

John C. Eccles. *How the Self Controls Its Brain*. Berlin/New York (Springer), 1994.

In his latest book Eccles claims that his dualism is an empirical theory of the mind, and that he has confirmed it. „So this book is an inexorable challenge that materialist have to answer.“(p.X)

In commenting on this challenge I will not dispute any of Eccles` neurophysiological descriptions of the brain, which make up the larger part of the book, nor will I contest the thesis that the brain at its micro level works quantum mechanically. I will argue that even if all this is true, a non-dualistic interpretation of the facts rests on the better arguments.

Eccles` picture is this:

a) Some electric processes in the cortex are quantum mechanically probabilistic. The ultimate synaptic units are the boutons that deliver the total contents of a single synaptic vesicle probabilistically. This quantal emission is the ultimate functional unit of the transmission processes in the brain (cf.p.55).

b) There is a self acting on the brain. The self (the mind) *is* a „probabilistic field“ not a material entity in space and time. Popper`s ontology of the three worlds of existents is presupposed: „The new light on the mind-brain problem comes from the hypothesis that the non-material mental events, the World 2 of Popper, relate to the neural events of the brain (the World 1 of matter and energy) by actions in conformity with the physics of quantum theory.“(p.56) Probabilistic fields carry neither mass nor energy but exert effective action at microsites (cf.p.56).

c) This probabilistic field alters the behaviour of the probabilistic emitters in the cortex. That is its mode of interaction. „The hypothesis of mind-brain interaction is that the mental events act by a quantal probability field to alter the probability of emission of vesicles from the presynaptic vesicular grids.“(p.69)

Therefore,

d) The self starts the brain`s behaviour, it controls the brain`s behavioural output.

e) Since the self is immaterial and does not act according to the laws of nature, but only by altering probabilities, the physical conservation laws are not broken. The greatest obstacle to dualism is removed.

Now let us assume that (a) is true and the brain works quantum mechanically. Then there is no nomological causal determination. Now a dualist like Eccles assumes that there exists a self (a soul) as a non-causal starting point of a chain of actions. The existence of the self *explains*

why there is a start. We need now (i) a self, and (ii) some way the self affects quantum probabilities. The materialist who accepts (a) has to explain why something in the quantum brain happens. There is no nomological connection. And there has to be mental causation. We need now (i) some way of non-nomological interaction between brain (=mental) states which starts of a causal chain and which explains *psychologically* why something happened. And we need - nothing else! Although the materialist too is committed to a second channel of „some kind of causality“ *the dualist is committed to this anyway*. And, furthermore, the dualist is *ontologically* committed to a soul. If we now take a look at criteria for choosing theories, simplicity and parsimony favour the materialist. Even if there is the possibility of an immaterial self existence somewhere out of space and time, the assumption of its existence will always be *explanatory superfluous* once we have accepted a second kind of causality. Once we assume that causation in the brain is not classical causation, why do we need an extra entity? There is, a priori, no need for dualism.

There is a need for a theory of non-nomological causation. This theory is missing in Eccles' book. How are the probabilities changed? Eccles repeats the thesis of a probability field, but has to confess that „...its mechanism clearly lies beyond ordinary quantum mechanics.“(p.160). And interactionism is a twoway traffic: Intentions act on the brain, perceptions (= neural events) yield knowledge. How do the synapses act back on the self? If the probability field depends on the states of the quantum objects (cf. pp.108-10), why treat it as an object itself instead of treating it as a (quantum) property of the neural objects?

Eccles sees the merits of dualism in two further areas: (i) freedom of the will and (ii) religion. (i) Concerning freedom of the will: Lets say (a) might well be true. If it is true, there is no overall strict determination in the brain. Even if the causal chain starting in the brain behaves deterministically there is no nomological determinism, which would be describable in strict causal laws, because of the probabilistic origin. But nomological determination was a problematic theory anyway: If I claim something to be true I expect my audience to assent because the reasons I have given are acceptable. If my audience behaves merely because of their causal history they lack the capacity to accept good reasons *because* they are good reasons (i.e., in view of our epistemic standards). As a nomological determinist I contradict myself if I assume that a thesis is accepted because of our standards of epistemic evaluation and *at the same time* assume that this acceptance depends only on a nomologically strict natural history. If there was no place for consent *and* dissent in the *same* causal history there would be no epistemological rules which say how we *should* behave. The quantum brain fits

into this picture. Since there is no strict determination in the brain rules of grammar and epistemic evaluation have to be consulted with respect to some perceptual input. But we do not have „brains with full freedom“ (p.172). Nor has Eccles „transcended“ the age old problem of freedom of the will (p.173). The above argument, if sound, does not refute psychological determinism: We might be determined *by* our epistemological standards, and our reasons might *be* the causes of our beliefs. All the psychological determinist (and a causal theory of action) has to concede is (a). If we assume that there is a second channel of causation, it will turn out to be a description of physical events which depicts them as the epistemic proper causes of our behaviour and beliefs (i.e., a Davidsonian rationalisation). This determination is in accord with epistemology. We are determined in as much as we are rational.

(ii) Concerning religion: Lets assume Eccles could tell us why a probabilistic field is attached to a specific brain, and that it is not material. Should we now speak of a soul, which is immortal, and of creation (cf.p.180)? No, we should not. Dualism does not make immortality more plausible than materialism. Sydney Shoemaker made this point¹: In interactionism there can exist systems which consist of one or more immaterial substances (Eccles' self) interacting „causally“ with one or more material substance (the boutons). Immaterial substances need not be simple, and if they have parts or properties by which they interact with the brain, there is no reason why it is not possible that these immaterial substances are subject to destruction through dissolution of their parts. Therefore, dualism as a theory of mind does not solve the problems of the philosophy of religion. It does not make things more easy - neither in the debate on freedom of the will nor concerning the question of immortality. Eccles sums up with a comment on materialism: „all of this pseudophilosophy can now be rejected“ (p.169). Eccles' book is filled up with neurological descriptions of the brain and some quantum mechanics. Unfortunately there isn't much philosophy to be rejected.

¹ Sydney Shoemaker. *Identity, Cause, And Mind*. London, 1984, Chap.7.