

seems to be no room for spirit to get into the act, and no sign of its effects. The Shadow of Physiology is a shadow cast by a successful program of scientific research.

The importance of this speculative extension of physiology for the Mind-Body problem is plain, for it is incompatible with matter-spirit interaction. How different our view of man would be if brain physiology uncovered the operation of non-physical forces! In tackling the Mind-Body problem we must come to terms with the scientific results and the likelihoods these results reveal. They reveal that the outlook for the action of spirit on matter in particular, and so for interaction, is bleak.

The Mind-Body problem is a problem because, as we have now seen, there are reasons for holding to each of the four propositions which make up our inconsistent tetrad. Competing solutions of the problem consist in competing ideas concerning which members of the tetrad should be rejected, and what should be put in their place. So now we must set out and assess these different responses that the tetrad has called forth.

Chapter 3

DUALISMS

Dualist doctrines are those which, in holding that the body is material and the mind spiritual, accord to man a dual nature. Dualists retain the first two of our four propositions, and must therefore reject either the third or fourth. So there are two main types of Dualism, one affirming and the other denying the interaction of mind and body.

Before discussing each of these alternatives, we must consider general objections to the very idea of a spiritual thing, for if these objections were compelling they would of course rule out both types of Dualism. Some of these objections are purely philosophical, and some are more closely tied to scientific findings.

(i) **Philosophical Objections to Spirit**

If spirits were spatial, then we would have to show why they were not just a new variety of physical thing, like a magnetic field. And we would have to face the idea that two different things can be in the same place at the same time. These problems are not overwhelming; we can distinguish spirits from material objects by reference to mental properties, and we can point out that, like an electrostatic field and a piece of glass, two different things can be in the same space provided they are of suitably different kinds. So a body and a spirit might well coexist in the same space.

Spatial spirits would nevertheless give us many intractable problems. How could we determine the boundaries of spiritual things? What is the composition of such ghosts? What holds them together? What makes them move? The worry that these questions could never be answered has led philosophers to hold that spirits have no spatial characteristics at all, not even position. But there is usually a price to be paid for avoiding one set of problems. Theories dealing in things which have no place are heir to several ills of their own.

The Elusiveness of Spirit

Being without place, a spirit resists normal research techniques. If we want to investigate such a thing, we literally do not know where to begin. We cannot devise experiments in which spiritual operations are controlled, or screened, or maximized. In attempts to enlarge our knowledge of spirits, we are restricted to introspection and asking other people, whose bodies we suppose are also connected with a spirit. By the experimental use of drugs or hypnotism, for example, we might hope to gain more copious and accurate insight into spirit's nature and workings, but we are always confined to reports on how things seem to the subject of research. Uncontrolled reports of how things seem are an unsatisfactory basis for scientific knowledge. A theory which involves spirits is therefore one which, of necessity, involves a great deal of ignorance. Spirits are methodologically elusive.

Like so many other considerations in the philosophy of mind, the methodological elusiveness of spirits will not

of course establish that there are no such objects. But it should set us to searching for adequate alternative accounts of the mind which are less impervious to scientific investigation.

The Correlation of Minds and Bodies

A fact about normal people, so familiar we scarcely notice it, is that each body has associated with it one, and only one, mind. And with each different body is associated a different mind. Each mind belongs with the body through which it perceives and acts, and with no other. The bodies and minds of people match one to one.

In all Dualist theories, this is a contingent and indeed surprising fact about the world. It is a fact that cries out for explanation. The explanation is not going to be easy to find if the spirit is not only distinct from the body but is not in space at all. How can a non-spatial thing enter exclusive and intimate relations with just one body and no other? Take the case of two bodies which are thoroughly alike; identical twins just before birth. Suppose that from the time of the first division their development has proceeded exactly parallel. They now differ only in position and physical attitude, so their only differences are spatial. Yet already (or soon after) each body must be associated with its own mind. If these minds are non-spatial spirits, how can they "take advantage" of the merely spatial differences between the twins' bodies and become associated with just one of them? It will be hard for any Dualist to furnish a convincing account of such a situation.

The Individuation of Spirits

Non-spatial spirits are involved in another, deeper, conundrum. Minds can be more or less like one another. Two people can be very different indeed, or they can be broadly alike in upbringing, education, experience, taste, and character. Suppose that they are not just very alike, but absolutely alike. By some freak of nature, the course of their experience has been exactly alike and has worked in exactly the same way on the same innate tendencies. The minds of these two persons are alike in both history and contents.

