



## Review of Adam Zeman's *Consciousness: A User's Guide*

Carol Slater  
Swanson Academic Center B-30  
614 W. Superior St. Alma,  
Michigan 48801, U.S.A.  
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[cslater@alma.edu](mailto:cslater@alma.edu)

### PSYCHE 11 (1), February 2005

**REVIEW OF:** Zeman, A. 2002. *Consciousness: A User's Guide*. New Haven: Yale University Press. 404pp. US\$40.00 hbk. ISBN: 0300092806

Adam Zeman has given us an intriguing book, one that, on principle, eludes easy categorization. On the one hand, like any user's guide, *Consciousness* provides information ranging from the most basic (geography of a generic cell) to the highly specialized (competing anatomical explanations of blindsight), plus a fifteen page glossary of technical terms (*acetylcholine* to *theta rhythm*, *achromatopsia* to *ventral stream*). Like any manual, *Consciousness* is no cosy cover-to-cover read; in a preliminary note, Zeman considerably (albeit reluctantly) suggests selective strategies. For all that, the *User's Guide* is far from being a typical manual or, for that matter, a standard text of any sort. Zeman sees the study of consciousness as positioned on "a fault line in human thought...between the sciences and the arts" (xi) and hopes "to mediate between...scientists and philosophers [who have]...an interest in consciousness" (7). Beyond interpreting the work of each community to the other, Zeman wants to challenge their entrenched separation. Late in the book, he wistfully conjures up sophisticated alien intelligences who report with bemusement a "curious" division between arts and sciences observed among earthlings (335). Readers who pick up *Consciousness: A user's guide* should be prepared for a highly personal *vade mecum*.

As a practicing neurologist, Zeman wants readers to appreciate what neuroscience can contribute to an understanding of human consciousness. He believes that it already grounds as "a tentative law" the first tenet of David Chalmers's "principle of structural coherence" (314): "every distinction drawn in our experience and behaviour will be reflected in a distinctive pattern of neural activity" (305). Conceived as the project of

mapping these correspondences, "A 'neurobiology of consciousness' is no longer a distant dream" (305). Seven of the nine chapters are primarily concerned with limning such correlations; it is impossible to do more here than suggest their scope and detail.

Chapter 2. is "a brief primer" (x) that assumes no background and is intended to convey "the biological splendour of the brain" (74); it introduces newcomers to Phineas Gage, HM and Hebb's conjecture. Chapter 3 takes up brain correlates of consciousness in the sense of being awake, tracing the history of electroencephalography and, in particular, the course of REM sleep research. Chapter 4 takes up less familiar states of consciousness: "faints, fits and funny turns," anaesthesia, coma, and trance. Here, as elsewhere, pathologies shed light on the requirements of everyday capacities. We learn that claims about hypnosis are controversial (Zeman does not challenge the claim that it can be used to retrieve repressed memories) and are advised that "Well-intentioned efforts to prevent someone who is fainting from slipping to the ground [thus assuming a horizontal posture] are distinctly counterproductive" (113).

Chapters 5 and 6 consider visual experience, the flagship example of "consciousness of" something. Zeman discusses mechanisms of color vision, varieties of agnosia ("mindblindness"), the nature of blindsight and challenges posed by constancies, illusory contours and reversible figures, in all of which perceptual experience seems curiously independent of physical stimuli. In Chapter 7, Zeman places the human brain and nervous system in evolutionary perspective, drawing attention to the resemblance between the chemistry of our elaborate nervous system and that of the "humble worm" *Caenorhabditis elegans*. His take on the evolution of consciousness is cautiously but consistently adaptationist. Assuming that "experience is useful" (341)—"[I]t is intuitively unlikely, to say the least, that it has [no function]" (346)—he suggests that "perceptual awareness and conscious purpose...enable us to select appropriate actions to meet...unpredictable challenges" (268-69). In support of this assumption, he notes that it is consistent with when and of what we are conscious.

Chapter 8 surveys comprehensive attempts to identify structures and processes that give rise to (or, perhaps, constitute) consciousness. Zeman compares (diagrammatically) the views of Gerald Edelman, Francis Crick and Christof Koch, Antonio Damasio, Larry Weiskrantz and Semir Zeki (Figure 8.4, 292). Taking "a step further from the everyday world of biology" (295), he introduces quantum theories of consciousness (reducing two mysteries to one) and Roger Penrose's brief for abandoning "old-fashioned physical laws" (296). The chapter concludes with a brief look at functional accounts—"computational metaphors rather than closely worked models" (297)—and two approaches to consciousness that focus on the crucial role of social interaction.

Zeman is unquestionably successful in demonstrating that neuroscientific research vouches for the existence of intricate and systematic correspondences between neural events and human experience. A colleague in neuroscience to whom I lent the book promptly declared her intention of acquiring a copy for her own use as well as considering it as a resource for her undergraduates. Anyone who would like to learn more about the manifold associations between neural events and varieties of consciousness will find Adam Zeman an enthusiastic and engaging teacher.

