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What Difference Does Consciousness Make?

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Abstract

The question whether and when it is morally appropriate to withdraw life-support from patients diagnosed as being in the persistent vegetative state is one of the most controversial in bioethics. Recent work on the neuroscience of consciousness seems to promise fundamentally to alter the debate, by demonstrating that some entirely unresponsive patients are in fact conscious. In this paper, I argue that though this work is extremely important scientifically, it ought to alter the debate over the moral status of the patients very little. First, the data presented is complex and difficult to interpret; we should be wary of taking the claimed discovery entirely at face value (though the remaining questions will probably be settled by future research). Second, though the demonstration that some of the patients are in fact conscious would show that they are moral patients, and therefore beings whose welfare must be taken into account, it would not, by itself at any rate, show that they have an interest in continued life.

Consciousness is notoriously difficult to study empirically. But unlike most other nearly intractable subjects, consciousness *matters*. It matters *practically*: to the quality of our lives, but also for significant ethical questions. Consider the vexed question concerning the withdrawal of the means of life (whether life-support or nutrition and hydration) from patients in a persistent vegetative state (PVS). As we witnessed in the Terri Schiavo case, these cases are the focus of passionate debate, and this is a debate that turns, significantly, on the consciousness of the patient. Opponents of withdrawing life-support often claim that PVS patients are conscious, citing spontaneous behaviour by these patients as evidence; supporters of the right of family to withdraw life-support maintain that PVS is incompatible with consciousness. Given this context, the recent claim by Owen et al. (2006) that they have strong evidence of consciousness in a PVS patient is apparently extremely significant.

In this paper, I will argue that though the work of Owen et al. is undoubtedly of great scientific interest, its ethical significance is much less great than might be thought. I shall argue that even if Owen and colleagues have succeeded in showing that some patients correctly diagnosed as PVS (correctly, that is, by appropriate application of the relevant scales) are in fact conscious – and I will register some doubts as to just how convincing their case is – the ethical debate is likely to be little altered by the finding. On the most likely interpretation of what they have demonstrated, *if* they have demonstrated that some PVS patients are conscious, the ethical debate should change, but only a little. PVS patients who we discover to be conscious are unlikely to have an interest in remaining alive.

PVS and Consciousness: New Evidence?

Patients are diagnosed as being in a persistent vegetative state if they exhibit preserved sleep/wake cycles in the absence of voluntary motor responses or contingent response to stimuli. That is, PVS patients are unresponsive to words, gestures or other stimuli. They may engage in spontaneous activity: moving, crying, laughing, and so on, but their activity is unrelated to external stimuli. A patient who is minimally responsive to such stimuli is said to be minimally conscious. Someone is said to be minimally conscious when they are able, at least sometimes, to follow commands, to answer yes/no questions (by word or gesture), talk or to respond to stimuli (Laureys et al. 2005).

A PVS patient is not even minimally conscious: such patients are thought to lack consciousness altogether. In a recent study, Owen et al. (2006) forcefully challenge this view. Owen and colleagues probed the brain of a patient diagnosed as PVS using fMRI. They used four probes, two designed to test language comprehension and two asking the patient to follow instructions. The language probes came in two kinds: those containing only unambiguous words, and those including ambiguous words. With unambiguous sentences, activity was observed in speech specific areas (the middle and superior temporal gyri), in the same areas active in healthy controls. When the sentences contained ambiguous words (e.g., “The *creak* came from a *beam* in the *ceiling*”), there was an additional response from the left inferior frontal region, a region involved in semantic processing. Once again, similar activity was observed in healthy controls.

There were two variants on the instruction probes also. One variant asked the patient to imagine playing tennis, while the other asked her to imagine walking from room to room in her house. In each case, she was asked to engage in the task for 30 seconds at a time. During the tennis probe, significant activity was observed in the supplementary motor area; during the navigation task activity was observed in the parahippocampal gyrus, the posterior parietal cortex, and the lateral premotor cortex. In both cases, the responses were indistinguishable from those observed in healthy controls.

