

# Can There Be a Test for Consciousness?

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THE desirability of a test for consciousness derives from its potential to resolve conflict in several debates on interesting subjects of serious ethical importance where there is a potential to minimise suffering, such as foetal consciousness, euthanasia, animal consciousness and (perhaps soon) machine consciousness. Such a test, if formulated, might also establish the usefulness, one way or another, of debate on extra-terrestrial, plant, sub-atomic and cosmic consciousness, all of which have their ardent adherents. Finally, a test might enable us to *detect* consciousness where it has hitherto been unsuspected. To be useful, then, the test must be universal. If it is applicable only to communicating humans, it begs the question what consciousness is, in the worst possible way. To be universally applicable it must recognise the generalised characteristics of consciousness, not just the form of it with which humans are familiar. As Lucy Suchman puts it:

Mind is best viewed as . . . an abstractable structure implementable in any number of possible physical substrates. . . . This view decouples reasoning and intelligence from things uniquely human.<sup>1</sup>

To be valid, any test must correlate objective physical events with individual phenomenal events. Secondly, any test which purportedly resolves a question must contain a certain definition of the question, expressed in terms of the results of the test and the probability of its accuracy. In other words, the statement “consciousness in a subject under investigation will produce result  $R_1$  with probability  $P_1$ , and absence of consciousness will produce result  $R_2$  with probability  $P_2$ ” amounts to one kind of definition of consciousness. Though this may seem circular, it isn’t. It is simply a way of showing that some definition of consciousness is necessary and integral to the test. The test must be built on the ground plan of an agreed physical definition.

But researchers are fundamentally split on the issue of the definition of consciousness. One school of thought, which includes Daniel Dennett<sup>2</sup>, Patricia Smith

<sup>1</sup> L. A. Suchman, *Plans and Situated Actions* (Cambridge 1987) 8.

<sup>2</sup> D. C. Dennett, *Consciousness Explained* (London: Penguin 1993) 459. “I do resist the demand for a single, formal, properly quantified proposition expressing the punch line of my theory. Filling in the formula ( $x$ )*x is a conscious experience if and only if . . .* and defending it against proposed counterexamples is not a good method for developing a theory of consciousness.”

Churchland<sup>3</sup>, Francis Crick and Christof Koch<sup>4</sup>, Lawrence Weiskrantz<sup>5</sup>, Heinz Pagels<sup>6</sup> and William Lycan<sup>7</sup>, is wary of premature definition and prefers to continue research in the belief that better understanding of consciousness will bring a clearer definition with it. This view is *relevant* to our question, because it strongly asserts the correlation of consciousness with physical events, but is not *helpful*, because it specifically declines to offer any such events as candidates.

There are just as many others, for example, Bernard Baars<sup>8</sup>, Eduardo Bisiach<sup>9</sup>, Anthony Marcel<sup>10</sup>, James Thompson<sup>11</sup> and David Woods<sup>12</sup>, who are prepared to offer their definitions of consciousness.<sup>13</sup> The difficulty in this attempt is two-fold: identifying the physical events, and finding a common meaning. In none of the definitions of consciousness offered by these writers are observable physical events mentioned. Though these definitions differ in the detail, they have common failings when it comes to the question of a test. Because of this, it is possible to look at one of the definitions and draw conclusions about them all. Of the definitions, Bisiach's seems inclusive enough to represent the others as a class, yet is sufficiently well constructed to illustrate the central problems of consciousness.

Before looking at Bisiach's definition, I will point out that we have already encountered two major obstacles to devising an *agreed* test of consciousness: many writers do not even think we are able to define what it is we seek, and those that do, do not provide any testable criteria, and differ in the detail of their definition.

Bisiach's position on the question of premature definition is objective:

<sup>3</sup> P. S. Churchland, "Reduction and the Neurological Basis of Consciousness" in *Consciousness in Contemporary Science* ed. A. J. Marcel and E. Bisiach (Oxford 1988) 273–304. "There is a fatal temptation to try to deal with the problem of the vagueness of 'consciousness' . . . by giving stipulative definitions. . . . The difficulty is that, if we are not clear about the phenomena that are meant to be captured under 'consciousness', stipulative definitions will not help significantly."

<sup>4</sup> F. Crick and C. Koch, "The Problem of Consciousness", *Scientific American* Sept. 1992 110–7. "We did not attempt to define consciousness itself because of the dangers of premature definition."

<sup>5</sup> L. Weiskrantz, "Some Contributions of Neuropsychology of Vision and Memory to the Problems of Consciousness" in Marcel and Bisiach 183–99. "To insist that the value [of the term consciousness] must depend, as a pre-requisite, on the availability of a precise definition would, I think, be a mistake. . . . Definitions are the final product, not the starting point of enquiry."

<sup>6</sup> H. R. Pagels, *The Dreams of Reason* (New York: Simon & Schuster 1988) 203. "The terms 'consciousness' and 'mind' as we loosely use them probably do not refer to anything we can scientifically study."