What of Zeman's goal to demonstrate that truly understanding consciousness demands acknowledgement of the mutual relevance and equal epistemic claims of science and the humanities? At first glance, Zeman seems to be encouraging us to expect substantial cross-fertilization. "During our excursions into neuroscience," he says, "we will keep our philosophical interests in view" (8). The book will "review a wealth of evidence that damage to the nervous system can damage and fragment awareness," evidence that "has implications for our understanding of the mind" (7). It is easy to anticipate hearing how one or another neuroscientific finding is helping to settle some or other refractory philosophical question about consciousness. This is not, however, how the two disciplines are going to engage each other. We do indeed encounter ample evidence that "mundane requirements... must be met in the brain—or consciousness fails" (149): damage in the region of the fusiform gyrus produces loss of color experience (210); recurrent episodes of *déjà vu* are reliably correlated with temporal lobe epileptic seizures (4) and so on. The closest thing to a philosophically relevant implication that Zeman draws from such observations, however, is that they bear (unfavorably, we are left to assume) on "the conception of the mind as an immaterial and indivisible soul" (8). As my grandmother (no substance dualist) might have put it, "For this we need federally funded research?" Initial appearances to the contrary, Zeman is far from proposing that neuroscience can bake philosophical bread.

The point of contact between neuroscience and philosophy to which Zeman will repeatedly return is quite different and the outlook rather less optimistic. "[E]vents in the brain," he tells us, "provide the physical basis for consciousness. But what is the nature of the relationship...?" (304). Reviewing general theories constructed within a scientific framework, he says, "[I]t is not obvious that any of these models fully explains why *consciousness* results from the mechanisms in question: why should they not operate just as well *unconsciously*?" (298). When push comes to shove, consideration of (lots and lots of) sophisticated research reveals that neuroscience "says nothing at all about the really difficult and interesting question, the one to which we really want an answer—why we *experience* what happens in our brains, why we *see* colours, *hear* music, *savour* tastes. The processes ...[described] could perfectly well be enacted in darkness and silence, in a world without consciousness, a world of complex bodies without minds" (346-47). Rather than neuroscience providing answers for philosophy, philosophy must be recruited to augment the scientific account.

Zeman therefore dedicates the very last chapter of the book to philosophical responses to three related questions: "[W]hat is the nature of the relationship between conscious states and the neural activity associated with them? Is there any bar, in principle, to the construction of a conscious machine? What are the implications of the intimate relationship between consciousness and brain events for human freedom and responsibility?" (303). Assuming a reader unfamiliar with Descartes, thought experiments, inverted spectra, zombies or eliminative materialists, Zeman offers a well organized and eminently readable primer on the mind-body problem, giving competing positions their due while pointing out the price tag for their endorsement. Unsurprisingly, there is no happy ending. Making sense of the relationship between "experience and the molecules of the brain" (341) may demand radical reconceptualisation of mind, matter or both, and it is up for grabs whether science—or our cognitive capacity—is adequate to the task; without a better account of that relationship, it is hard to know what sorts of systems

could or could not be conscious; perhaps—but only perhaps—the freedom we can have is freedom enough. Well, one wants to say, that’s the price one pays for turning to philosophy.

In the light of all this, what can we say about Zeman’s brief for the overarching unity of the arts and sciences? He certainly makes it clear that he himself has not felt it necessary to choose between being one of Us and one of Them. In the very first chapter, Zeman conducts a foray into historical etymology (‘consciousness’ comes from the Latin *conscio* by way of ‘conscience’ (14)) and offers the results of an informal inquiry into cross-cultural lexical equivalences (“If consciousness matters, we should expect to find words expressing its various senses in every human language” (32). No skeptic about synonymy, Zeman finds just such words in Russian, Chinese and a language spoken in the hills of Sudan.) Contrary to practice in the mature sciences, current findings are regularly placed in a historical context—we learn, for example, that Hans Berger’s mother was the daughter of a German poet who had an interest in oriental philosophy (82); epigraphs come from (inter alia) Homer, Auden, T.S. Eliot, Virginia Woolf, Suzanne Langer and Ted Hughes. Zeman’s writing is notably graceful and distinctive, often metaphorical, not infrequently autobiographical and generally a delight to read. At the very least, Zeman shows that one need not take an oath of academic purity, that, as the social psychologist Ted Newcomb used to urge, it is possible to have “two skills in one skull,” and that it is rather nice to choose them from different sections of a university catalogue. But the absence of any necessary opposition between domains does not mean that there are no interesting differences of epistemic kind between them. Zeman himself unhesitatingly tags Chalmers’s “hard question of consciousness” (298) as “firmly philosophical” and informs naïve readers that thought experiments “are not experiments in the scientist’s sense, of practical procedures yielding robustly repeatable observations,” but are meant to be “aids to reflection” (307-308). If, “[f]or the time being we have no alternative but to continue to use...[the] languages of biology, behaviour and experience, in our efforts to understand the mind,” (325), it seems equally likely that we will need (at least for the time being) to rely on the distinguishably different strategies of science and philosophy as well.

Finally, the potential reader might like to know that Yale University Press has done an admirable job of copy editing *Consciousness*; that references to sources are embedded in endnotes, making it much harder than need be to track down a source; that Zeman uses single quotes with distracting abandon throughout the text and that (appearances and recommendation to the contrary) Daniel Dennett’s *Consciousness Explained* is probably not a book for beginners in philosophy.