Owen et al. (2006) take these results as confirming “beyond any doubt” that the patient was “consciously aware of herself and her surroundings”. Other neuroscientists agree. Nicholas Schiff, for instance, was quoted by the *New York Times* saying that the study presented ““knock-down, drag-out” evidence for conscious activity’ (Carey 2006). Thus, this work seems to promise to entirely alter both our understanding of the nature of PVS, and – apparently – the ethical debate surrounding withdrawal of the means of life from these patients.

Excitement and debate over these results largely focuses on the instruction-following probes. The semantic processing probes are no more than suggestive. PVS has long been thought to be consistent with islands of preserved cognitive function. A number of previous studies have shown task-specific brain activation in patients: Schoenle & Witzke (2004) measured event-related potentials in the brains of PVS patients, using sentences ending in congruent or incongruent words as stimuli. In normal controls, an N400 response is elicited by the incongruent endings. 12% of VS patients and 77% of what the authors describe as near VS patients exhibited the response, reflecting preserved semantic processing in these patients. Unpublished data reported by Perrin showed a P300 response – correlated reliably with recognition – to the patient’s own name in PVS (Laureys et al. 2005). The evidence from Owen et al. of semantic processing in PVS is therefore unsurprising. Semantic processing is mental activity, but mental activity need not be conscious.

Indeed, mental activity without consciousness is ubiquitous, in both normal and pathological cases. Automatic actions – actions carried out by processes that do not need conscious

supervision or initiation – are extremely common, making up perhaps 95% of the actions of ordinary people (Bargh & Chartrand 1999). Inside the laboratory, normal subjects also show evidence of semantic processing without consciousness, inasmuch as the content of a stimulus can be demonstrated to be causally effective on their behaviour, while they deny conscious awareness of it. The most obvious example involves priming by masked stimuli (Deheane et al. 1998). A stimulus is shown to a subject very briefly (50ms) and then immediately masked by another. In this paradigm, the subject reports that she has not perceived the first stimulus, but she nevertheless processes its content, as shown by her behavior. For instance, given the masked stimulus “sheet” and asked to complete a word stem task (“she-”) she is more likely than chance to complete the stem with the primed word than alternatives (“sheep”, “shear”, “shell”, and so on). There are also many pathological syndromes, in which apparently unconscious subjects act. In automatism, subjects may engage in all kinds of activity, some of it very sophisticated – driving a car while obeying traffic signals, playing the piano, and so on – in the (apparent) absence of consciousness (Searle 1994; Broughton et al. 1994).

Data from these normal and pathological cases can be used to build an empirical argument against the hypothesis of Owen et al. The evidence for lack of consciousness in all these cases consists, primarily, in the reports of subjects. Most (though not all) researchers think that we are entitled to take subjects at their word when they report that they are not conscious (of a stimulus, or globally). We can then use data from these subjects to isolate the *neural correlate of consciousness* (NCC); “the minimal set of neuronal events and mechanisms jointly sufficient for a specific conscious percept” (Koch 2004: 16). Awareness of the target stimulus in priming studies is correlated with activation of higher associative cortices, particularly parietal, prefrontal and anterior cingulate areas (Deheane et al. 2006). Thus, it is widely (though by no means universally) held that this pattern of activation is, or is part of (from now on I drop this qualification) the NCC. Further evidence comes from the correlation between other syndromes and activation of higher associative cortices. Call the neural state corresponding to activation of higher associative cortices *S*. Absence of *S* is correlated with failure to report stimuli in change blindness as well as with neglect (Deheane et al. 2006). It is also correlated with reported absence of consciousness in somnambulism and seizures (Laureys 2005). But if *S* is the NCC, then PVS patients are unconscious: Though PVS patients respond to a variety of stimuli, their cortical responses are isolated from higher associative cortices (Laureys et al. 2005). On this basis, it can be argued that though Owen et al. may provide evidence for preserved cognitive function in PVS that is more impressive than previously believed, the best explanation for their results will hold that this is preserved function *without* consciousness.

