

5 How Dogmatic Can Materialism Be?

JOHN C. ECCLES

In the preceding paper, Dr. Savage's technique is the classical one of erecting a straw man which he then proceeds to demolish. It would be tiresome to respond to every criticism. Instead I restrict myself to a few test cases.

For his introduction, we find a superficial account of the Cartesian hypothesis of the dualism of soul and body. This is a curtain raiser for the statement, "In the light of these familiar difficulties, it is a bit surprising to discover in our midst the ghost of Descartes, embodied in that intelligent machine known as Sir John Eccles"; hence the title! Dr. Savage even admits that many contemporary scientists are Cartesians and wonders why. Such wondering may lead to wisdom, since the list of neuroscientists would include Sherrington, Penfield, Russell Brain, Thorpe, Walsh, as well as the philosophers Popper and Polten, and the psychologist Beloff.

In the section on *Interaction*, it appears that Dr. Savage is out of his depth. When he tries to write of recent discoveries in the neural sciences, the result is replete with errors and misunderstandings. Further, throughout the discussion, I deliberately refrained from using the theological term "soul." In the whole of my discussion and my writing, I used the philosophical words "conscious self" and "pure ego," rather

JOHN C. ECCLES · State University of New York at Buffalo

than the word "soul," which Savage uses satirically. Savage's attack is, in fact, just a rehash of the standard beliefs of the faith of materialist monism. One has read it all so many times before. It really is reassuring to me to find there is not one criticism that I am unfamiliar with!

I am attacked on the grounds that I hint of a solution of how the will acts on neurones; but I do not claim that I have a solution of the mind-brain interaction in its special aspect of the free-will problem. The statement that I make is: "Free will is often denied on the grounds that you can't explain it, that it involves happenings inexplicable by present-day physics and physiology." To that I reply that our inability may stem from the fact that physics and physiology are still not adequately developed in respect of the immense patterned complexity of neuronal operation that can be imaginatively appreciated to some small degree from the tremendously simplified illustrations of Figures 1, 2, 3, and 4. The subtlety and the immense complexity of the patterns written in space and time by this "enchanted loom" of Sherrington's and the emergent properties of this system are beyond any levels of investigation by physics or physiology at the present time, as I have argued in my book *Facing Reality* (Eccles, 1970)—and perhaps for a long time to come.

It should be apparent to philosophers of science that fundamental problems are not usually solved by one brilliant flash of scientific insight. Instead, the scientific effort is to define the problem more clearly by attempting to understand the physical conditions basic to the problem under consideration. In the old-fashioned philosophy, the mind-body problem was very crudely defined. It was Descartes' great contribution to establish that it was in fact a mind-brain problem. It is certainly important if this problem becomes further sharpened as a mind-cerebral cortex problem, or as a mind-dominant hemisphere problem, or, finally, as a mind-cortical liaison area problem. With these advances in topographical definition, there are also advances in the understanding of the structure and operation of the neuronal machinery in the cortex. No claim is made that a solution of the mind-brain problem is at hand. My claim is that the discoveries in the neural sciences in recent decades have contributed significantly to an understanding of the physical substrate upon which the mind-brain problem and the free-will problem are superposed. The denial of this claim is just a piece of obscurantism by Dr. Savage. Furthermore, the attack to which I am subjected in this article is based on dogmatic faith in the deterministic physics of 19th-century vintage. There is no reference to such problems of modern physics as the principle of indeterminacy or to the paradoxes involved in trying to understand the ultimate nature of

matter. Who is to predict that a deeper understanding of physics will not give a new conceptual base for the formulation of the mind-brain problems? I marshal these statements against the materialist dogmas of the last paragraph of the section *Interaction*.

The section on *Intelligent Behavior* is devoted to linguistic performances of chimpanzees and computers. I am no more impressed by contemporary computer magic and computer magicians than I am by magic and magicians of other ages. Science fiction may be good for entertainment, but it must not be taken seriously. The whole section on *Intelligent Behavior* deserves no further comment. The final sentence, though, is worth quoting. "But if, as seems likely from developments in computer science and neurophysiology, the brain can do everything in the way of cognitive processing a soul can do and do it just as well, then why retain the troublesome hypothesis of the soul?" To which I reply, firstly, that the premise is untrue and, secondly, that to reject something because it is troublesome is antiscience. All scientific hypotheses arise out of troubles, and science consists in taking trouble about troublesome problems.

The section *Consciousness* is mainly devoted to a separate paper of mine (1975). There is an initial discussion about what I mean by consciousness which may be as confusing to the reader as it is to me. We are told, "Eccles insists that consciousness cannot be a function of the brain, but must be a function of the conscious self." I have never used "function" in this ambiguous sense, but I do state that the dominant linguistic hemisphere is uniquely concerned in giving conscious experiences to the subject and in mediating his willed action. It is not denied that some other consciousness may be associated with the intelligent and learned behavior of the minor hemisphere, but the absence of linguistic or symbolic communication at an adequate level prevents this from being discovered. My hypothesis is that the state of *self-consciousness* can arise only when there is an adequate level of activity in the neuronal machinery of the liaison brain in the dominant hemisphere. This hypothesis is in accord with all relevant scientific evidence, but must of course be subjected to ongoing scientific testing of the most rigorous kind.

