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The Nature of Mind

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Men have minds, that is to say, they perceive, they have sensations, emotions, beliefs, thoughts, purposes and desires. What is it to have a mind? What is it to perceive, to feel emotion, to hold a belief or to have a purpose? Many contemporary philosophers think that the best clue we have to the nature of mind is furnished by the discoveries and hypotheses of modern science concerning the nature of man.

What does modern science have to say about the nature of man? There are, of course, all sorts of disagreements and divergencies in the views of individual scientists. But I think it is true to say that one view is steadily gaining ground, so that it bids fair to become established scientific doctrine. This is the view that we can give a complete account of man *in purely physico-chemical terms*. This view has received a tremendous impetus in recent decades from the new subject of molecular biology, a subject that promises to unravel the physical and chemical mechanisms that lie at the basis of life. Before that time, it received great encouragement from pioneering work in neurophysiology pointing to the likelihood of a purely electro-chemical account of the working of the brain. I think it is fair to say that those scientists who still reject the physico-chemical account of man do so primarily for philosophical, or moral or religious reasons, and only secondarily, and half-heartedly, for reasons of scientific detail. This is not to say that in the future new evidence and new problems may not come to light that will force science to reconsider the physico-chemical view of man. But at present the drift of scientific thought is clearly

set towards the physico-chemical hypothesis. And we have nothing better to go on than the present.

For me, then, and for many philosophers who think like me, the moral is clear. We must try to work out an account of the nature of mind which is compatible with the view that man is nothing but a physcio-chemical mechanism.

And in this paper, I shall be concerned to do just this: to sketch (in barest outline) what may be called a Materialist or Physicalist account of the mind.

THE AUTHORITY OF SCIENCE

But before doing this, I should like to go back and consider a criticism of my position that must inevitably occur to some. What reason have I, it may be asked, for taking my stand on science? Even granting that I am right about what is the currently dominant scientific view of man, why should we concede science a special authority to decide questions about the nature of man? What of the authority of philosophy, of religion, of morality, or even of literature and art? Why do I set the authority of science above all these? Why this "scientism"?

It seems to me that the answer to this question is very simple. If we consider the search for truth, in all its fields, we find that it is only in science that men versed in their subject can, after investigation that is more or less prolonged, and which may in some cases extend beyond a single human lifetime, reach substantial agreement about what is the case. It is only as a result of scientific investigation that we ever seem to reach an intellectual consensus about controversial matters.

In the Epistle Dedicatory to *De Corpore*, Hobbes wrote of William Harvey, the discoverer of the circulation of the blood, that he was: "the only man I know, that conquering envy, hath established a new doctrine in his life-time."

Before Copernicus, Galileo and Harvey, Hobbes remarks: "there was nothing certain in natural philosophy." And we might add, with the exception of mathematics, there was nothing certain in any other learned discipline.

These remarks of Hobbes are incredibly revealing. They show

us what a watershed in the intellectual history of the human race the seventeenth century was. Before that time, enquiry proceeded, as it were, in the dark. Men could not hope to see their doctrine *established*, that is to say, accepted by the vast majority of those properly versed in the subject under discussion. There was no intellectual consensus. Since that time, it has become a commonplace to see new doctrines, sometimes of the most far-reaching kind, established to the satisfaction of the learned, often within the lifetime of their first proponents. Science has provided us with a method of deciding disputed questions. This is not to say, of course, that the consensus of those who are learned and competent in a subject cannot be mistaken. Of course such a consensus can be mistaken. Sometimes it has been mistaken. But, granting fallibility, what better authority have we than such a consensus?

Now this is of the utmost importance. For in philosophy, in religion, in such disciplines as literary criticism, in moral questions in so far as they are thought to be matters of truth and falsity, there has been a notable failure to achieve an intellectual consensus about disputed questions among the learned. Must we not then attach a peculiar authority to the discipline that can achieve a consensus? And if it presents us with a certain vision of the nature of man, is this not a powerful reason for accepting that vision?

I will not take up here the deeper question *why* it is that the methods of science have enabled us to achieve an intellectual consensus about so many disputed matters. That question, I think, could receive no brief or uncontroversial answer. I am resting my argument on the simple fact that, as a result of scientific investigation, such a consensus has been achieved.

