# Mind and body: commentary on readings

**Edelman, G.M. & Tononi, G. (2000). Consciousness: how matter becomes imagination'. London: Penguin. Ch. 6 pp61-75**

Edelman & Tononi present in this book a materialist approach to the mind-body problem they call **dynamic core theory**. In this chapter they review some of the evidence relating consciousness to brain activity in order to draw some conclusions about the types of brain activity necessary for conscious experience.

They start by restating their view (explained in earlier chapters) that consciousness is caused by neural activity in the **cerebral cortex** and the **thalamus** of the brain and suggesting that in order to give rise to conscious experience (i.e. 'mind') this activity has to be of a particular type. Specifically brain activity from which consciousness emerges needs to involve:

1. 'Strong and rapid re-entrant interactions' (p. 62; i.e. different parts of the brain stimulating each other).
2. Constant change in the pattern of activity.
3. Differentiation between the activity of different groups of neurones.

The writers proceed to present evidence from a variety of sources to discuss these hypotheses.

*Disconnection syndromes*
In this section, Edelman & Tononi discuss the consequences of one part of the brain becoming disconnected from another. According to their view, disconnections in the brain should result in disconnections between parts of consciousness. They draw on evidence presented by Sperry and others who studied patients whose cerebral hemispheres had been surgically separated in order to reduce the effects of epileptic seizures (**split-brain patients**). Such patients, according to some readings of the evidence, show signs of having two separate consciousnesses that correspond to the two hemispheres. Edelman & Tononi explain this in terms of an inability of the two separated hemispheres to 'establish short term temporal [i.e. time-based] correlations between the activities of neuronal groups in the two hemispheres' (p.64).

*Dissociative disorders*
The writers go on to discuss the possible significance of the dissociative disorders described by, amongst others, Sigmund Freud. They point out that in **hysterical blindness** (where a patient claims inability to see but there is no obvious organic reason why) the patient may nonetheless manage to avoid most obstacles when walking about. This might be taken to imply that their consciousness has been divided –one part is not conscious of being able to see, but another part is able to acton visual information. Edelman & Tononi suggest that such phenomena might be indicative of a 'dynamic impairment of connectivity' (p.67) between different brain areas. They admit, however, that virtually nothing is known about the neurological correlates of this type of dissociative disorder and consequently, that they are speculating.

*Perception without awareness*
Here, Edelman & Tononi make the point that not all information processed by the brain actually reaches consciousness. They cite evidence from studies of **subliminal perception** to demonstrate that stimuli must be presented for a minimum length of time in order to be consciously perceived but that they may affect behaviour (although unconsciously) at somewhat shorter presentations. There follows a lengthy discussion of neurological research by Ben Libet that

focused on neural stimulation, time and conscious perception. The conclusion drawn from this review is that sustained neural activity is necessary for conscious experience to occur.

*Differentiation of neural activity*
This section focuses on the relationship between consciousness and the firing patterns of the neurones that make up the brain. Examining the evidence that comes from EEG readings of people having **epileptic seizures**, Edelman & Tononi put forward the suggestion that consciousness arises when neural activity is highly differentiated (i.e. when different parts of the brain are firing in many different patterns). During seizures, the EEG trace shows a clear rise and fall pattern that indicates that large numbers of neurones are firing in a synchronized pattern. During normal waking consciousness, this pattern is absent. Similarly, EEG traces taken at different times during **sleep** show that highly synchronized firing occurs during State 4 sleep, where consciousness is largely absent whereas a highly desynchronized firing pattern is associated with REM sleep, during which conscious experiences (in the form of dreams) are prevalent.

Edelman & Tononi then summarise the main points of the foregoing sections and draw a number of conclusions about the relationship between brain activity and conscious awareness. Namely:

1. That consciousness arises from neural activity in the thalamocortical system.
2. That consciousness arises from the integration of changes in neural activity that are distributed throughout the thalamus and cerebral cortex.
3. That consciousness only occurs if this activity is highly differentiated.

