The Inner Life of Vegetative Patients and Why It Matters

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Introduction

In 2006, Adrian Owen reported in *Science* his team found signs of residual consciousness in a patient clinically diagnosed with vegetative state disorder (VS), a devastating disorder of consciousness (DOC) that leaves the patient in a paradoxical state of “wakeful unawareness”\(^1\). Since Owen’s discovery, research teams have found similar results in at least a dozen more VS patients using the same method (Monti et al., 2010; Stender et al., 2014). If true, these findings should concern ethicists due to the putative moral significance associated with consciousness. But *which* kind of consciousness? Philosophers tend to distinguish two broad types of consciousness: consciousness as *phenomenology* and consciousness as *cognitive access*. Within the latter category, philosophers have distinguished many different types of cognitive access ranging in complexity from simple “monitoring” access to the complexities of human self-consciousness. Philosophers interested in these cases have typically focused on the epistemic difficulties of using neuroimaging data to make inferences about consciousness\(^2\) but another, equally important question has received less attention\(^3\): *which* kind of consciousness is the most important in the clinical-ethical context?

The standard view is that *phenomenal* consciousness is the kind of consciousness that matters most, where phenomenal consciousness is the qualitative sense of there being “something-it-is-like” to

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\(^1\) For a review of active probe methods, see Owen (2013)
\(^3\) Exceptions include (Levy & Savulescu, 2009; Kahane & Savulescu, 2009)
be an experiencing subject whose quality-of-life matters. This view makes sense of why it’s permissible to crush a rock but not a rabbit: rabbits are phenomenally conscious and rocks are not. It’s difficult to think of an entity with moral standing who does not have phenomenological experiences. Hence, the standard view says if VS patients have no phenomenal experience and never will again then their lives have no intrinsic value; they cease to be moral patients whose desires and interests morally matter. Accordingly, the standard view says that clinicians have a prima facie duty to use the latest technology to find residual levels of phenomenal consciousness in clinical populations. The cognitive neuroscientist Anil Seth captures the essence of the standard view in the forward to a 2009 text *Coma Science: Clinical and Ethical Implications*:

“Consciousness is the appearance of a world. In its absence there is no self, no environment, no pain, no joy; there is simply nothing at all. Following Thomas Nagel, without consciousness there is ‘nothing like it is to be’ (Nagel 1974). Understanding the boundaries of consciousness is therefore of the highest clinical and ethical importance. The new enterprise of ‘coma science’ is at the very forefront of this mission.” (p. ix, emphasis added).

In contrast to the standard view, I argue that an exclusive focus on phenomenal consciousness is mistaken because it fails to account for the unique value of reflective self-consciousness that exists independently of whether its a reliable indicator of phenomenal consciousness. Thus, my goal is not to totally discredit the standard view but extend it to show that although phenomenal consciousness is clinically and ethically significance, it is not of the highest importance. Indeed, reflective self-consciousness is equally important if not more so due to its connection to acquiring informed consent, respecting the autonomy of patients, and enriching the quality of their lives.

The plan for the paper is as follows. In section 1, I briefly outline the latest information about VS and how it’s clinically diagnosed. In section 2, I distinguish phenomenal consciousness from reflective self-consciousness.
self-consciousness consciousness and other types of cognitive access. In section 3, I briefly describe Owen’s active probe methodology to provide background context for what’s at stake in the clinical-ethical context. In sections 4 I...

1. Overview of the Vegetative State

In this section I give a brief overview of VS, how it’s diagnosed according to standard clinical practice, and outline a methodological limitation for the standard approach.

1.1 What is the vegetative state?

The vegetative state is distinct from several other disorders of consciousness resulting from severe brain trauma. Coma is defined as the complete absence of any observable response to vigorous stimulation and typically lasts about two weeks, after which patients tend to either recover or transition into VS, a state described as “awake but not aware”. VS patients are considered awake insofar as they breathe on their own, open their eyes, go through sleep/wake cycles, and display reflexes ranging from simple twitches to grimacing, crying, and even reflex behaviors such as repeating a single word [Schiff 1999]. Although technically awake, VS patients do not display sustained reproducible, purposeful responses to stimuli nor do they show evidence of linguistic comprehension or expression [Monti et al. 2009. VS is in turn distinct from the minimally conscious state (MCS). MCS patients look like VS patients but intermittently show nonreflexive behaviors such as nodding appropriately to questions. Family members are often the first to notice these signs [ref]. Finally, VS and MCS are distinct from locked-in syndrome (LIS), where the cerebral cortex is cut-off from the mechanisms of motor control. LIS patients are mentally normal but severely paralyzed. Many LIS patients are still able to blink their eyes or twitch a muscles, enabling them to communicate and even write a memoir [Bauby].