It may be replied — it often is replied — that while science is all very well in its own sphere — the sphere of the physical, perhaps — there are matters of fact on which it is not competent to pronounce. And among such matters, it may be claimed, is the question: what is the whole nature of man? But I cannot see that this reply has much force. Science has provided us with an island of truths, or, perhaps one should say, a raft of truths, to bear us up on the sea of our disputatious ignorance. There may have to be revisions and refinements, new results may set old findings in a new perspective, but what science has given us will not be altogether

superseded. Must we not therefore appeal to these relative certainties for guidance when we come to consider uncertainties elsewhere? Perhaps science cannot help us to decide whether or not there is a God, whether or not human beings have immortal souls, or whether or not the will is free. But if science cannot assist us, what can? I conclude that it is the scientific vision of man, and not the philosophical or religious or artistic or moral vision of man, that is the best clue we have to the nature of man. And it is rational to argue from the best evidence we have.[1]

DEFINING THE MENTAL

Having in this way attempted to justify my procedure, I turn back to my subject: the attempt to work out an account of mind, or, if you prefer, of mental process, within the framework of the physico-chemical, or, as we may call it, the Materialist view of man.

Now there is one account of mental process that is at once attractive to any philosopher sympathetic to a Materialist view of man: this is Behaviourism. Formulated originally by a psychologist, J.B. Watson, it attracted widespread interest and considerable support from scientifically oriented philosophers. Traditional philosophy had tended to think of the mind as a rather mysterious inward arena that lay behind, and was responsible for, the outward or physical behaviour of our bodies. Descartes thought of this inner arena as a *spiritual substance*, and it was this conception of the mind as spiritual object that Gilbert Ryle attacked, apparently in the interest of Behaviourism, in his important book *The Concept of Mind* (1949). He ridiculed the Cartesian view as the dogma of "the ghost in the machine". The mind was not something behind the behaviour of the body, it was simply part of that physical behaviour. My anger with you is not some modification of a spiritual substance that somehow brings about aggressive behaviour; rather it is the aggressive behaviour itself:

1. The view of science presented here has been challenged in recent years by new irrationalist philosophies of science. See, in particular, Thomas Kuhn (1962) and Paul Feyerabend (1975). A complete treatment of the problem would involve answering their contentions.

my addressing strong words to you, striking you, turning my back on you, and so on. Thought is not an inner process that lies behind, and brings about, the words I speak and write: it is my speaking and writing. The mind is not an inner arena, it is outward act.

It is clear that such a view of mind fits in very well with a completely Materialistic or Physicalist view of man. If there is no need to draw a distinction between mental processes and their expression in physical behaviour, but if instead the mental processes are identified with their so-called "expressions", then the existence of mind stands in no conflict with the view that man is nothing but a physico-chemical mechanism.

However, the version of Behaviourism that I have just sketched is a very crude version, and its crudity lays it open to obvious objections. One obvious difficulty is that it is our common experience that there can be mental processes going on although there is no behaviour occurring that could possibly be treated as expressions of those processes. A man may be angry, but give no bodily sign; he may think, but say or do nothing at all.

In my view, the most plausible attempt to refine Behaviourism with a view to meeting this objection was made by introducing the notion of *a disposition to behave*. (Dispositions to behave play a particularly important part in Ryle's account of the mind.) Let us consider the general notion of disposition first. Brittleness is a disposition, a disposition possessed by materials like glass. Brittle materials are those that, when subjected to relatively small forces, break or shatter easily. But breaking and shattering easily is not brittleness, rather it is the *manifestation* of brittleness. Brittleness itself is the tendency or liability of the material to break or shatter easily. A piece of glass may never shatter or break throughout its whole history, but it is still the case that it is brittle: it is liable to shatter or break if dropped quite a small way or hit quite lightly. Now a disposition to *behave* is simply a tendency or liability of a person to behave in a certain way under certain circumstances. The brittleness of glass is a disposition that the glass retains throughout its history, but clearly there also could be dispositions that come and go. The dispositions to behave that are of interest to

the Behaviourist are, for the most part, of this temporary character.