In the section on *Free Agency* there is at the outset confusion arising from misunderstanding of the neural sciences. There is apparently a naive belief that actions can only occur when willed and that there are "consciously willed" and "unconsciously willed" actions. Much confusion is generated by this word usage. Most of our actions are automatic and not consciously willed. They should be referred to merely as unconscious actions. Even when we are willing an action, our

conscious action consists as a rule in giving a general command which the neuronal machinery of the cerebral cortex, the cerebellum, and associated nuclear regions refines to a skilled, smooth response by unconscious action of the most complex kind. There is now an immense literature on this motor control. Most of the philosophical arguments and criticisms of this section would have to be scrapped in the light of this scientific knowledge.

It is time that philosophers talking on free agency of human action inform themselves on the science of motor control. The necessity for this is particularly evident in the misunderstandings that arise when Dr. Savage is discussing Kornhuber's experiments. For example, "There is no compelling reason to suppose, as Eccles does, that the readiness potential is caused by a 'mental act of willing.'" To which I reply: Ask the subjects of the experiment, who are well-trained neuroscientists. I have myself discussed the experiment very fully with all of them whom I have met on many occasions. They are unanimous in stating that they experience it as a mental act at the time of the voluntary movements of their finger in Kornhuber's experiments. In fact, the very essence of the design of the experiment was that it had to be a free act initiated without any reference to any signal or to any imposed timing. Later we are told by Dr. Savage that "The cause of my finger flexion is *my* neural activity, it is neural activity in *me*, and in that sense it is *I* who move my finger." This is just the old obscurantist materialism which refuses to recognize the experience of willing because it conflicts with a dogmatic belief.

In the section on *Disproving Cartesianism* we are introduced again to the automatic crane-riveter as an analogy of human action. I wonder why Dr. Savage has concentrated so much on such an absurd analogy for the mind-brain problem.

As we near the end of Dr. Savage's paper, he commits himself to some generalizations that show his unfamiliarity with brain science as it has developed in the recent decades of this century. In comparing the brain with the physical universe, he regards it as a finite, relatively small system. He makes the following statement: "There comes a point at which the hypothesis that God intervenes in the physical universe, even though it cannot conclusively be disproved, becomes unreasonable. The hypothesis that the soul intervenes in the physical system called the brain becomes unreasonable at a much earlier stage of scientific investigation, since the brain is a finite, relatively small system. In the opinion of the author, that stage has been achieved." Does Dr. Savage not know that, even at our present primitive level of understanding of the human brain, we know it has a degree of organized

complexity of a different order from anything else in the physical universe, and in fact of the whole cosmos? In expressing this opinion, Dr. Savage is making the error that one would expect of some naive critic in confusing mere mass and immensity with complexity of organization. Finally, on the basis of the quasilinguistic abilities of chimpanzees and computers and the extraordinary statement that "Neuro-physical investigations have so far failed to uncover any neural events not caused by physical events," Dr. Savage concludes that "There is, in short, a mountain of evidence that all human and animal behavior is caused by neural events, and that every neural event is caused by some physical event." Would he please substitute "molehill" for "mountain" in this statement!

We are finally led to a pathetic appeal: "Interactionist dualism (the theory that the body and an immaterial soul act on one another) has no scientific basis. Eccles should confess to this, and cease practicing on us the delusion that neurophysiological investigations can confirm the existence of the soul." It is regrettable that Dr. Savage should make this accusation, which is based upon his misunderstanding. In the last paragraph, there is also much to regret. For example, why can a materialist hold that all life is sacred, or that all being is sacred, given the ordinary usage of the word "sacred"? Then we are told that political uses of dualism are discreditable relative to materialism since it justifies the cruel treatment of animals. However he qualifies this: "Dualism is humane . . . as long as it concedes that animals too have souls . . . rights, the same right to life and to absence of pain that we accord humans." I assume that Dr. Savage is referring simply to furry animals that are not used for food but as pets and as playthings in zoos. Perhaps he might also like to extend it to feathered animals. But the word "animals" is a scientific term applying to the whole of one of the great branches of biology, down to the most humble protozoan. How far down will he go?

Finally, dualists as myself are accused of human narcissism. If this accusation means that in the biological world only human beings are endowed with a self-consciousness, and with a cultural creativity, and that they are distinguished completely from animals by the ability to think logically, creatively, and imaginatively and to communicate these thoughts in every medium of cultural expression, then I am happy to admit that I am guilty of human narcissism.

The difference between Dr. Savage and me is that I seek to understand the brain-mind problem in the first place as a problem based upon scientific studies of the brain using, of course, reductionist strategies, and in the second place, as it arises in my own personal life

and experience, where I am metaphysically an antireductionist. It is my experience that I have self-consciousness and that I can consciously and effectively will actions. Dr. Savage is concerned with the problem as he sees it in objective observations of others, leaving himself out of the equation. For that materialist monism is enough. I regard this materialist dogma as an ancient superstition according to which man is the victim of iron determinism as defined by nineteenth century physics.

REFERENCES

- Eccles, J. C. (1970): *Facing Reality*. New York: Springer-Verlag.
Eccles, J. C. (1975): Cerebral activity and consciousness. In: *Studies in the Philosophy of Biology: Reduction and Related Problems*. Ed. by F J. Ayala & T Dobzhansky, Berkeley: University of California Press.