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5 The term “persistent vegetative state” is rarely used; instead it is recommended to simply describe how long a patient has been in the VS.
Uncompetence Wakefulness Syndrome (UWS) is a new term for VS (Laureys et al., 2010; Laureys & Boly, 2012) that is more respectful of patients⁶ as well as more diagnostically accurate because until modern neuroimaging is used, it is hasty to infer a patient lacks communicative readiness. In other words, the term “vegetative” is inaccurate as a blanket diagnostic label because it ignores the possibility that they will find residual cognitive function using neuroimaging. Accordingly, I will henceforth use the term UWS instead of VS.

1.2 Diagnosing UWS: the standard approach

The unobservability of consciousness makes it necessary to rely on behaviors such as eye-opening, withdrawal from noxious stimuli, gaze-following, command following, and verbal comprehension/expression (Jennett & Plum, 1972; Posner & Plum, 2008; Giacino, 2009). The problem with this approach is that it can overlook “covert cognition” and thus produce false negatives: saying there is no consciousness when in fact the patient retains some level of consciousness. Because the absence of behavior does not entail the absence of consciousness some psychologists argue the standard approach in clinical neurology is flawed” because of its implicit behaviorist epistemology (Overgaard 2009 p. 13, Monti 2009, Kurthen 1991). Furthermore, the standard approach is often ambiguous about which concept of consciousness is relevant to the diagnosis of UWS. In the next section I distinguish between these two different types of consciousness, and explain why this might matter in the clinical-ethical context.

2.0 Concepts of Consciousness

In this section I clarify which concepts of consciousness are relevant to the diagnosis of UWS

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⁶ When Jennett and Plum first coined “vegetative state”, they referenced the Oxford English Dictionary’s definition of the verb “vegetate”, meaning “To live a merely physical life devoid of intellectual activity or social intercourse”
and why this matters for interpreting Owen’s active probe methodology.

Owen’s team claims they detected “conscious awareness” in a UWS patient. What does “consciousness awareness” mean in this context? Terms like “consciousness” and “awareness” mean different things to different theorists and are famously difficult to define [Zeman, 2001, 2005; Wilkes, 1988]. Clinicians often break concepts of consciousness along two distinct dimensions: levels of consciousness vs. contents of consciousness, corresponding to what philosophers call intransitive and transitive consciousness. Intransitive consciousness is sometimes called “creature consciousness” because it’s typically ascribed to a whole creature e.g. “The cat is conscious, not asleep.” Types of consciousness ascribed to creatures include wakefulness (referring to the sleep/wake cycle), vigilance (corresponding to cortical arousal), and sentience (capacity for pain and pleasure). Creature consciousness can also refer to Thomas Nagel’s influential phrase that there is “something-it-is-like” to be a creature. Transitive consciousness refers to the objects of consciousness e.g. “Bob is conscious of the smell of coffee”. Philosophers also distinguish creature consciousness from “state consciousness”, where particular mental states are ascribed consciousness e.g. a conscious percept as opposed to an unconscious percept. Within state consciousness, philosophers distinguish between phenomenal consciousness and access consciousness (Block, 1995). Phenomenal consciousness (henceforth “p-consciousness”) is roughly synonymous with Nagel’s “what-it-is-likeness” and refers to, e.g., the experience of feeling a toothache or the redness of seeing a sunset. On Block’s view, a mental state is p-conscious if there is something-it-is-like to be in that state. In contrast, a mental state is access conscious if that state is generally available to interact with other mental states to guide reasoning and behavior (Block 1995).

Last, access consciousness should be distinguished from the kind of reflective
self-consciousness presumably unique to normal, mature humans. Although reflective self-consciousness is hard to define, it’s clear that newborn babies and nonhuman animals are probably not capable of self-conscious reflection and that this capacity is distinct from metacognition, higher-order monitoring. “Reflective self-consciousness” in the broad sense I am using the term refers to a suite of capacities including reflection and mind-wandering, imagination, inner speech, and the ability to explicitly reason and articulate about intentional states qua intentional states. The term “self-consciousness” is a slight misnomer because reflective self-consciousness can actually take as an object of reflection any object or proposition. Accordingly, I prefer to talk about “reflective consciousness”, henceforth r-consciousness.

