, 1931; Steiner, 1961) are needed to begin to address this task, which is arguably the most important we face, as scientists and human beings.

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