Now how did Ryle and others use the notion of a disposition to behave to meet the obvious objection to Behaviourism that there can be mental process going on although the subject is engaging in no relevant behaviour? Their strategy was to argue that in such cases, although the subject was not behaving in any relevant way, he or she was *disposed* to behave in some relevant way. The glass does not shatter, but it is still brittle. The man does not behave, but he does have a disposition to behave. We can say he thinks although he does not speak or act because at that time he was disposed to speak or act in a certain way. *If* he had been asked, perhaps, he would have spoken or acted. We can say he is angry although he does not behave angrily, because he is disposed so to behave. *If* only one more word had been addressed to him, he would have burst out. And so on. In this way it was hoped that Behaviourism could be squared with the obvious facts.

It is very important to see just how these thinkers conceived of dispositions. I quote from Ryle:

> To possess a dispositional property *is not to be in a particular state, or to undergo a particular change;* it is to be bound or liable to be in a particular state, or to undergo a particular change, when a particular condition is realized.[2]

So to explain the breaking of a lightly struck glass on a particular occasion by saying it was brittle is, on this view of dispositions, simply to say that the glass broke because it is the sort of thing that regularly breaks when quite lightly struck. The breaking was the normal behaviour, or not abnormal behaviour, of such a thing. The brittleness is not to be conceived of as a *cause* for the breakage, or even, more vaguely, a *factor* in bringing about the breaking. Brittleness is just the fact that things of that sort break easily.

But although in this way the Behaviourists did something to deal with the objection that mental processes can occur in the absence of behaviour, it seems clear, now that the shouting and the dust have died, that they did not do enough. When I think, but my thoughts do not issue in any action, it seems as obvious as anything is obvious that there is something actually going on in me that constitutes my thought. It is not simply that I would speak or act if some conditions that are unfulfilled were to be fulfilled. Something is currently going on, in the strongest and most literal sense of "going on", and this something is my thought. Rylean Behaviourism denies this, and so it is unsatisfactory as a theory of mind. Yet I know of no version of Behaviourism that is more satisfactory. The moral for those of us who wish to take a purely physicalistic view of man is that we must look for some other account of the nature of mind and of mental processes.

2. Ryle, 1949: 43; emphasis added.

But perhaps we need not grieve too deeply about the failure of Behaviourism to produce a satisfactory theory of mind. Behaviourism is a profoundly unnatural account of mental processes. If somebody speaks and acts in certain ways, it is natural to speak of this speech and action as the *expression* of his thought. It is not at all natural to speak of his speech and action as identical with his thought. We naturally think of the thought as something quite distinct from the speech and action that, under suitable circumstances, brings the speech and action about. Thoughts are not to be identified with behaviour, we think; they lie behind behaviour. A man's behaviour constitutes the *reason* we have for attributing certain mental processes to him, but the behaviour cannot be identified with the mental processes.

This suggests a very interesting line of thought about the mind. Behaviourism is certainly wrong, but perhaps it is not altogether wrong. Perhaps the Behaviourists are wrong in identifying the mind and mental occurrences with behaviour, but perhaps they are right in thinking that our notion of a mind and of individual mental states is *logically tied to behaviour*. For perhaps what we mean by a mental state is some state of the person that, under suitable circumstances, *brings about* a certain range of behaviour. Perhaps mind can be defined not as behaviour, but rather as the inner *cause* of certain behaviour. Thought is not speech under suitable circumstances, rather it is something within the person that, in suitable circumstances, brings about speech. And, in fact, I believe that this is the true account, or, at any rate, a true first account, of what we mean by a mental state.

How does this line of thought link up with a purely Physicalist

view of man? The position is that while it does not make such a Physicalist view inevitable, it does make it *possible*. It does not entail, but it is compatible with, a purely Physicalist view of man. For if our notion of the mind and of mental states is nothing but that of a cause within the person of certain ranges of behaviour, then it becomes a scientific question, and not a question of logical analysis, what in fact the intrinsic nature of that cause is. The cause might be, as Descartes thought it was, a spiritual substance working through the pineal gland to produce the complex bodily behaviour of which men are capable. It might be breath, or specially smooth and mobile atoms dispersed throughout the body; it might be many other things. But in fact the verdict of modern science seems to be that the sole cause of mind-betokening behaviour in man and the higher animals is the physico-chemical workings of the central nervous system. And so, assuming we have correctly characterized our concept of a mental state as nothing but the cause of certain sorts of behaviour, then we can identify these mental states with purely physical states of the central nervous system.