Crucial to my purposes, many reflective acts occur in the context of the practice of asking and answering questions about mental states. As experts in folk psychology, humans routinely ask others about their mental states and answer questions about the mental states of ourselves and others. If I ask you a question about how you are feeling, I expect an answer that coheres with folk psychological concepts of BELIEF, DESIRE, FEELING, INTENTION, PAIN, etc. If someone asks me to describe the location, intensity, or type of pain I’m in I would be able to reflect on my bodily experience and answer through a verbal report, pointing at placards with symbols on them, or by establishing by convention that a single muscle movement means “Yes”. With these conventions mutually agreed upon by both the questioner and the elying on the questioner to triangulate similarly to the game “twenty questions”, a skill that undoubtedly involves r-consciousness at some stage of the answering process especially if the questions involve complex psychological vocabulary e.g. “How long have you been conscious?”

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7 Although Block does connect access consciousness to the rational control of speech (which is unique to humans) Block clearly states that, on his view, “Very much lower animals are A-conscious” (Block, 1995, p. 238)
8 Gallagher’s (2010) definition is as good as any: “reflective self-consciousness an explicit, conceptual, and objectifying awareness that takes a lower-order consciousness as its attentional theme.”
It should obvious then why r-consciousness is significant in the clinical-ethical context but the question at at hand is whether it’s more important than p-consciousness. Furthermore, could r-consciousness make life worth living without p-consciousness? I will return to this question in section 4, but first we need describe Owen’s active probe methodology in more detail. This background context is important to my main thesis because it shows why r-consciousness is not only easier to measure but intrinsically valuable in the clinical-ethical context. On my interpretation, Owen’s methodology gives us a proof of principle demonstration for how to probe for a patient’s r-consciousness and use it to ask them morally relevant questions or establish a social rapport.

3. Actively Probing for Consciousness

In this section I describe Owen’s paradigm for detecting consciousness with functional neuroimaging.

In July 2005, a 23 year old woman in a car accident suffered severe brain damage. After five months she satisfied all behavioral criteria for diagnosis of UWS. However, when the woman was put in a fMRI machine and presented her with spoken sentences the speech areas of her brain activated similarly to normal controls. And when presented with ambiguous spoken sentences (e.g. “The creak came from a beam in the ceiling”) the patient showed additional activation in frontal areas, an indication of deeper semantic processing in controls. Accordingly, Owen’s team reasoned there is a possibility this patient had residual levels of consciousness overlooked by bedside measures.

Skeptics point out that cortical language areas can remain functional even during anesthesia [Davis, Coleman, Owen 2007] and the patient’s brain activity might be unconscious activation to stimuli [Nachev 2007; Greenberg 2007]. Aware of this possibility, Owen’s team conducted a second fMRI study with the same patient using spoken instructions to cue mental imagery. Specifically, the patient was
asked to either imagine herself playing a game of tennis or imagine herself walking through her house.

When the patient was given the cue to imagine playing tennis, significant activity was observed in the supplementary motor area similarly to controls. When the patient was asked to imagine herself walking through her home, significant activity was observed in the parahippocampal gyrus, the posterior parietal cortex, and the lateral premotor cortex. Crucially, the patient’s activations in both conditions were indistinguishable from the activation of normal controls given the same task. In conclusion, Owen et al. argue, “Her decision to cooperate with the authors by imagining particular tasks when asked to do so represents a clear act of intention, which confirmed beyond any doubt that she was consciously aware of herself and her surroundings” [2006, p. 1402, emphasis added]. Given the field of consciousness research is a young and theoretically fragmented field, are these findings as conclusive as Owen suggests? Other scientists have argued the study doesn’t warrant such a strong conclusion. For example, [Greenberg 2007] wants to know what would happen if the patient was asked more complicated variations of these imagery instructions e.g. “Imagine walking through a city after playing tennis”. Similarly, Nachev and Hacker and argue [(2010) that until the patient is asked follow up questions like “Do not imagine yourself playing tennis if asked to play tennis” it is difficult to probe for genuine linguistic mastery.