On the Dualist theory each has a spirit just like the other's. But here an embarrassment arises: In what sense are there *two* spirits? What is the difference between *two* spirits each with the same contents and history as the other, and *one* spirit associated with two bodies? This is not the question of how we could tell that there were two minds, or how we could tell which was which. In a spontaneous fission explosion of radioactive uranium, we may not be able to tell which atom disintegrated first or whether the chain reaction began from a single atom or from two disintegrating simultaneously. Nevertheless, although we may not have them, there are answers to the questions "Which atom?" and "One atom or two?" The answers involve the location of the atoms in question at the time the reaction began. The atom which initiated the reaction was the atom at the place where the chain commenced at the time it commenced. If atoms at different places disintegrate, then two atoms are involved. Atoms, and material things generally, are individuated and counted

by their positions. Non-spatial spirits cannot, of course, be individuated and counted in this way. But then, in what way can they be individuated and counted? If there really is no difference between one spirit and two spirits of exactly similar history and contents, then spirits are a very suspect sort of thing indeed.

Spirits as Located

As Locke realized, Dualists have made things unnecessarily hard. Spirits can be given a location even if they have no dimensions. They need not take up space in any direction, so need have no length, area, or volume. Yet if they are at a place, and in particular at a place inside a body, progress can be made with the problems of correlation and individuation that have just been raised. Spirits are correlated with the body within which they lie. As bodies exclude one another, there will be exactly one body containing, and so associated with, each spirit. A place inside the skull is a sensible location for the spirit, and skulls interpenetrate to a negligible extent. So no spirit will be in more than one body. Why only one spirit is to be found inside a normal man is not answered in this way, nor how the body and spirit interact. But there is some intelligibility in the notion that a body can affect and be affected by a spirit within it and not by any spirit beyond it. An indwelling spirit does have a special relation to one body rather than others, no matter how similar these other bodies might be.

Further, indwelling spirits can be individuated by the bodies within which they are located. The bodies can be individuated spatially, no matter how alike they may

be in every other way, and the indwelling spirits can be individuated in the same way. If they are in different places at one time, there are two of them; if not, there is only one. We would not know precisely at which point the spirit was located, but that is not a problem. The problem of individuation is "In what do two spirits differ, in virtue of which there are two and not one?" And we can answer "They are two in virtue of different location" even if we do not know what their exact location is.

If we give spirits a location we are also able to meet the more subtle and more difficult objections raised by P. F. Strawson against the possibility of a pure ego—what we are calling a "spirit". And for the same reason, that location enables spirits to be identified and distinguished from one another.¹

Strawson's conclusion, that anything to which we ascribe a conscious state must also have bodily characteristics, and so cannot be a separate object "attached" to the body, is seen to be too strong when we notice that a located spirit, "attached" to the body, will meet his objections about the identity of spirits.

What could be more natural than the idea that when you go on holiday you take your mind with you? And if your mind is a spirit, how explain this unless the spirit is to be found where your body is?

Descartes, the great Dualist who set the modern debate in motion, conceded that the non-spatial spirit

¹ See P. F. Strawson, *Individuals* (London, 1959), chap. 3, especially pp. 90–103. Strawson's further objection to spirits, that there could never be adequate grounds for describing them in mental or any other terms, involves a positivistic view of imperceptible objects discussed in chapters 4 and 5 below.

worked through a particular place in the body.² (He bet wrong, putting his money on the pineal gland rather than the cortex, but that's of no importance.) Here we propose to take the matter one step further and allow that the spirit is actually at a particular place.

The minimum spatiality that this requires is location; dimension need not come into it. The great modern neurophysiologist Sir John Eccles, who is a Dualist, accords "spatial patterning" to the mind.³ This goes further than what is needed for individuation and intimacy of association, and it raises problems of its own about size, shape, and volume which do not trouble a theory of merely located spirit.

In the eighteenth century the natural philosopher Boscovich developed a theory of matter in which the fundamental elements were material points. Any doctrine of located spirits involves spiritual points, and these would have to be distinguished from material points. So far as spatial properties are concerned, they are of course indistinguishable. It is in terms of what is to be found at the point that the distinction must be made; a material point is not capable of consciousness or purpose, but a spiritual point is. Whether a spirit can be at the same place as a material point is a detail we need not settle; nothing depends on it.

The elementary material things may have dimensions, or may be points. Either way they are different from located spirits. We do not end up with a contradictory

² René Descartes, *Meditations on the First Philosophy* (Meditation VI), in the Everyman edition of *A Discourse on Method*, London, 1912.

³ John C. Eccles, *The Neurophysiological Basis of Mind* (Oxford, 1953), chap. 8.

theory in which we are forced to conclude that located spirits are both material and non-material.

Located spirits are still methodologically elusive. But they are not subject to the other philosophical objections which have been urged against spiritual things.