Given that the claim that *S* is a component of the NCC is controversial, however, this argument cannot be seen as decisive. Owen and colleagues might argue that their results show that *S* is not necessary for consciousness. They take the instruction-following probes to settle the matter. By cooperating with the experimenters, they argue, the patient gave unequivocal evidence of an intentional decision, and such an intentional decision requires consciousness. By focusing on instruction following, Owen et al. *bypass* the debate over the NCC. We do not ordinarily look for the neural correlates of consciousness in other people, because we believe that the kinds of complex cognitive processes in which they manifestly engage – talking to one another paradigmatically, but also interacting flexibly with the environment in ways that outrun overlearned processes – are clear evidence of consciousness. Owen and colleagues argue that instruction following is the kind of task that requires consciousness, and therefore evidence of instruction following is evidence for consciousness.

Might the behavior have been carried out by zombie systems nevertheless? Some critics have worried that the behavior might be produced through priming (Greenberg 2007). In response, Owen et al. (2007) point to the sustained nature of the activity. Priming, they argue, is typically transitory, not sustained for the full 30 seconds. But this reply is not decisive. Owen and his critics seem to have the same view of the unconscious: it is the 'dumb' unconscious of cognitive psychology, which engages in brief flickers of automatic behaviour. But the view of the unconscious mind suggested by work in social psychology is of a set of flexible and complex systems, capable of driving intelligent behaviour. Researchers in social psychology have spoken of an automaticity revolution in their field, as the power and range of unconscious processes have been uncovered. Consciousness is a limited resource and it is saved for difficult tasks. So there is another way to interpret the evidence: rather than inferring, with Owen et al., that the patient engaged in goal-directed and complex behaviour, and thus must have been conscious, we can conclude that they have provided further evidence for the power of automatic systems.

Owen et al. argue that their study demonstrated that the patient was conscious, because the activation in SMA and other regions persisted so long; whereas responses to primes last only a few seconds. But persisting activity by unconscious processes has been demonstrated: Bargh et al. 2001 primed subjects with stimuli related to high performance, put them to work on a word finding task and then instructed them to stop after two minutes. Primed subjects were more likely to ignore the instruction, indicating the persistence of the unconsciously activated goal. In a variation of this study, primed subjects were interrupted at the task after one minute and then made to wait five minutes before being given the choice of continuing the word finding task or instead performing a cartoon-rating task, which was rated as more enjoyable. Once again, subjects primed with stimuli related to high-performance were more likely to return to the word finding task than controls, indicating the persistence of the unconsciously activated goal through a full five minutes of rest.

Of course this study is in many ways disanalogous to Owen et al.; most significantly in that it concerned fully conscious subjects, albeit with unconsciously primed attitudes. Nevertheless, it demonstrates that we cannot infer from the mere persistence of a mental state to the conclusion that it is conscious. There is also some evidence that instruction following can be performed in the absence of consciousness, this time by subjects who may be entirely unconscious (though this is controversial). Automatism is characterized by complex goal-directed behaviour, apparently in the absence of consciousness. Automatism can persist for long periods of time. Consider the case of Ken Parks, who in 1987 drove 23 kilometres through the Ontario suburbs to the home of his parents-in-law, where he stabbed them both (Broughton et al. 1994). Parks was held to be acting automatistically. Behavior in automatism is less flexible and intelligent than conscious behaviour; some researchers believe that the violence sometimes observed arises from an unexpected obstacle interrupting an overlearned script. But it is apparently compatible with instruction following, at least in an extended sense: Parks drove through the Ontario streets apparently safely. We do not know if he obeyed the instructions of traffic lights and stop signs, but at very least he was able to guide his actions by the layout of the streets, all in the absence of consciousness.