As a response to these skeptics, Monti [2010] followed up on Owen’s results with a large-scale replication involving 54 patients with severe brain injury, 23 of which were diagnosed as vegetative and 31 in a minimally conscious state. In addition, Monti’s team looked at 16 healthy controls. All subjects were given two imagery tasks for the initial localizer scan: they were asked to imagine themselves playing tennis and “hit the ball” back and forth in the motor task and on the spatial imagery task they were asked to imagine walking through a familiar city or through the rooms of their
The subjects were asked to alternate performing each imagery task for 30 second blocks cued by the spoken words “tennis” or “navigation” followed by the command “rest”. In the communication phase of the experiment, the subjects were asked yes-or-no questions (e.g. “Is your father’s name Alexander?”) and asked to answer with either spatial imagery for yes or tennis imagery for no. After hearing the question, the subjects were cued with the word “answer” and expected to perform the imagery tasks for 30 seconds followed by the cue “rest”, just as in the localizer scans. The 16 controls were able to answer 48 questions with 100% accuracy. Of the 54 patients with brain injury, 5 patients were able to answer the questions showing what Monti’s team calls “willful modulation of brain activity”. 4 of these 5 patients were diagnosed with VS and the other MCS.

While Monti’s study is impressive and in my opinion represents a genuine clinical breakthrough it is imperative that determine which kind of consciousness active prove methods measure. The standard view is that active probes are evidence of phenomenal consciousness but this is debatable. The reliance on self-report through mental imagery looks like the type of phenomenon associated with r-consciousness especially since its plausible that a creature could be p-conscious without any capacity for mental imagery or the ability to follow commands.

It’s an open question then whether Owen’s methodology tracks p-consciousness, r-consciousness, or both but such questions are outside the scope of this paper. Instead, I want to focus on the question: which concept of consciousness should clinicians care about? On the standard view (Kahane & Savulescu, 2009), if Owen’s technique measures r-consciousness but not p-consciousness then its moral significance would be greatly diminished because of the special role p-consciousness plays in generating creaturely interests and is therefore of particular interest for drawing a line between UWS and MCS. In the next section I challenge this claim and argue that in the clinical-ethical context we have
strong reasons to care about r-consciousness independently of its relation to p-consciousness. Specifically, I argue that r-consciousness is morally significant because of its connection to informed consent, autonomy, and enriching the quality of patient’s lives.

4. The Moral Significance of R-Consciousness

If p-consciousness and r-consciousness can come apart, then there are four main variations that need to be evaluated for their moral significance:

1. The patient has no p-consciousness and no r-consciousness.
2. The patient has p-consciousness but no r-consciousness.
3. The patient has r-consciousness but no p-consciousness.
4. The patient has both p-consciousness and r-consciousness.

Case (1) is presumably the standard interpretation of VS patients: they have no r-consciousness or p-consciousness, “all is dark inside”. The moral status of patients in this condition is relatively uncontroversial because most philosophers ground moral status in either p-consciousness or r-consciousness so if an organism has neither then by most accounts they have little if any moral status.9 Any regard towards these patients is arguably done out of respect towards the family members or for any potential recipients of organ donation. Case (4) plausibly describes patients with Locked-in Syndrome, and their moral status is unquestionably on par with any other person. The difficult cases are (2) and (3), where we have a mismatch between p-consciousness and r-consciousness. Consider case (2) first: what is the moral status of a patient with preserved p-consciousness but no r-consciousness?

4.1 P-consciousness but no r-consciousness

In this section I examine the moral status of case (2): p-consciousness without r-consciousness.

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9 This claim assumes that there is no chance of recovering. As Stone (1994, 2007) argues, the non-negligible chance of recovering consciousness complicates the moral status of VS patients. However, Stone’s argument doesn’t affect my conclusion because the moral status of VS patients with a non-negligible chance of recovering is grounded on the moral value of the potential for either p-consciousness or r-consciousness.
This is the standard interpretation of patients in the minimally conscious state (MCS). What is the moral status of such patients? One plausible thought is that phenomenology is needed for sentience—the capacity for pain and pleasure—and that sentience is a morally significant if not primary factor in deciding whether an entity is a moral patient as opposed to a mere object (tables, chairs, etc.). Why? The argument is that what makes pain bad is intimately related to the fact there is “something-it-is-like” to experience the “painfulness” of pain. For example, Kahane & Savulescu (2009) argue that phenomenal consciousness is necessary for having what they call “experiential interests”, and that even though a VS patient might have basic desires and “pain” states, without experiential interests there would be “nothing it feels like” to be in these pain states and thus they are not morally significant. Peter Singer also argues that sentience is the only requirement for entering what he calls the “circle of altruism”:

“All beings with the capacity to feel pleasure or pain should be included [in the circle of altruism]; we can improve their welfare by increasing their pleasures and diminishing their pains.” *(The Expanding Circle)*

Along similar lines Levy & Savulescu argue (2009) the presence or absence of phenomenal consciousness in a creature is arguably relevant to its status as a moral patient but not its status as a moral agent. A moral patient is an entity whose well-being matters, particularly with respect to the capacity for experiencing pain or pleasure. If UWS are conscious in *this* sense, then they are clearly moral patients, but Levy & Savulescu say such a diagnosis would not morally distinguish them from simple creatures that have a relatively low moral status. Furthermore, Kahane & Savulescu rightly point out that it’s a separate question entirely whether phenomenal consciousness gives us reason to *sustain* a

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*Singer’s view is complicated because although he argues we have an obligation to reduce a creature’s pain on account of its phenomenal badness, he also believes that it’s permissible to end the life of that creature because only self-consciousness is relevant to whether an entity has a “right to life”. In other words, Singer believes that although p-consciousness is morally significant it is not nearly as significant as r-consciousness.

*“The question is not, Can they reason? nor, Can they talk? but, Can they suffer?”* (Bentham 1789).
patient’s life. They rightly argue that if the patient’s phenomenology is pure pain there is duty to sustain their existence just for the sake of preserving phenomenology.

And what if the patient is all pleasure and no pain, but lacks r-consciousness and will never regain it? I do not think such a patient’s life is worth keeping alive. First, if VS patients are artificially supplied with nutrition and hydration they can stay alive without recovery for 5, 10, or even 20 years. Second, surveys suggest that most people consider VS a state “worse than death” and rate their mental status as less than actual dead people (Gray & Wegner, 2011). The evidence suggests that most people believe it’s better for the patient to die early rather than live in a permanent vegetative state with zero chance of recovery. Why? I believe these judgments are driven by an appreciation of how the capacity for r-consciousness makes an incalculable difference the quality of human life, for better or worse. To paraphrase John Stuart Mill, it is better to be a dissatisfied Socrates than a satisfied vegetative patient.

What about aphasics or recovering stroke patients who are intelligent but unable to comprehend or produce language? I don’t believe language per se is necessary for r-consciousness, which arguably is realized in a distributed network that includes but does not consist of traditional language processing areas (Allen & Williams, 2011). The damage of language areas plausibly affects the normal functioning of r-consciousness but does not arrest it altogether. Furthermore, aphasics are still capable of making their preferences known by using their natural-born mimetic skills (Donald, 1991) to intentionally communicate entire body through gesture, pointing, pantomime, eye and face movements, etc. Anyone who has played charades knows it’s possible to convey a great deal of complex information without words.

In sum, the moral status of VS patients with p-consciousness but no r-consciousness is non-trivial but not enough to make it wrong to end their lives without explicit consent, but only if there is
virtually no chance a VS patient will recover to MCS or beyond.

Next, I turn to case (3): r-consciousness without p-consciousness. If a VS patient fully recovered their capacity for r-consciousness but were phenomenal zombies, how would this affect their moral standing?

4.2 R-consciousness without p-consciousness

What is the moral status of a patient with preserved r-consciousness but no phenomenology? Many theorists dispute the theoretical coherence or nomological possibility of a scenario where someone has the r-consciousness of a locked-in patient but lacking phenomenology. Settling this debate is beyond the scope of this paper. Nor does my argument turn on the nomological possibility of p-consciousness existing without any r-consciousness. For my purposes it’s enough that p-consciousness and r-consciousness might be weakly dissociable. Thus, even if p-consciousness is always contingently associated with r-consciousness or even constituted by higher-order access as some theorists believe [Rosenthal, X], clinicians still have good reasons to care about reflection qua reflection and not just because it is a reliable indicator of p-consciousness (though we might also value r-consciousness for this purpose).

