

Are zombies really possible? Dennett sees no reason to think so. Rosenberg disagrees, and he aims to bolster and extend the following kind of argument in support of the possibility of zombies: consider a body somewhat like ours, but controlled remotely by radio communication with a giant computer. Ordinary human beings may be extremely complex, but it is plausible to suppose that our complexity could, at least in principle, be replicated by a monumentally complex computer. Putting these two thoughts together, there could, in principle, be creatures behaviourally indistinguishable from us but with computers for "brains". Would they be conscious? Would they feel pain, experience our spectrum of colours, and so on? The natural reaction is: Who knows? How could we tell whether exactly duplicating the human brain's functional capacities in different "hardware" would generate qualia? It is an open question, one that we human beings might never be able to answer, were we actually confronted with such creatures. Rosenberg believes that this reaction represents a positive insight into the nature of qualia: the presence or absence of qualia within a given computer-brain is a merely contingent matter. One wants to say: God could make computer-brains with qualia, and ones without. But then it should be a merely contingent matter whether other complex objects generate qualia – including objects that look, from the outside, just like our brains. Of course we know that our brains do – we know this "from the inside". But if it is a contingent matter whether non-organic beings have conscious experience, it must be a contingent matter whether organisms more closely resembling us have conscious experience. So zombies are possible; or so the argument goes.

Those who reach this conclusion ("the Zombic Hunch", as Dennett calls it) must reject physicalism. "God's decree" may settle all the facts describable within a "final physics" that mentions no mentality; nevertheless, whether there is phenomenal experience would remain an open question. To settle the matter affirmatively, the creative act must include more – for example, the enforcement of extra laws linking brain states and qualia.

Antecedents of the zombie argument against physicalism may be found in Locke and Leibniz, and Rosenberg's use of them owes much to David Chalmers (see *The Conscious Mind*, reviewed in the *TLS*, June 21, 1996). But he adds an interesting twist. He makes use of a particular sort of computer to serve as the brains in his story. John Conway's "Game of Life", familiar since the 1970s, is a "cellular automaton" (a mini-version can be downloaded at <http://www.bitstorm.org/gameoflife/standalone/>). It consists of a two-dimensional grid, like a chessboard. Individual squares may be in one of two states: "red" or "black", for instance (a Game-world need not use red and black as the difference between its two states: any pair of colours will do, or indeed any pair of distinct, space-permeating qualities). The "Game" is a simple set of rules determining the "next state" of the grid. Roughly, squares that are nearly surrounded by squares of the other colour will switch states, as will squares that are nearly surrounded by their own colour. Otherwise, a square retains its colour. These deterministic "laws" govern the evolution of the two-dimensional chessboard worlds. Surprisingly, "life", of a sort, is possible even in worlds with the Game's simple physics. Stable groups of red or black squares can be designed so as to "move about"; stable

"machines" can be built to create them. The activities of complex "life-forms" can be mimicked in the Game's "matter". A computer of any imaginable complexity could be built in the Game, given grid enough and time.

Suppose astronauts on an intergalactic voyage find their path blocked by a Game-governed "flatland" filled with two-dimensional but apparently intelligent creatures. The astronauts might, for instance, bump into an invisible grid, with positively and negatively charged squares. But Rosenberg asks us to imagine something stranger: a Game-world in which the squares do not differ in colour, charge or any other independently conceivable property. Instead, the difference is "bare" or "brute". Imagine that the inhabitants of the invisible grid give the astronauts a mysterious device enabling them to tell whether squares are "on" or "off". When the astronauts ask about the difference between "on" and "off", they are told that "on" means "not off" and "off" means "not on". If the difference is genuinely brute, there is no more to say.

Rosenberg takes the "Zombic Hunch" to be strongest in the case of the flatlanders in such a world: a Game-world built upon bare differences is utterly devoid of qualitative features, phenomenal or otherwise. The rich variety of phenomenal colours, flavours and smells would not be found in a world where all differences boil down to complex combinations of "on" and "off". With this conclusion in hand, Rosenberg argues that the physics of the actual world is consistent with the fundamental physical differences being "bare" or "brute". Physics merely describes "a network of effective dispositions, with each element typed according to its place in a network of relations to other such dispositions". As Bertrand Russell put it, "physics . . . reveals only certain mathematical characteristics of the material with which it deals. It does not tell us anything as to the intrinsic character of this material".

Rosenberg's idea, then, is that a complete description of the matter of our universe in physical terms might as well be a description of a Game-world. And if this is right, there could have been creatures indistinguishable from us, so far as physics is concerned, but lacking phenomenal experience altogether. In other words, there could have been zombies.

A flatland with brute differences between squares would, in effect, be a physical world with no intrinsic differences among its ultimate parts. Is such a world really possible? Some will say, "No": if a Game-world with a certain pattern is to be concretely realized within a plane, there must be intrinsic differences between parts of the plane that can play the "on" and "off" roles in the Game's simple "physics". The fundamental building blocks of any material world must have "insides", some kind of intrinsic nature. Surprisingly, Rosenberg does not really dispute this – which rather undermines his use of the Game-world to bolster our Zombic Hunch.

Rosenberg's positive theory of mind-matter relations does not require that brute physical differences are a genuine possibility, only that physics does not pin down the intrinsic nature of fundamental properties. In that case, they might even be phenomenal properties, for all physics has to say about it. And that's exactly what Rosenberg claims they are. Quarks have little "experiences" with a "qualitative character very alien to us"; they may be like "little fireflies in the night supporting brief

flashes of sensation as they interact".