These considerations suggest that instruction following is not unequivocal evidence of consciousness. However, the evidence from the Owen paradigm is impressive, and more evidence can be expected in the near future. In the rest of the paper, I shall assume that Owen and colleagues have, or will at any rate, succeed in demonstrating that some PVS patients are conscious. I shall argue that the ethical significance of these results is less than might be thought.

The Moral Significance of Consciousness

Ned Block usefully distinguishes two fundamental concepts of consciousness: *phenomenal* consciousness and *access* consciousness (Block 1995). Phenomenal consciousness refers to the qualitative character of experience. A state is phenomenally conscious inasmuch as there is something it is like to be in it. In contrast, information is access conscious if it is available for rational control; if it is simultaneously accessible to the decision-making, planning and volitional centres. This distinction is important for value theory as well as philosophy of mind, I will suggest. Consciousness, I claim, is closely linked to the moral status of those capable of experiencing it, but different kinds of consciousness underlie different kinds of moral value. Phenomenal consciousness, I will argue, is sufficient to make its bearer a moral *patient* (though it may not be necessary – beings with interests, like plants, who lack phenomenal consciousness might be moral patients as well; if so, however, they are a very low-grade kind of moral patient). To be a moral patient is to be a being whose welfare must be taken into account when we decide what to do. But a (mere) moral patient does not have an interest in continued life, and therefore does not have a right to life.

It is easy to see why phenomenal consciousness underlies the kind of moral value we rightly attribute to moral patients. To be phenomenally conscious is (in all cases of which we have knowledge) to be capable of experiencing states that have qualities of aversiveness (like pain or boredom) or of pleasantness (like joy), and these are states that matter intrinsically. To undergo these states is to have experiences which matter morally, and therefore beings capable of such experiences are moral patients. Moral patients are beings to whom we cannot be indifferent, precisely because they have experiences which matter intrinsically. They have a welfare, and we must take that into when we decide how to act. If PVS patients are sentient, then it matters what we do to them. We can benefit them by causing them pleasure and harm them by causing them pain. To that extent, their moment-by-moment states are of potential value and disvalue to them: they can suffer (on the assumption – *contra* Carruthers (2004) – that the badness of pain consists in its phenomenality). We are morally required to minimize the amount of pain suffered by any sentient being (to the extent to which this is compatible with our other moral obligations), where sentience is the ability to have phenomenally conscious states. One way in which the findings under discussion should affect the debate, therefore, is by indicating the use of analgesics of some PVS patients. They may suffer, and we ought to take steps to prevent or minimize their suffering.

Non-human animals are (at least, and at least typically) moral patients. They undergo experiences which are intrinsically valuable or disvaluable. But most of us believe that normal human beings have a higher moral status than most non-human animals. We believe that though we ought to take the quality of the experiences of non-human animals into account in our decision-making, such that, say, we cannot cause them pain unless we have a genuinely good justification for doing so, non-human animals (with the possible exception of the great apes and perhaps cetaceans) do not have a *right to life*. By 'right to life', I do not mean the kind of full inviolability that deontologists mean by the phrase, but something less stringent: a right to inviolability that can be defeated only by a sufficient number of comparable goods. Non-human animals must not be caused gratuitous pain, but other things being equal we have little reason to maintain non-human animals in existence; we need little justification to (painlessly) kill them. What, if anything, explains this intuition? What is it about normal adult human beings that justifies this difference in their moral status?

Let us call beings with a right to life *persons*. Personhood cannot be defined on the basis of species membership: though it could turn out that there are no persons who are not human beings, it would be unacceptably parochial to rule out the possibility (as already mentioned,

there may be non-human animals with a right to life; additionally, there may be species on other planets that are persons). Since our paradigms of beings with a right to life are normal human beings, however, it is worth looking to humans to ask what characteristics might underlie personhood. The traits in question will be possessed by all normal human beings, but not those non-human animals that we are confident are not persons (simpler mammals, for instance), and which are such that they could be possessed by alien species. In addition, these traits will be *explanatorily relevant* to personhood. That is, they will be traits which contribute to the distinctive value of the being that possesses them, not a trait that merely happens to be possessed by all and only persons.