At this point we may stop and go back to the Behaviourist's dispositions. We saw that, according to him, the brittleness of glass or, to take another example, the elasticity of rubber, is not a state of the glass or the rubber, but is simply the fact that things of that sort behave in the way they do. But now let us consider how a scientist would think about brittleness or elasticity. Faced with the phenomenon of breakage under relatively small impacts, or the phenomenon of stretching when a force is applied followed by contraction when the force is removed, he will assume that there is some current *state* of the glass or the rubber that is responsible for the characteristic behaviour of samples of these two materials. At the beginning, he will not know what this state is, but he will endeavour to find out, and he may succeed in finding out. And when he has found out, he will very likely make remarks of this sort: "We have discovered that the brittleness of glass is in fact a certain sort of pattern in the molecules of the glass." That is to say, he will *identify* brittleness with the state of the glass that is responsible for the liability of the glass to break. For him, a disposition of an object is a state of the object. What makes the state a state of

brittleness is the fact that it gives rise to the characteristic manifestations of brittleness. But the disposition itself is distinct from its manifestations: it is the state of the glass that gives rise to these manifestations in suitable circumstances.

This way of looking at dispositions is very different from that of Ryle and the Behaviourists. The great difference is this: If we treat dispositions as actual states, as I have suggested that scientists do, even if states the intrinsic nature of which may yet have to be discovered, then we can say that dispositions are actual *causes*, or causal factors, which, in suitable circumstances, actually bring about those happenings that are the manifestations of the disposition. A certain molecular constitution of glass that constitutes its brittleness is actually *responsible* for the fact that, when the glass is struck, it breaks.

Now I cannot argue the matter here, because the detail of the argument is technical and difficult, but I believe that the view of dispositions as states, which is the view that is natural to science, is the correct one.[3] I believe it can be shown quite strictly that, to the extent that we admit the notion of dispositions at all, we are committed to the view that they are actual *states* of the object that has the disposition. I may add that I think that the same holds for the closely connected notions of capacities and powers. Here I will simply have to assume this step in my argument.

But perhaps it will be seen that the rejection of the idea that mind is simply a certain range of man's behaviour in favour of the view that mind is rather the inner *cause* of that range of man's behaviour, is bound up with the rejection of the Rylean view of dispositions in favour of one that treats dispositions as states of objects and so as having actual causal power. The Behaviourists were wrong to identify the mind with behaviour. They were not so far off the mark when they tried to deal with cases where mental happenings occur in the absence of behaviour by saying that these are dispositions to behave. But in order to reach a correct view, I am suggesting, they would have to conceive of these dispositions as actual *states* of the person who has the disposition, states that have actual causal power to bring about behaviour in suitable cir-

3. I develop the argument in *Belief, Truth and Knowledge* (1973), ch. 2, sect. 2.

cumstances. But to do this is to abandon the central inspiration of Behaviourism: that in talking about the mind we do not have to go behind outward behaviour to inner states.

And so two separate but interlocking lines of thought have pushed me in the same direction. The first line of thought is that it goes profoundly against the grain to think of the mind as behaviour. The mind is, rather, that which stands behind and brings about our complex behaviour. The second line of thought is that the Behaviourist's dispositions, properly conceived, are really states that underlie behaviour and, under suitable circumstances, bring about behaviour. Putting these two together, we reach the conception of a mental state as *a state of the person apt for producing certain ranges of behaviour.* This formula: a mental state is a state of the person apt for producing certain ranges of behaviour, I believe to be a very illuminating way of looking at the concept of a mental state. I have found it fruitful in the search for detailed logical analyses of the individual mental concepts.

