

NEED HUMAN CHOICE IMPLY PHYSICAL INDETERMINATENESS?

By DONALD M. MACKAY, B.Sc., Ph.D.

EVERYONE admits that some human actions may sometimes be determined by the physical state of the brain. The convulsion of epilepsy or the tremor of Parkinson's disease are extreme examples; but most people would admit that some at least of their most ordinary acts could probably be traced back, through a continuous chain-mesh of cause-and-effect, to the previous state of their central nervous system.

This worries nobody, as long as the actions concerned are not of a kind to which we attach moral significance. But as soon as we consider acts of choice in which questions of responsibility might arise, we find ourselves in the middle of a well-trodden battlefield. On the one hand there are those who believe that when I make a morally valid choice, my brain changes its state in a way which *breaks* the chain-mesh of physical cause and effect. Even if a super-observer could have access to every detail of my brain beforehand, they maintain, this information would not be sufficient to indicate which choice I am about to make. They don't mean that it would just be too complicated to work out in practice, though in fact it probably would be. They believe that the information would be insufficient even *in principle*: that is, even if the observer had unlimited powers of calculation. They imply that if my choice is to be morally valid, the outcome must in some way falsify or go beyond the physical indications which might in principle have been deduced beforehand, from the state of my brain. On the other hand there are those who believe that even when I make a moral choice, the corresponding physical changes in my brain are tightly linked to the previous physical state of my nervous system. An accurate description of this previous state, they maintain, *would* be sufficient in principle to indicate beforehand which choice I am about to make.

Now of course on both sides there are plenty of varieties of opinion. Some of the former group would hold that each morally valid choice requires a miraculous physical event to take place in the brain. Others, including the late Sir Arthur Eddington, invoke the unpredictability of atomic events (Heisenberg's famous Principle of Indeterminacy), suggesting that although this unpredictability is usually negligible in a system as big as the human brain, it could occasionally mount up in such a way as to make human decisions unpredictable even from a complete description of the physical state of the brain just beforehand.

In the second group there are even more varieties of opinion. Some robustly deny that there are any morally valid choices. They agree with the first group that a choice could not be valid unless it falsified or went beyond what was indicated beforehand by the state of the brain; but they just don't believe that human choices do so.

Others again maintain that questions of moral validity are 'meaningless'; and so forth.

SOME BASIC QUESTIONS

I am not concerned here to come down on one side or other of this traditional fence. My purpose is rather to undercut the discussion with a group of prior questions, which I think ought to have been asked before sides were picked on the traditional ground.

First of all, *would it help* my choice to be morally valid if the accompany-

ing changes in my brain were shown to contradict or go beyond the physical indications preceding them? Is it of the essence of a 'free' choice, that it is in some way logically *disconnected* from the state of the brain leading up to it? I think not, if we accept the reasonable view that the activity of my brain leading up to a rational choice indicates (reflects, mediates) what I am thinking. Indeed on the contrary, if there were no logical connection between the states of the relevant parts of my brain before and after choosing, one might be inclined to describe the choice as *irrational* and to regard its moral status, far from being enhanced, as rather lowered, if not altogether annulled. One could escape from this conclusion, of course, by making the *ad hoc* hypothesis that any logical gap between the two brain-states (before and after choosing) is filled by a rational sequence of thought in some other world, whose activity is not indicated by corresponding changes in the brain. But for such a hypothesis there is no evidence; such little evidence as we have points the other way. I hope to show, moreover, that the moral values designed to be saved by such a hypothesis can be still more adequately safeguarded without it.

'But,' you may object, 'surely a choice which is uniquely indicated beforehand by the state of the brain cannot be called a "free" choice? If you could in principle predict how I shall choose before I make my choice, surely my choosing has no moral validity?'

Here we come to our second basic question. What *kind* of predictability would upset the validity of a choice? Under what conditions would you admit that an action of yours was not 'free'? I think we would all agree that if a prediction of our action could be written down and offered to us, and we had no power to help or hinder its fulfilment, we should admit that this particular action was not 'free' but *involuntary*. A sneeze, for example, at a sufficiently advanced stage, is judged involuntary by this criterion. So is a simple reflex action like an eye-blink or a knee-jerk.

But what of more complex acts? Suppose for example that you are about to choose between porridge and prunes for breakfast. If the state of your brain immediately beforehand indicates which you will choose, would it not be possible in principle for a super-observer to write down and offer you an infallible prediction of your choice? The short answer, if you are a normal human being, is that it would not. No matter how closely-knit the chain-mesh of cause and effect in your brain, no super-observer could deduce from it a prediction which he could offer you without fear of contradiction. The reason is simply that the state of your brain after reading his prediction would not (and could not) be the state on which he based his deductions. If he tried to allow beforehand for the effects of his prediction upon you, he would be doomed to an endless regression — logically chasing his own tail in an effort to allow for the effects of allowing for the effects of allowing . . . indefinitely.¹

TWO TYPES OF HUMAN ACTION

Our question has thus led us to a crucial distinction between two kinds of human actions, those which could in principle be predicted to us, and those which even in principle could not. So humble an act as the choice between porridge and prunes is separated by this test from all actions such as sneezing and blinking, which we normally term 'involuntary'. In fact, a cursory survey suggests that all actions which we term 'voluntary' are distinguished from those termed 'involuntary' by the same criterion.

¹ The basic logical point here was made first by Karl Popper (Brit. J. for Phil. of Sci. I, 191 (1950)) in a profound discussion of the limitations of predictive mechanisms.