The explanatory relevance constraint immediately serves to narrow down the range of possible traits that might underlie personhood. Only traits that might underlie the value of the being that possesses it can count. In addition, since what is in question is a *right*, the value is plausibly taken to be a value that it has to *itself*. Were the value in question a value to others alone, it could not be said to underlie a right. A right is something that cannot be traded off for something else of equal or (slightly) greater value. It is a side-constraint against such consequentialist trade-offs. But if the value in question were exclusively a value to others, it would be mysterious why those others could not choose to trade-off the value for something else. Only if the value is a value to the being itself can it underlie a right.

We can conclude that the traits in question must be such that it gives the being an *interest* in continuing to live. Now, it seems that only our mental capacities can be relevant to having such an interest; hence the traits must be (or underlie) such capacities. Which capacities might be the relevant ones? At first glance, one might think that the relevant capacities are those which lead us to enjoy our lives: capacities to experience pleasure, or contentment, or to take satisfaction in states of affairs (or what have you). Of course, these are capacities which we share with many other animals; if these were the relevant capacities, then the intuition with which we began (and the many practices characteristic of human societies that are justified by this intuition), according to which few non-human animals have a right to life would be shown to be faulty. In fact, the capacities which underlie our phenomenology do not ground a right to life. As we noted above, if a being has the capacity to experience pleasure and pain, then it is a moral patient. It's *momentary* conscious states matter to it. But it need have no conception of its experiences as having a temporal component: as continuing into the future. Only if a being can conceive of itself as having a future can it have an interest not merely in the quality of its experiences *now*, but also in having experiences in the future.

Having an interest in continued life requires sophisticated psychological capacities, including (though not only) the capacity to experience certain kinds of conscious states with ineliminably temporal properties. A being acquires a full moral status, including the right to life, if its life – and not merely its momentary states – matters *to it*. A full right to life requires that it is not only experiences that matter to one, but also how one's life actually goes; that is, if the satisfaction of one's interests matter to one. This requires very sophisticated cognitive abilities, such as an ability to conceive of oneself as a being persisting through time, to recall one's past, to plan and to have preferences for how one's life goes (Singer 1993; McMahan 2002). It is the connectedness and continuity of one's mental states that underwrite *personhood*, in one central sense of the word; it is insofar as each of us a single being across (relatively long) stretches of time that we count as moral persons.

But the abilities that underlie moral personhood and full moral status are abilities that require *access* consciousness, not phenomenal consciousness. Information must be

sufficiently available for rational thought and deliberation in order for a being to be able to have future-oriented desires or to conceive of itself as persisting in time. So the demonstration that the PVS patient was phenomenally conscious – that is, that she was “consciously aware of herself and her surroundings” (Owen et al. 2006: 1402) – would not alter the debate significantly unless it was also evidence for sophisticated cognitive abilities, including a sophisticated kind of access consciousness.

In order to justifiably attribute to a being the right to life, in the sense sketched above, we must have good reason to attribute to them not phenomenal consciousness, but a sophisticated *kind* of access consciousness. It is not sufficient that information be in the global workspace; there is every reason to think that this much is true of many non-human animals, including many who are not capable of the sophisticated mental states required for a right to life. In addition, as we have seen, the right kinds of information must be available to the right systems to enable the organism to have extended and self-referential mental states. The organism must be capable of future-oriented desires; desires that some future state of affairs be actual, of plans and projects. It must be capable of preferences regarding how its life goes. These capacities require that the organism be capable not merely of phenomenal and access consciousness, but also of *self*-consciousness, because only a self-conscious being can have preferences regarding how *its* life goes. This is one reason why most non-human animals do not have a right to life, but great apes and cetaceans might; because the latter pass tests for self-consciousness (like the mirror test; see Keenan et al. 2003), and the former do not.