(ii) Scientific Objections to Spirit

Spirit is supposed to be a very different sort of stuff from matter. The advance of our knowledge of living things, their evolution, development, and growth, raises difficulties for any theory of spirit.

The Continuity of Nature

There are two aspects of the continuity of nature which pose essentially the same question for spirits, the Problem of Evolution, and the Problem of Growth. Evolutionary theory asserts that complex modern forms, such as man, are the remote descendants of earlier species so much simpler that like the amoeba they show no signs of mental life. If minds are spirits they must have arrived as quite novel objects in the universe, some time between then and now. But when? We see only a smooth development in the fossil record. Any choice of time as the moment at which spirit first emerged seems hopelessly arbitrary.

In the embryonic development of man, the same problem arises. The initial fertilized cell shows no more mentality than an amoeba. By a smooth process of division and specialization the embryo grows into an infant. The infant has a mind, but at what point in its

development are we to locate the acquisition of a spirit? As before, any choice is dauntingly arbitrary.

The continuity of mental with non-mental forms is capable of two interpretations. Continuity shows that men and one-celled organisms have the same basic nature, and we may conclude from this that since single cells are without spirit, so must be man. This is the materialist response, and is, I think, the more common one among zoologists. Alternatively, we may conclude from the common nature of men and amoebas that as men have a spirit, so must amoebas also.

The continuity of structure extends even further. The smooth sequence, in descending complexity, from one-celled animals through viruses and protein molecules to simple material groupings leads us either to a more confident materialism, or to the view that all matter shares with man his more-than-material nature. The second response is known as panpsychism, the doctrine that mind is to be found throughout nature.

The scientific difficulty for any form of dualism is therefore this; the continuity of nature leads a dualist inexorably on to panpsychism, but panpsychism is a speculation which extends the field of the mental far beyond anything warranted by the direct evidence of mentality.

And if we reject the continuity of nature by insisting that spirit did make a sudden appearance in the world, we must explain if we can how a non-spirited parent can have a spirited offspring, and by what mechanism a spirit is acquired by a developing embryo.

None of this can refute Dualism; after all, the world is full of surprises. Nevertheless, these considerations should make a thoughtful man uneasy. The reason why

the Mind-Body problem is a classic in philosophy is that the alternatives to Dualism should make a thoughtful man uneasy too.

(iii) Interactionist Dualism

The most important and common form of Dualism is that which, following common opinion, affirms the interaction of body and mind.⁴ This variant must therefore reject (4) Matter and spirit do not interact. It must accordingly confront the reasons advanced against interaction in chapter 2, and show them to be insufficient.

Spirit-Matter Interactions Are Anomalous

If spirits are conceived of as located, then at least changes in the brain bring about changes in a spirit at some definite place within itself. This slightly alleviates the oddity of the connection, but does not change the situation very much. And we can enlarge on how anomalous the connections must be.

If the dualists are right, events in the brain, of a complexity which defeats the imagination, can cause effects of great simplicity in the spirit. For example, the experience of seeing a red circle on a white ground requires brain activity involving millions of cells. And vice versa, so simple a mental event as deciding to go to bed sets in train, on the Dualist account, cortical events of the most staggeringly complicated sort.

⁴ For example, Descartes, *op. cit.*; Michael Maher, *Psychology*, London, 1940.

Because no mechanism connects matter with spirit, such causal connections must be primitive, fundamental ones. In no other case are there fundamental connections between the simple and the complex. In no other case is the effect of a complex activity quite different from any composition of the effects of part of the complex. Matter-spirit connections, if they occur at all, are quite unlike any others. And unless panpsychism is true, they occur only in tiny fragments of the universe.

These anomalies must be conceded. But as we pointed out in chapter 2, to show that something is unusual does not show that it does not exist. Formally speaking, this is a sufficient defense of interaction against the anomaly criticism. We cannot decide about interaction by considering the anomaly alone. What matters is whether reasons in favor of interaction are strong enough to outweigh the anomalies. And that in turn depends on how satisfactory the alternatives to interactionist dualism can be made.

The Shadow of Physiology

Interaction is a two-way affair. If spirit acts on matter, then what happens in the mind must make a difference to what happens in the brain. Consequently, not every brain event can be determined solely by antecedent physical conditions and follow recognized physical laws.