<sup>7</sup> W. G. Lycan, *Consciousness* (Bradford MIT 1987) xi. "'Conscious' and 'consciousness' have any number of different though related senses."

<sup>8</sup> B. J. Baars, *A Cognitive Theory of Consciousness* (Cambridge 1988) 15. "We can define a useful (though not perfect) objective criterion for conscious events."

<sup>9</sup> E. Bisiach, "The (Haunted) Brain and Consciousness" in Marcel and Bisiach 101–20.

<sup>10</sup> A. J. Marcel, "Phenomenal Experience and Functionalism" in Marcel and Bisiach 121–58.

<sup>11</sup> J. A. Thompson, "Consciousness and the Brain-damaged Child" in *Aspects of Consciousness* (London: Academic Press 1984) 41–63.

<sup>12</sup> D. Woods, "Consciousness and Deafness" in *Aspects of Consciousness* 229–56.

<sup>13</sup> The disadvantages of both approaches are well known. As Socrates wryly notes in Plato's *Meno*: "He would not inquire after that which he knows, since he knows it and there is no need of inquiry for such a thing, nor after what he does not know, since he does not know what he is inquiring after."

One may either insist on the prerequisite of precise definitions or contend that, once the arguments have been taken care of, the definitions will take care of themselves. As a matter of fact, however, the process is circular, and the emphasis may be placed either way according to circumstances and personal propensities.<sup>14</sup>

Bisiach's "definition" is actually three different definitions! The first definition of consciousness, C1, states that consciousness consists in the phenomenal experience of a subject capable of perceiving and representing. The existence of a phenomenal experience is *not* to be confused with the expression or the report of such an experience; the experience itself is inaccessible to the external observer. This creates problems for us, as there can be no externally administered test for C1.

The second definition, C2, is the capacity for self-examination. This is a theme prominent also in Dennett's thinking:

The workings of the Joycean machine . . . are just as "visible" and "audible" to it as any of the things in the external world that it is designed to perceive—for the simple reason that they have much of the same perceptual machinery focused on them.<sup>15</sup>

As the property of self-examination is present in machines of such simplicity as photocopiers it cannot, on its own, be used as an indicator of consciousness. So much for our test. However, there is a more elaborate activity, which is a kind of self-examination, that *does* seem to be inseparable from consciousness: the act of reporting mental states. Perhaps this reporting is a reliable indicator of consciousness; its occurrence certainly is verifiable physically. In Dennett's view<sup>16</sup>, the report as opposed to the mere expression of a mental state presupposes a state of consciousness: consciousness of the mental state. This is straightforward enough. According to this view, the real characteristic of the presence of consciousness is use of language. This, however, is no more testing than the Turing test, which, many<sup>17</sup> agree, cannot detect much more than very convincing behaviour.

Bisiach's third definition, C3, is the "non-physical" entity which appears in many guises. Originally the "spirit" or "soul", it includes Descartes' "immaterial mind" and the "self" posited by Eccles<sup>18</sup>. The persistence of such a definition is due, in

<sup>14</sup> Bisiach, *op. cit.* 102.

<sup>15</sup> Dennett, *op. cit.* 225–6. Dennett's theory of consciousness states that anyone or anything that contains a "Joycean Machine" is conscious purely and simply because of this. A Joycean Machine is a massively parallel information processor.

<sup>16</sup> *Ibid.* 303–9.

<sup>17</sup> Dennett, *op. cit.* 310–1.

D. Hofstadter, *Metamagical Themas* (London: Penguin 1986) 492–525.

R. Gregory, *Perception* XX (1991) 699–702.

R. van Gulick, "Consciousness, Intrinsic Intentionality, and Self-understanding Machines" in *Consciousness in Contemporary Science* 78–100.

<sup>18</sup> K. R. Popper and J. C. Eccles, *The Self and its Brain* (Berlin: Springer 1977).

part but not entirely, to its unfalsifiability and in some of its forms to religious doctrine. Since “interactionism” is bound to describe the operation of the non-physical entity on the body by means of a falsifiable hypothesis, the idea is justifiably considered part of empirical science and cannot be dismissed. Until such hypotheses are presented, tested and found to be true, however, the definition is useless for the purposes of our test.

The definitions of consciousness offered by the other writers share with those just reviewed either an untestable subjectivity or a reliance on some behavioural indicator. Patricia Churchland goes somewhat further by linking particular dream states to particular electroencephalogram tracing patterns<sup>19</sup>, thus showing a correlation of physical events with phenomenal events, but admits that this is only a tiny intimation of what she would consider sufficient for us to define consciousness in objective terms.