Rosenberg is not the only contemporary philosopher defending "panpsychism" – the thesis that all matter is suffused with consciousness. Thomas Nagel wants panpsychism back on the table, as a viable alternative to orthodox materialist metaphysics. Similar views have been advanced, more or less tentatively, by a number of philosophers, including David Chalmers, Michael Lockwood, Peter Unger, Galen Strawson, David Ray Griffin and William Seager.

Dennett asks a question all panpsychists must answer: How does a "smidgen" of simple consciousness in the tiny parts of a brain add up to the complex consciousness we enjoy? A normal person's sensory experience is not the sum of a vast congeries of "brief flashes of sensation". One also wonders: are the properties panpsychists attribute to tiny particles phenomenal in name only? Phenomenal properties belong to experiences; but aren't reflection and attention necessary for experience? And surely electrons are not capable of complex thought.

The second half of Rosenberg's book is a response to such challenges. He proposes an original (perhaps too original) theory of causation, according to which human consciousness has much in common with the properties physics attributes to inanimate matter. It is here that Rosenberg passes completely into the land of pure metaphysics, offering a theory of "natural individuals" and their causal interrelations to rival that of Whitehead in complexity – and, some will think, obscurity. Even philosophers sympathetic with Rosenberg's project may well have trouble "getting inside" his system, despite the evident care with which it is constructed. Everything depends upon his notion of a "receptive connection" that "binds" individuals – a causal relation peculiar to his theory, and hard to understand from other perspectives. If a dialogue should open up between Rosenberg and those defending more familiar theories of causation, the result would likely shed light on what is now a darkly forbidding edifice. Dennett's verdict on a project like Rosenberg's will not await the outcome of a polite dialogue among metaphysicians, however. Only a crackpot would erect a theory of consciousness upon thought experiments, on his view, for they can elicit nothing but groundless "hunches".

Zombies are extreme; one may be forgiven for agnosticism about their credibility. But there are less bizarre thought experiments threatening physicalism, and Dennett is as disdainful of the "hunches" they elicit as he is of the "Zombic Hunch". Do others see colours in quite the same way as oneself? Could someone else's experience of the colour spectrum be systematically inverted relative to one's own – red objects appearing violet, orange objects appearing indigo, and so forth? The colour inversion "hunch" is stronger than the Zombic Hunch: it seems easy to imagine creatures just like us at the microphysical scale, but with inverted colour experience. Perhaps such inversions could not happen to us, given the physics (and psycho-physics) of our world; but many philosophers are inclined to take the conceivability of inversion as reason to suppose that such inversions are possible in a more abstract sense – "God had a choice" whether to correlate brain states and qualia in the way he did. But then physicalism is false: settling the facts that physics can describe would leave the phenomenal facts up in the air.

As famous as zombies, there is the story

Frank Jackson tells of a mythical neuroscientist called Mary. Although confined all her life to an entirely black-and-white environment, Mary learns everything physics, biology and cognitive psychology can possibly tell her about the way visual information is encoded and utilized by the brain. Can Mary learn the entire physical story about colour perception, without yet knowing what the experience of red is like? Suppose it is so much as possible for her to know all the physical facts while not knowing some facts about human experience, even with god-like powers of ratiocination. In those circumstances, seeing (or even vividly hallucinating) a red object would teach her something new about consciousness – something she could not deduce from the physical facts alone. So the physical facts are not all the facts.

These stories might seem possible, says Dennett; but that "seeming" is evidence of nothing but our own gullibility. Dennett asks us to imagine that someone has the following hunch: "If you burp, sneeze and fart all at the same time, you die". Should we take this wild guess seriously, as a fact of biology? Of course not! According to Dennett, our pre-scientific convictions about the nature of experience are on all fours with this idiotic hunch. We should wait until science tells us the real story about the mind; until then, our common-sense convictions about consciousness should be demoted to the status of wild guesses, with no presumption in their favour.

In effect, Dennett turns traditional empiricism on its head. The old-fashioned empiricist says that science brings hypotheses before the tribunal of sensory experience for confirmation or falsification. Dennett puts the judges on trial: everything we say about our awareness of colours, sounds, smells, etc is, as likely as not, unreliable confabulation. None of it should be accepted until independently confirmed by impersonal scientific investigation; and the scientists who would study consciousness are solemnly warned not to slip into the habit of trusting even their own judgements about what experience is like.

*Sweet Dreams* is a sequel to Dennett's *Consciousness Explained* (1991, reviewed in the *TLS*, August 21, 1992) – a book that, although warmly received by a broader readership, was roundly criticized within philosophical circles. Non-philosophers may lose patience with *Sweet Dreams*, since it is simply a series of replies to Dennett's philosophical critics. But his critics will find their patience tried, too. There are few ideas or arguments that were not set forth in the earlier book, and Dennett rarely descends to the level of detail philosophers will expect; most chapters were lectures, and retain a breezy informality. Although his prose displays the dash and directness for which he is justly famous, these strengths diminish in importance in a book ostensibly aimed at specialists. Many passages are marred by the blistering polemics and invective for which he is equally famous. Such lapses are understandable. Dennett can barely bring himself to talk about zombies and their ilk; it triggers his "giggle reflex" and his "gag reflex". Evidently it is difficult to maintain a measured tone when discussing work one finds alternately laughable and sickening.

The complexity and originality of Rosenberg's book make it hard to be sure how important its defence of qualia will prove to be, in the long run. It is much clearer that, whatever Dennett's contribution to the zombie wars, it was already made in *Consciousness Explained*.