Moreover, it is plausible to think that the access consciousness which underlies a right to life must be temporally sustained; that is, for a being to possess a right to life, the information in their global workspace must be available to consuming systems for a sustained period, to enable the being to link mental states across time. It may in fact be the case that this kind of sustained access consciousness is a necessary condition of self-consciousness; that only a being who is able to maintain a thought about a desire can refer that desire to itself and therefore be self-conscious. There is evidence for some kind of sustained access consciousness in the patient reported in Owen et al. 2006; the patient sustained the instruction following task for a full 30 seconds. But before we can conclude that she is self-conscious, we need evidence that her diachronic access consciousness had the right *content* as duration: that it included self-referential contents. So far as we can tell, the study does not provide such evidence, and therefore does not establish that the patient has the right kinds of sophisticated mental states that underlie full moral status.

Obviously, further research is needed. We cannot rule out the possibility that some patients who pass the test are in a state akin to locked in syndrome (LIS), and therefore have all the capacities which underlie a full right to life. But it is more likely that the degree of consciousness is closer to that seen in MCS, rather than in LIS. The transitory and fluctuating consciousness seen in the MCS does not underwrite full moral status: because it is transitory, it is likely that the mental states of the person are not appropriately connected to one another for her to have full moral status.

If the patient is conscious, then she is a moral patient; it matters – morally – how we treat her. We cannot cause her pain unless there is good reason to do so. But we do not have a reason to maintain her in being. Indeed, given that decisions about patient treatment are made in contexts in which resources are scarce, evidence that the patient is neither self-conscious nor capable of self-consciousness might be seen to be evidence that we have a positive reason *not* to maintain her in being.

LIS and Moral Value

Finally, what if further research discovers that some patients diagnosed as PVS are actually fully conscious; that is, if they are in the LIS? Do such patients have a right to life? It is clear that they do: someone in the LIS has the same mental capacities as you and me, and as we have already seen, it is these mental capacities that underlie a right to life. What is less clear is whether they have lives worth living, where a life worth living is a life that contains sufficient satisfactions to be *worth* continuing. At first glance, we might think that the vast majority of LIS patients have almost unbearable lives of frustration and boredom. That first thought needs tempering, however: there is some evidence that LIS is much less bad than one might think. Bruno et al. (2008) measured the quality of life of LIS patients, and found that their self-rated life satisfaction was only slightly (and non-significantly) lower than controls. This might testify to the power of hedonic adaptation, whereby people tend to return to approximately their former level of subjective well-being following events that might be expected to greatly diminish (or enhance) it (Lucas, et al. 2003).

However, it is worth registering two caveats. First, though the median rating of life satisfaction was around the same as controls, the standard deviation was much greater. This suggests much greater variance in life satisfaction. Second, there may be some inevitable selection bias in the sample. Subjects were recruited through the Association Française du Locked-In Syndrome. Given that being a member of the society is possible only with the cooperation of attentive family members, or through the provision of advanced and relatively rare technological assistance, which allow people with LIS to communicate with the world and with others, it may be that we are measuring only the experience of those patients who have been the beneficiaries of sustained efforts to alleviate their frustration and boredom. There may be many others, languishing in much less fortunate circumstances. In the absence of costly assistance and family members (or others) with the time and inclination to devote much of their lives to sufferers, the worst outcomes may be much more common,

However these complications play out, the most important fact about PVS patients who turn out to be in the LIS (if indeed there are any) is that they should prove capable of communicating whether they wish to continue living (research groups in the UK and in Australia are developing promising techniques that will allow for such communication). If they desire to continue in existence, given that they are moral agents and not just patients, their wishes should be respected. But for those who are merely phenomenally conscious, or are capable only of a relatively low-grade access conscious, life is not a benefit. In the absence of good prospects for recovery, we do them no wrong in withdrawing life-support.ⁱ

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