Conversely, if all brain happenings are determined solely by physical influences operating on the antecedent physical condition of the brain, then spirit has no effect on matter. The Shadow of Physiology is the likelihood

that this is so, and consequently, that interactionist dualism is false. For the only way out is a theory of Double Causation, according to which both spiritual and material conditions are separate but complete causes of some particular brain events. But this is a spurious way of escape, for Double Causation is an incoherent idea. Either the material and the spiritual were both effective (both made a difference), in which case each was part only of the cause and the physical causes are not complete, or one was idling and was not effective although it might have been. In that case the idling member is not a cause at all. If physiology is complete, then to introduce spiritual causes alongside physical causes and have one or the other idling all the time, is idle indeed.

So the question we must face is: How solid is the evidence that for explaining events in the brain, physiology is, in principle, complete? How dark is the shadow of physiology? In the previous chapter we saw the completeness of physiology as an extension of the successes of contemporary biochemistry. We suggested the shadow was pretty dark. Let us now make a further examination of the situation.

Before considering brain activity more particularly, we must notice that earlier, more general arguments from the conservation of energy are invalid. Let us admit that the body and its environment form an energy-conserving system, so the spirit neither supplies nor absorbs energy. As C. D. Broad pointed out,⁵ changes in the distribution of energy, and hence causal changes, can be brought about without supplying

⁵ C. D. Broad, *The Mind and Its Place in Nature* (London, 1925), chap. 3.

any energy. His example was the string and bob of a pendulum. The condition of the string is causally efficacious in determining the path of the bob, but supplies no energy to it. Jerome Schaffer's example,⁶ illustrating the same point, is a radioactive atom. A spirit could cause it to disintegrate at a particular time, so changing the pattern of energy distribution, without supplying energy, and so without violating the conservation principle. As for the production of spiritual effects by material causes, it is no part of the conservation principle that the production of non-material effects requires physical energy.

Now let us turn to brain activity itself. D. M. Armstrong,⁷ in his discussion of this question, assumes that unless there is a time-lag somewhere in the chain of physical events, the spirit would have no opportunity to act. In hitting a cricket ball, for example, impulses from the eyes affect the brain, and this in turn affects the spirit, giving us vision of the ball. The spirit next decides how to act, and then, after the period required for the spiritual events, the brain would change and so affect the muscles controlling the bat. If there is no waiting period in the chain of physical events, then there cannot be any effective spiritual activity. So far as I know, there is no evidence for such a delay.

Although a time-lag would be splendid evidence of spiritual action, this is not the only way in which spirit could be active. There is, after all, no time-lag within which the pendulum string acts on the bob, or the earth

⁶ J. A. Schaffer, *Philosophy of Mind* (Englewood Cliffs, N.J., 1968), pp. 66-67.

⁷ D. M. Armstrong, *A Materialist Theory of the Mind* (London, 1968), pp. 32-34.

on the moon. In the same way, the spirit could effect a general constraint upon physical processes which go on without interruption, affecting their course but not breaking in upon them. It may take no longer for the brain to enter the ball-hitting condition when the spirit is directing events than when the spirit is on holiday; so long as the end result is different, the spirit has been efficacious.

There is a further complication. The indeterminacy in quantum laws means that any one of a range of outcomes of atomic events in the brain is equally compatible with known physical laws. And differences on the quantum scale can accumulate into very great differences in over-all brain condition. So there is some room for spiritual activity even within the limits set by physical law. There could be, without violation of physical law, a general spiritual constraint upon what occurs inside the head.

Although many outcomes are equally possible within quantum laws, they are not all equally probable. So the evidence for spiritual constraint would consist in total brain activity deviating in a non-random way from the expected probabilities. Because we are ignorant of the detailed constitution and working of the brain, we do not know what these expected probabilities are. We do not know whether spiritual activity is affecting the brain.

Interaction of spirit and brain is not positively excluded by contemporary knowledge. Yet for most people researching brain function, the working hypothesis is that no such thing occurs. For in the absence of evidence to the contrary, the most economical and therefore best assumption is that only physical causes are at

work. The interactionist dualist must bet that the economical assumption will prove inadequate to the facts. Until there is some sign of inadequacy, his bet is a baseless one, and hence one that in sound philosophy ought not to be made. There is at present no light by which we might dissipate the shadow of physiology.

(iv) Parallelism

If we abandon the interaction of matter with spirit, but cling to the dual character of man as having a material body and a spiritual mind, we become Parallelists. Parallelists may hold that neither matter nor spirit affects the other, or that matter can affect spirit but not vice versa.