## Blackmore, S. (2005). 'Conversations on consciousness'. Oxford: OUP. Ch.5 pp50-67. Patricia & Paul Churchland

Blackmore's book is a series of interviews with philosophers, neuroscientists, psychologists and cognitive scientists who are all leading thinkers in the area of consciousness and philosophy of mind. This interview, with the Churchlands, examines, amongst other things, their views on consciousness, reductionism and the question of free will.

Patricia Churchland advances the view that there is nothing 'special' about consciousness in relation to the brain and that the notion that there is nothing especially 'hard' about understanding how the brain produces consciousness as compared to any other problem we have understanding the brain (e.g. how neural firing encodes information). In her view, all problems understanding the brain are amenable to the **scientific method**.

Paul Churchland elaborates on this view by pointing out how scientists and philosophers in the past believed to be special or even insoluble problems (such as the transmission of sound in air) whose solution we now take for granted. In his view, consciousness will eventually go the same way. The main thing, he suggests, is not to get sidetracked by the **subjective** aspect of conscious phenomena. This is irrelevant to the solution of the problem: 'a sound of middle C isn't *correlated* with a compression wave train of 263Hz. It *is* a compression wave train of 263Hz' (p. 54). By analogy, conscious awareness isn't *correlated* with brain activity, it *is* brain activity. This is an example of an **eliminative materialist** viewpoint.

There follows a series of examples (colour perception, the perception of pain) where the Churchlands argue against the notion that there is anything special about the subjective experiences and argue in favour of understanding such phenomena in terms of neural activity.

Blackmore then raises the issue of **dualism** in terms of *what it is like* to experience pain as something distinct from the neural activity that gives rise to pain. The Churchlands respond by suggesting that conscious experience is simply the result of the brain making an internal

representation of the person whose brain it is and that phenomena like pain are simply part of that internal representation: 'There is a real dualism going on there but it doesn't involve spooky stuff' (p. 57).

There follows a discussion of a range of issues, including the **philosophical zombie**, a thought experiment associated with Chalmers (1996) in which we are asked to imagine a person (zombie) who is in all respects identical to a human being except that it has no consciousness. The zombie argument is often used as an argument against materialism. Patricia Churchland dismisses it as an irrelevance.

Following a discussion of the differences between their views and those of Dan Dennett, another influential materialist, the issue of free will is raised. Both Patricia and Paul Churchland subscribe to the **determinist** view – that free will is impossible. However, they accept that they often act as if they had free will and that it generally feels as if they do; however, this is just an illusion. Paul Churchland distinguishes between determination and predictability and points out that, even though his behaviour is determined (because the working of his brain is deterministic) it doesn't follow that his behaviour is predictable: people should not 'fear the story science seems to tell, that we are just robots' (p.63). The remainder of the interview covers a range of issues including drug use, moral responsibility and how the Churchlands became interested in philosophy of mind.

### Searle, J.R. (1992). 'The rediscovery of the mind'. Cambridge, MA: MIT Press. Ch.1 pp1-26.

Searle begins by presenting his view on the mind-body problem: that mental phenomena are caused by neurological processes and are (emergent) features of the brain. He calls this view **biological naturalism**. Note that he is not advancing a traditional materialist/monist view – he believes that it is both meaningful and necessary to talk about mental states like beliefs, desires etc. when explaining what people do and that it is neither desirable nor possible to reduce such phenomena to physical descriptions of brain activity. Searle goes on to discuss why, when his solution to the mind-body problem is so obvious, the majority of Philosophers of Mind appear blind to it. He outlines two viewpoints in contemporary philosophy of mind. There are **property dualists**, who agree with Searle that mental phenomena are real and irreducible but think that the mind-body problem is insoluble. There are also **materialists** who have attempted to solve the mind-body problem by deciding that mental phenomena are, one way or another, reducible to physical phenomena (e.g. Paul Churchland) and hence that to use 'mentalistic' terms is either unnecessary, undesirable or both. Searle suggests that materialism of this sort dominates contemporary philosophy of mind because of a fear that acknowledging the reality and irreducibility of mental phenomena commits one to some sort of **Cartesian dualism**, which is generally accepted to be incompatible with science.