I do not think that Hegel's Dialectic has much to tell us about the nature of reality. But I think that human thought often moves in a dialectical way, from thesis to antithesis and then to the synthesis. Perhaps thought about the mind is a case in point. I have already said that classical philosophy has tended to think of the mind as an inner arena of some sort. This we may call the Thesis. Behaviourism moves to the opposite extreme: the mind is seen as outward behaviour. This is the Antithesis. My proposed Synthesis is that the mind is properly conceived as an inner principle, but a principle that is identified in terms of the outward behaviour it is apt for bringing about. This way of looking at the mind and mental states does not itself entail a Materialist or Physicalist view of man, for nothing is said in this anlaysis about the intrinsic nature of these mental states. But if we have, as I have argued that we do have, general scientific grounds for thinking that man is nothing but a physical mechanism, we can go on to argue that the mental states are in fact nothing but physical states of the central nervous system.

THE PROBLEM OF CONSCIOUSNESS

Along these lines, then, I would look for an account of the mind that is compatible with a purely Materialist theory of man. There are, as may be imagined, all sorts of powerful objections that can be made to my view. But in the rest of this paper, I propose to do only one thing: I will develop one very important objection to my view of the mind — an objection felt by many philosophers — and then try to show how the objection should be met.

The view that our notion of mind is nothing but that of an inner principle apt for bringing about certain sorts of behaviour may be thought to share a certain weakness with Behaviourism. Modern philosophers have put the point about Behaviourism by saying that, although Behaviourism may be a satisfactory account of the mind from *an other-person point of view*, it will not do as a *first-person* account. To explain. In my encounters with other people, all I ever observe is their behaviour: their actions, their speech, and so on. And so, if we simply consider other people, Behaviourism might seem to do full justice to the facts. But the trouble about Behaviourism is that it seems so unsatisfactory as applied to our *own* case. In our own case, we seem to be aware of so much more than mere behaviour.

Suppose that now we conceive of the mind as an inner principle apt for bringing about certain sorts of behaviour. This again fits the other-person cases very well. Bodily behaviour of a very sophisticated sort is observed, quite different from the behaviour that ordinary physical objects display. It is inferred that this behaviour must spring from a very special sort of inner cause in the object that exhibits this behaviour. This inner cause is christened "the mind", and those who take a Physicalist view of man argue that it is simply the central nervous system of the body observed. Compare this with the case of glass. Certain characteristic behaviour is observed: the breaking and shattering of the material when acted upon by relatively small forces. A special inner state of the glass is postulated to explain this behaviour. Those who take a purely Physicalist view of glass then argue that this state is a *material* state of the glass. It is, perhaps, an arrangement of its molecules and not, say, the peculiarly malevolent disposition of the demons that dwell in glass.

But when we turn to our own case, the position may seem less plausible. We are conscious,we have experiences. Now can we say that to be conscious, to have experiences, is simply for something to go on within us apt for the causing of certain sorts of behaviour? Such an account does not seem to do any justice to the phenomena. And so it seems that our account of the mind, like Behaviourism, will fail to do justice to the first-person case.

In order to understand the objection better, it may be helpful to consider a particular case. If you have driven for a very long distance without a break, you may have had experience of a curious state of automatism, which can occur in these conditions. One can suddenly "come to" and realize that one has driven for long distances without being aware of what one was doing, or, indeed, without being aware of anything. One has kept the car on the road, used the brake and the clutch perhaps, yet all without any awareness of what one was doing.

Now if we consider this case, it is obvious that *in some sense* mental processes are still going on when one is in such an automatic state. Unless one's will was still operating in some way, and unless one was still perceiving in some way, the car would not still be on the road. Yet, of course, *something* mental is lacking. Now, I think, when it is alleged that an account of mind as an inner principle apt for the production of certain sorts of behaviour leaves out consciousness or experience, what is alleged to have been left out is just whatever is missing in the automatic driving case. It is conceded that an account of mental processes as states of the person apt for the production of certain sorts of behaviour very possibly may be adequate to deal with such cases as that of automatic driving. It may be adequate to deal with most of the mental processes of animals, which perhaps spend most of their lives in this state of automatism. But, it is contended, it cannot deal with the consciousness that we normally enjoy.

I will now try to sketch an answer to this important and powerful objection. Let us begin in an apparently unlikely place and consider the way that an account of mental processes of the sort I am giving would deal with *sense-perception*.