The remarkable fact to note is that the distinction holds good *whatever* the degree of physical 'determinateness' in the mechanism of the brain. The fact that no voluntary act of mine can be predicted to me is entirely compatible with the possibility that all activity is physically determinate. Whether determinate or no, the physical human organism is a system which is sensitive to, and altered by, information reaching it. To be more specific, we are so constructed that any would-be prediction of our voluntary actions becomes for us merely an invitation to choose how to act. This is not theory, but empirical fact. If anyone predicts to you that you are about to choose porridge rather than prunes, no matter how scientific the basis of his statement, you can easily verify from experience that he is simply giving you a fresh opportunity to make up your mind. Whether you decide to fall in with his would-be prediction or to contradict it, you know — and he knows — that it has lost any scientific validity by being offered to you.

Nothing that I have so far said removes the possibility that if your brain were a physically determinate system, your decision could in principle be predicted by our super-observer, as long as he kept quiet about it, so that *you* were not affected by his activities. He would have to know, of course, not only the details of your brain-workings but also every physical factor in the world that could influence them up to the moment of your choice. But given this information and unlimited powers of calculation, he could in that case make an accurate forecast.

THE VALIDITY OF CHOICE

Now it may well be that the brain is not a determinate system in this sense. Nobody knows. But even if it were, would this possibility throw any doubt on the validity of your choice? I don't think so. If you had no *power* to falsify the prediction, of course it would. But there is no doubt here that you have the *power*. Our super-observer is only denying you the *opportunity*. It is difficult to see why in such a case you should be held any less responsible for the choice you make, since you can defy anyone to predict to *you* how you will choose. As we have seen earlier, a close connection between your choice and the brain-state just preceding it is to be expected in any case if your choice is a rational one. We might even say that it would nail down more firmly your responsibility for the choice, by guaranteeing that the 'you' that makes the choice is the same as the 'you' who weighed up the pros and cons.

All this may sound as if I have after all come down on the determinist side of the classical fence; but it is not so. What I have contended is not that the brain is physically determinate, but that physical *indeterminateness* would not help to validate human choices. As a matter of fact I believe that there may be occasional events in the brain which we should describe as physically indeterminate. To this extent I agree with Sir Arthur Eddington. But I would not associate any such indeterminateness with freedom of *choosing*; its effects would show up rather in connection with *imagination*. Spontaneous changes taking place in the brain, independently of its previous physical state, would have the effect of giving a fresh direction to the current train of thought, giving rise to 'a new and unbidden idea', we might say. Of course, I am far from suggesting that *all* originality derives only from physical indeterminateness. But if any indeterminateness exists, it is to the originality and spontaneity of behaviour that it would contribute.

I have been arguing that physical indeterminateness is both unnecessary and undesirable in the brain-mechanism concerned with the making of a valid choice. There is however one sense in which it could (if it exists) play an important part in such choosing. For in any difficult decision, — choosing a job or a career for example, — we cannot possibly take into

account everything that might have a bearing on our choice. Inevitably, we consider consciously only a selection of the facts we know. If then there were any indeterminateness in the physical brain-process through which some facts receive our attention and others do not, the choice based on these facts would be no less rational, but it would be undetermined by the previous state of our brain.

Let me insist again, however, that any 'freedom' conferred in this way upon our choice would not be the same as the 'freedom' we feel in making it. The 'freedom' due to physical indeterminateness would show itself only by the arbitrary way in which the relevant facts cropped up in our minds. If anything, it would make us feel less in control, and less responsible for our decision. The 'freedom' we feel in making our choice, I have been suggesting, is something quite different — namely our conscious and demonstrable power to defy all comers to predict that choice to us.

THREE CLASSES OF ACTIVITY

To summarize, I suggest that there are three logically-conceivable classes of activity of which a human being could be capable — not two, as has classically been supposed. First, there may be actions physically determinate and predictable even to the individual concerned. These I have called 'involuntary'. Second, there may be actions physically determinate but unpredictable, in the sense that no prediction exists beforehand which could retain its validity when offered to the individual concerned; these I have called 'voluntary'. Third, there may be actions physically indeterminate and unpredictable. These I have called 'spontaneous'.

I do not wish to deny that any of the three kinds of action exist, nor that the second and third may overlap. I suspect that they do. I only want to contend that the class of actions we term 'free and responsible' would be adequately covered under the second heading, so that the defenders of moral responsibility need have no stakes in physical indeterminateness.

THE MISSIONARY'S SELF-DISCIPLINE

By L. E. MAXWELL,

Principal, Prairie Bible Institute, Three Hills, Alberta, Canada.

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HE had not been long out of Germany when, with little education and little grasp of English, he came to Prairie Bible Institute. However, he was all the Lord's and had such a grasp of himself that while in School he would get to bed at 9 o'clock and rise early each morning (4-40 a.m.) to get at his devotions, his student work and his studies. By the time he was prepared to apply for the Mission Field his examiners did not so much as question him about his age (36), for they saw that he was a soldier — every inch a self-disciplined soldier of the cross.

He asked his Field leaders for a difficult and unreached area. The Mission therefore dropped him down by plane amidst two million untouched Ethiopians, to live in a tent, to begin to build, to take over for Christ. He had first to learn the Amharic language before tackling the tribal tongue. Now, after five years, he is home on furlough telling of God's power and blessing. Several hundred young people have been converted, a Mission Station has