After a brief discussion of the rhetoric employed within the debate about the nature of mind (and a few digs at, amongst others, Churchland), Searle reviews some theories of the mind that dominate contemporary materialism but which he regards as basically absurd. These include:

- **Eliminative materialism** – the view that mental states do not really exist (or can, at least, be effectively eliminated from explanations of human behaviour).
- **Functionalism** – the view that 'mind' is a property of how a system uses inputs to generate outputs and that anything that can translate inputs into outputs can be said to have a mind, regardless of whether it is made of neurones or tin cans and string.
- **Strong artificial intelligence** (or 'computer functionalism') – the view that a computer programmed to respond to inputs in the same way a human would, must be considered to be thinking and to have feelings and understanding.

He also dismisses views that regard mental state words like 'hope', desire', 'fear' simply as ways of speaking about people that describe predispositions to behave in certain ways.

There follows a discussion about the difficulty of conducting a proper debate with materialists. One of the main problems, as Searle sees it, is that materialists rarely respond to the actual arguments he presents against their theories because they are so utterly convinced of their own rightness that they don't see why they should. One of the main reasons Searle gives for this is that the materialists identify their own views with a (in Searle's opinion, mistaken) view of science. Because they regard materialism as 'scientific', materialists regard any attack on their views as 'antiscientific' and, consequently, wrong. Searle proceeds to unpack the assumptions that underpin materialism. He does this to show that materialism is not necessarily as scientific as it believes itself to be. By his account, it is actually based on some assumptions that are questionable. Specifically, he appears to suggest that the materialists' belief that it is not 'scientific' to study subjective phenomena has committed them to various forms of **behaviourism**. He consequently states that this view is *'not only profoundly unscientific, it is incoherent'* (p. 12).

Searle then presents a discussion of some possible reasons why so many philosophers of mind have committed themselves to materialist positions that are untenable and absurd. He identifies four such reasons.

1. Philosophers are scared of falling into **Cartesian dualism**, but this terror has led them to assume that because the Cartesian view is wrong it is also wrong to talk about mental states. Searle, however, sees no problem with the idea that there are such things as mental states but that they are also physical.
2. The Cartesian vocabulary that dominates philosophy of mind inclines us to regard as opposites things that are not. Because we are used to talking about 'mind or body', 'physical or mental', 'matter or spirit' we overlook the possibility that something could be both. Searle argues that things don't have do be either physical or mental. He advances the view that consciousness is an **emergent property** of the brain and that, consequently, mental states are physical properties of the brain, albeit ones that are not reducible.
3. There is a dominant but mistaken assumption that the only things that are real are things that are 'equally accessible to all competent observers' (Seale calls this **objectivism**). This has led to philosophers losing the distinction between something *having a mind* and something *acting as if it had a mind*. Searle contends that such a distinction is crucial.
4. The actual solution to the mind-body 'problem' (i.e. biological naturalism) is so obvious that people can't believe it is correct. They suppose that the solution to such a 'problem' must be much more complicated and difficult than that.

The chapter concludes with a discussion in which Searle presents a number of challenges to the assumptions that underpin materialism. These challenges are developed in the book to which this is the introduction and a summary would not do them any justice. Although technical at times they are very clearly presented and would bear some reading and re-reading. Searle concludes that monism/materialism and dualism are both incoherent. Dualism fails because the distinction between *res cogitans* and *res extensa* is untenable. But, crucially, monism fails because it accepts from the outset the conceptual vocabulary of dualism. As he succinctly puts it:

> *'Dualists asked, "How many kinds of things are there?" and counted up to two. Monists, confronting the same question, only got as far as one. But the real mistake was to start counting at all.'* (p.26).

The error, in Searle's view, is in believing (as he suggests materialists do) that 'physical' implies 'non-mental' and 'mental' implies 'non-physical'. Searle's arguments rest on the notion that some things can be both mental *and* physical.