Now psychologists, in particular, have long realized that there is a very close logical tie between sense-perception and *selective behaviour*. Suppose we want to decide whether an animal can perceive the difference between red and green. We might give the animal a choice between two pathways, over one of which a red light shines and over the other of which a green light shines. If the animal happens by chance to choose the green pathway, we reward it; if it happens to choose the other pathway, we do not reward it. If, after some trials, the animal systematically takes the green-lighted pathway, and if we become assured that the only relevant differences in the two pathways are the differences in the colour of the lights, we are entitled to say that the animal can see this colour difference. Using its eyes, it selects between red-lighted and green-lighted pathways. So we say it can see the difference between red and green.

Now a Behaviourist would be tempted to say that the animal's regular selection of the green-lighted pathway *was* its perception of the colour difference. But this is unsatisfactory, because we all want to say that perception is something that goes on within the person or animal — within its mind — although, of course, this mental event is normally *caused* by the operation of the environment upon the organism. Suppose, however, that we speak instead of *capacities* for selective behaviour towards the current environment, and suppose we think of these capacities, like dispositions, as actual inner states of the organism. We can then think of the animal's perception as a state within the animal apt, if the animal is so impelled, for selective behaviour between the red- and green-lighted pathways.

In general, we can think of perceptions as inner states or events apt for the production of certain sorts of selective behaviour towards our environment. To perceive is like acquiring a key to a door. You do not have to use the key: you can put it in your pocket and never bother about the door. But if you do want to open the door, the key may be essential. The blind man is a man who does not acquire certain keys and, as a result, is not able to operate in his environment in the way that somebody who has his sight can operate. It seems, then, a very promising view to take of perceptions that they are inner states defined by the sorts of selective behaviour that they enable the perceiver to exhibit, if so impelled.

Now how is this discussion of perception related to the question of consciousness or experience, the sort of thing that the driver who is in a state of automatism has not got, but which we normally do have? Simply this. My proposal is that consciousness, in this sense of the word, is nothing but *perception or awareness of the state of our own mind*. The driver in a state of automatism perceives, or is aware of, the road. If he did not, the car would be in a ditch. But he is not currently aware of his awareness of the road. He perceives the road, but he does not perceive his perceiving, or anything else that is going on in his mind. He is not, as we normally are, conscious of what is going on in his mind.

And so I conceive of consciousness or experience, in this sense of the words, in the way that Locke and Kant conceived it, as like perception. Kant, in a striking phrase, spoke of "inner sense". We cannot directly observe the minds of others, but each of us has the power to observe directly our own minds, and "perceive" what is going on there. The driver in the automatic state is one whose "inner eye" is shut: who is not currently aware of what is going on in his own mind.

Now if this account is along the right lines, why should we not give an account of this inner observation along the same lines as we have already given of perception? Why should we not conceive of it as an inner state, a state in this case directed towards other inner states and not to the environment, which enables us, if we are so impelled, to behave in a selective way *towards our own states of mind* ? One who is aware, or conscious, of his thoughts or his emotions is one who has the capacity to make discriminations between his different mental states. His capacity might be exhibited in words. He might say that he was in an angry state of mind, when, and only when, he *was* in an angry state of mind. But such verbal behaviour would be the mere *expression* or *result* of the awareness. The awareness itself would be an inner state: the sort of inner state that gave the man a capacity for such behavioural expressions.

So I have argued that consciousness of our own mental state may be assimilated to *perception* of our own mental state, and that, like other perceptions, it may then be conceived of as an inner state or event giving a capacity for selective behaviour, in this case selective behaviour towards our own mental state. All this is meant to be simply a logical analysis of consciousness, and none of it entails, although it does not rule out, a purely Physicalist account of what these inner states are. But if we are convinced, on general scientific grounds, that a purely physical account of man is likely to be the true one, then there seems to be no bar to our identifying these inner states with purely physical states of the central nervous system. And so consciousness of our own mental state becomes simply the scanning of one part of our central nervous system by another. Consciousness is a self-scanning mechanism in the central nervous system.

As I have emphasized before, I have done no more than sketch a programme for a philosophy of mind. There are all sorts of expansions and eludications to be made, and all sorts of doubts and difficulties to be stated and overcome. But I hope I have done enough to show that a purely Physicalist theory of the mind is an exciting and plausible intellectual option.