The first alternative is that of the classical Parallelists in the tradition of Descartes, who accepted his dualism but could not admit any causal action across the border between matter and spirit.⁸ They pictured the bodily and mental as occurring always in step, always parallel, but never linked by a causal tie. Thus, with M_1 , etc., as mental events, and B_1 , etc., as bodily events, and arrows indicating causal links:

$$\begin{array}{l} \text{Mind} \quad \dots \rightarrow M_1 \rightarrow M_2 \rightarrow M_3 \rightarrow \dots \\ \text{Body} \quad \dots \rightarrow B_1 \rightarrow B_2 \rightarrow B_3 \rightarrow \dots \end{array}$$

So that at the time when I become aware of the change in the traffic light (mental event), changes occur in the

⁸ See, e.g., Malebranche, *Dialogues on Metaphysics and on Religion*, London, 1923, and Leibniz, *Exposition and Defence of the New System*, in *Philosophical Writings*, ed. Mary Morris, London, 1934.

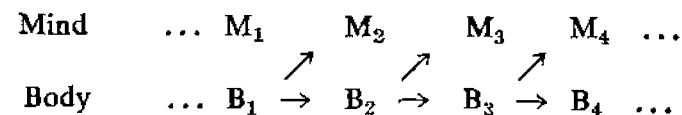
brain (bodily event). The awareness leads to the (mental) decision to move off, the brain changes set in train the muscular operations involved in starting the car. The processes are so synchronized that it appears the mind and the body interact, but this is illusion. The processes are kept in step by a divine Pre-Established Harmony, like two synchronized clocks in Geulincx' image of the situation, which keep time without affecting each other, because they have been preset to do so.

A rowing crew illustrates the same idea. If we knew nothing of rowing and were watching the oarsmen from some distance away, the movement of the oars would suggest almost irresistibly a causal connection of one rower with the next. The oars keep time, accelerate and decelerate together, as if joined by connecting rods and so interacting. Yet this appearance of causal connection is deceptive. The rowers act independently. Their apparent connection springs from a pre-established harmony set up by training.

This form of Parallelism was always thought to be a last desperate resort. It involves postulating all manner of unsuspected hidden mental causes. If, for example, I am surprised by the pain I suddenly feel when (but not because) I step barefooted onto a carpet tack, there must have been some unconscious mental state preceding and causing the pain. This is an unhappy conclusion; the method clutters the mind with a host of new unconscious events.

Introducing the Pre-Established Harmony is likely to offend also against the canons of method. For anything which can explain such a harmony is likely to be capable of anything and so incapable of explaining why there is one sort of harmony rather than another.

The second form of Parallelism asserts that matter can affect spirit but is not affected by it.⁹ Our picture is then one of bodily causes having both bodily and mental effects:



If we deny that the mind is in any sense a spiritual *thing*, and mental events never cause other mental events, then we think of it as a mere succession of events of awareness, decision, feeling, etc., arising from bodily causes. Such a view is Epiphenomenalism, popular in the late nineteenth century.

In the second form of Parallelism the causal hypotheses are in rather better order. They involve appeal only to events which we can ascertain independently do occur. We can again believe that treading on a carpet tack causes pain.

Both forms of Parallelism, however, do violence to our conviction that mental conditions are effective in human behavior. Unless we decide beforehand that such causal connections are impossible, ordinary ways of searching for causes lead unambiguously to the conclusion that perceptions, decisions, emotions, and moods can all be causal antecedents of bodily action.

Interactionism and Parallelism are both in trouble, but any dualism must take one or the other form. In consequence, the bulk of recent thought on the Mind-Body problem has involved denying the dual character

⁹ See T. H. Huxley, *Methods and Results* (London, 1894), pp. 199-250, and Broad, *op. cit.*

of man. As the materiality of the body enjoys massive scientific support, the spirituality of the mind has naturally been the favorite casualty. To theories which deny that the mind is a spiritual thing we now turn.

Chapter 4

THE BEHAVIORIST SOLUTION

In what is, broadly speaking, the materialist trend of thought in modern times, Behaviorists are the most radical. They deny that the mind is a thing at all, and so deny *a fortiori* that it is a spiritual thing. If the mind is not a thing at all, there can be no problem of how the thing which is a mind relates to the body or anything else. Behaviorism is more a dissolution than a solution of the Mind-Body problem as we have posed it.

(i) The Behaviorist Doctrine of Mental States

Behaviorists assert that a "mental" description of a man as intelligent, angry, seeing a traffic light, or in pain, is not a description of what some special part of him—his mind—is like. Rather, such descriptions tell us of that man's behavior and dispositions to behave.¹

To say a man is intelligent is to say that his rate of success in solving intellectual and practical problems is higher than normal, that solutions come to him comparatively quickly and with little effort, that he has the disposition to learn more quickly and forget more slowly than common men, and so on. The "and so on" is

¹For example, B. F. Skinner, *Science and Human Behavior*, New York, 1953, and Gilbert Ryle, *The Concept of Mind*, London, 1949.