Assuming case (3) is possible, what is the moral significance of patients in this condition? Kahane & Savulescu are skeptical that such patients would have genuine interests that warrant moral consideration because there would be nothing it is like for these patients to have their interests satisfied. As they put it, “phenomenal consciousness is required if a person is to have a point of view, that is for the satisfaction of some desire to be a benefit for someone.” This quotation implies that the goal of coma science should be to use the tools of neuroscience to study phenomenal consciousness, otherwise there would be nothing worth caring about in UWS patient.
In my opinion, these authors have overestimated the importance of p-consciousness and underestimated the moral significance of r-consciousness, especially in the clinical-ethical context. The significance of r-consciousness in VS stems from its connection to (1) gathering informed consent (2) respecting patient autonomy and (3) enriching quality of life. The value of these goods is intimately related to but not parasitic upon the value of p-consciousness.

4.2.1 Informed Consent

R-consciousness is *prima facie* important in the clinical-ethical context when we are trying to get informed consent from unresponsive patients when surrogates are making morally relevant decisions. Normally if you want to know if someone would want to be kept alive in a permanent state of UWS you would ask them and they would reflect on their preferences and articulate a response. But once you are in a state of UWS you are by definition unable to respond. But what if the UWS patient has preserved levels of r-consciousness but is unable to express their thoughts verbally? Could they be expressed through another medium? This is one example of where Owen’s methodology has the potential to significantly impact ethical decision-making in the clinic. If we pose morally relevant questions to UWS patients that have residual levels of r-consciousness, Owen’s methodology could be a way of making their reflective answers understood and respected.

But given the moral risk involved in getting informed consent about euthanasia and orders to not resuscitate, it’s unclear whether Owen’s methods are robust enough to confidently establish informed consent about morally serious decisions. How can we maximize our confidence that the neuroimaging data indicates the genuine content of a patient’s r-consciousness? Any criterion where 100% confidence is required is a non-starter not only because such certainty is impossible to achieve but also would lead to extreme solipsism. Instead of requiring impossibly high standards of certainty, another way of
approaching this issue is by thinking of Owen’s methodology as a kind of Turing Test for r-consciousness.

The original Turing Test comes from the field of artificial intelligence and was proposed by Alan Turing as an operational test as to whether machines can think. Turing’s idea was that if computers could successful play an “imitation game” between three players. In the standard interpretation of the task, the task of the computer is to interact with an interrogator via written language and convince the interrogator that they are human. Normally, this wouldn’t be relevant in day-to-day life but the unique situation of UWS raises the possibility of preserved cognitive powers, the detection of which is analogous to what Nachev and Hacker call a “reverse Turing test” (2009). In other words, we can conceive of clinical neurologists as the interrogators and the UWS patients as the system within unknown cognitive powers being tested.

The original Turing test was designed to tell if a system with unknown powers could mimic a human adult, but this exact comparison class might not always be of interest. We might be interested in whether an entity could approximate the linguistic abilities of three and four year old children rather than full grown adults. Accordingly, it’s an open question what the simplest possible Turing Test would look like but at the most basic level what the Turing test is after is the ability to communicate through a socially-learned symbolic code. Here, I’m following Merlin Donald’s definition of symbols: "Symbols are invented to facilitate a cognitive operation or purpose, and its solution in symbols, must somehow occur to the inventor" [1991, p. 219]. The latter clause is crucial in the context of UWS because what’s important is not necessarily the symbol itself but the intelligence to reflect on the symbol-referent

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12 John Stins [2008; 2009] has also noted the similarities of the Turing test to modern diagnoses of UWS patients.
relationship and then use the symbols in an appropriate manner. Furthermore, it seems plausible that the ability to reflect on and intelligently employ arbitrary symbols surely comes in degrees. Thus, the proper question is not whether UWS can pass the Turing test or not, but which Turing test and to what degree? If UWS patient can’t pass the same Turing test as a locked-in patient, they might be able to pass simpler versions of the test.

In sum, if Owen’s methodology was in fact capable of determining the deliberations of residual r-consciousness in UWS it would clearly be morally relevant. However, the moral significance of r-consciousness is not exhausted by its involvement in gathering information about the preferences of patients; it is also critically implicated in autonomy, which almost all contemporary bioethicists emphasize as important.