We now have two definitions of consciousness, C1 and C3, which cannot be used to build a test for it, and a third definition, C2, which implies, at least, that only those subjects that can use language will clearly pass the test. This is far from satisfactory for those who would like to see a test for consciousness. Though we may be a little nearer to having a test, it has been at the expense of universality, as the test now depends on our ability to identify the use of any possible language in any possible medium. It is as much a test of our abilities as it is the subject’s. Unless we are dealing with subjects either constituting, or closely modelled on, physically capable and mentally healthy adult humans, the test is likely to give results so unreliable that it would be practically useless in resolving any of the debates referred to earlier. And neither does the absence of language (aside from our ability to identify it if it is there) constitute absence of consciousness. Dennett states that, in theory, it is possible to imagine a good deal of what it is like to be a bat (for example), taking clues from its behaviour and involving oneself in considerable bat-study, but due to the absence of a language in bats it is actually very difficult to do so.<sup>20</sup> While we may have strong suspicions that bats are conscious, it is a very different consciousness from any which would pass our test. Without language, the phenomenal world is a very different place.

To make matters worse, if, as is now widely suspected, consciousness is an emergent property of the brain, definition gets harder. The difficulty in defining emergent properties is their haziness around the threshold of emergence, or rather, the unreliability of using change in the substrate to indicate exactly when there has been a phase transition at a higher level.

Dennett particularly stresses this “ill-defined boundary” of consciousness.<sup>21</sup> The

<sup>19</sup> Churchland, *op. cit.*

<sup>20</sup> Dennett, *op. cit.* 441–9.

<sup>21</sup> *Ibid.* 246–7. Dennett has abandoned his earlier idea (expressed in *Content and Consciousness*) that a functionally salient line separates the pre-conscious from the conscious. In this scenario an error taking place after processing “crosses the line” would result in a slip of the tongue or some other “mistake”, whereas an error on the other side of the line would cause a change in what was to be expressed. His “multiple-drafts” model erases this line, and with it, probably, any solid definition of consciousness.

effect of this is that it is unavoidably arbitrary to set the threshold of emergent consciousness anywhere between oneself at one extreme, and, at the other, the sperm and egg of one's conception, the earliest replicators, or the simplest phage. Moreover, Dennett's "multiple-drafts" model asserts that there is no definite time or place at which an event in the brain becomes conscious<sup>22</sup>; between unconsciousness and consciousness, within an individual, there is another continuum, and it is thus equally arbitrary to set any kind of threshold of consciousness in one's own brain. This is a substantial problem for the definition of consciousness. It is going to be unreliable on the borderline cases, regardless of where the line is arbitrarily set. Yet borderline cases are precisely the cases we are interested in testing.

What light, if any, does Dennett shed on borderline cases? His hypothesis (quoted by both Rosenfield and Shallice in their reviews<sup>23</sup>) that

Consciousness is . . . a huge complex of meme-effects in . . . a "von Neumannesque" virtual machine implemented in the parallel architecture of the brain<sup>24</sup>

portrays consciousness as the combinatorial effect of memes, *not* as a condition that is a property of any particular meme. And he finally concludes that "there is no fact of the matter"<sup>25</sup> that determines whether a past mental event was conscious or not.

#### CONCLUSION

Current definitions of consciousness are either subjective, which makes it an untestable quality, or use a physical characteristic of consciousness to indicate its presence. The use of a characteristic, the best of which is language production, as a test criterion can be seen to lead to false negative results. The emergent nature of consciousness complicates things by throwing further doubt on many borderline cases. Whilst a number of writers have attempted definitions of consciousness, I have found no proposals for a test. This is not surprising. Given the problems cited, a universal agreed test for consciousness seems only a very remote possibility.

It is therefore pertinent to put aside the question of *desirability* and simply ask whether there is any *need* of a definition of consciousness. It is clear, for instance, that research into the question of consciousness proceeds whether we all agree on a definition or not. In fact, there is probably *more* impetus to research as a result of the absence of an agreed definition. I find Patricia Churchland's view on this appropriate. To summarise it: there is too much doubt and disagreement over what "consciousness" is meant to include for any definition not to be premature; until we know more about the relationship between psychological events and neurological events, we are not in a proper position to frame the question of consciousness, and

<sup>22</sup> *Ibid.* 134–8.

<sup>23</sup> I. Rosenfield, *New Republic* XXVI 25 (1991) 40–4.

T. Shallice, *Nature* No. 356 (1992) 26–7.

<sup>24</sup> Dennett, *op. cit.* 210.

<sup>25</sup> *Ibid.* 462.

meaning will be given to our terms only through increased knowledge of the things they describe.

Given the enduring “problem” of consciousness, we may even decide that a definition of it is impossible. In his “outsider’s” critique of cognitive science<sup>26</sup>, Heinz Pagels concludes his discussion of the philosophical question of consciousness thus:

The point is that certain philosophical questions are not solved. Rather, the categorical framework of thinking about the problems is so radically altered by science that the questions no longer make sense.

<sup>26</sup> Pagels, *op. cit.*