4.2.2 Autonomy

According to article 5 of the Universal Declaration on Bioethics and Human Rights, “The autonomy of persons to make decisions, while taking responsibility for those decisions and respecting the autonomy is others, is to be respected.” What is autonomy? The traditional, Kantian sense of autonomy refers the ability to rationally make decisions for oneself and be a “self-legislating will” i.e. someone who makes decisions on the basis of rules that they impose on themselves. Arguably the process of self-legislation to some extent involves the capacity for r-consciousness insofar as one cannot automatically or unconsciously self-legislate; to self-legislate necessarily involves stepping back and reflecting on the type of life one wants to live. Thus, respect for autonomy goes hand-in-hand with respect for self-determination, the ability to determine how one wants to live their life. If someone in their rational mind declares publically that they would not want to live in a permanent state of MCS and

\[ \text{It is the representational intelligence underlying the symbol that defines its power and leads to its invention} \] [Donald, 1991, p. 219]

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if they suffered a heart attack they would not want to be rescued by hospital staff, it would be wrong to disrespect their right to determine how they want to live their life. What if a patient never stated their preference? Is there a “default” stance with respect to whether people would prefer to keep living in an unresponsive or minimally conscious state? Surveys suggest there is a default consensus, which is that permanent existence in UWS is “worse than death” (Jennett, 2002, p. 74). In a 1988 study of 405 outpatients and 102 Americans, over 80% of people said they would prefer no life-saving treatment or artificial nutrition if they were in a permenantly vegetative state [Emanuel 1991 - cited in Jennett 2002].

4.2.3 Quality of Life

R-consciousness is clearly connected to informed consent and autonomy, but a less obvious but equally compelling answer for why r-consciousness matters is that humans are deeply social creatures and r-consciousness is important to our practices of explicitly asking and answering questions about our mental states in terms of folk psychological concepts. Furthermore, it seems obvious to me that the value we place on social relationships is separable from any considerations about phenomenal consciousness. In other words, we would value socialization even in the absence of phenomenality. For example, suppose my wife was dying and the doctors said they could save her life only on the condition that she would be a phenomenal zombie. My wife would be able to converse intelligibly, write emails, post on Facebook, cook dinner, and otherwise act like a perfectly normal person but there’d be “nothing it is like” to be her.

Assuming this scenario is nomologically possible, would her life be worth living? I believe so and would certainly accept the doctor’s offer. My justification would appeal to the the rich, multidimensional quality-of-life associated with dialogic conversation and human culture broadly construed. and argue this value is distinct from any relation to phenomenology. But isn’t it incoherent to talk about “qualities” of
life without *phenomenal* quality? How can life be of “high quality” if one’s life has no experiential qualities? This objection rests on a terminological ambiguity because there is a neutral sense of “quality” that refers to the intrinsic nature or “mode” of a substance regardless of whether that substance is a subject of experience. For example, we might say that a tomato has the quality of being red, or that an electron has the quality of being negatively charged (c.f. Heil, 2003). Similarly, it seems coherent to talk about the qualities or “modes” of a cognitive system regardless of whether there is something-it-is-like for that system to be the system that it is.

4.3 Objection: what about pain?

One common objection to my view is Jeremy Bentham’s remark about our duties towards animals: “The question is not, Can they reason? nor, Can they talk? but, Can they suffer?” (Bentham 1781). The worry is that a focus on r-consciousness automatically excludes non-human animals and “marginal cases” such as infants, severely autistic children, and people with advanced dementia or Alzheimers. If a creature is in pain, why does it make a moral different whether also reflect on that pain? In the context of UWS, if someone is in pain but can’t report it then it seems impermissible to administer treatment on them that would require anesthesia in other patients. After all, it is no longer acceptable for medical professionals ignore the pain of non-verbal infants. Accordingly, someone might argue that too much emphasis on Turing competence ignores the *phenomenal* badness of pain. I have three rejoinders to this objection.

First, the term “pain” is famously ambiguous and it’s possible that different kinds of pain have different moral significance. Consider the example of stubbing one’s toe right before you get an important call. During the call, you seem to not notice the pain at all and only when you get off the phone do you realize it is throbbing. Presumably the toe is throbbing while you were on the phone as well, but
you didn’t “mind” it as much. Neuroscientists sometimes call “minding pain” the affective dimension of pain, as distinct from the sensory dimension. It’s long been known that in clinical populations pain sensation can be dissociated from pain affect e.g. morphine users sometimes report localized sensations of pain but say they aren’t unpleasant, or that they don’t mind them. Recent neuroimaging evidence supports this interpretation. Boly (2008) recently used PET to compare brain responses to noxious stimuli in UWS and MCS and found that compared to UWS patients MCS patients showed significantly more activation in the “pain matrix”, a set of brain areas associated with the experience of minding-pain in normal healthy controls. From a clinical-ethical perspective it therefore seems reasonable to allocate more resources to the detection and management of higher-order pain in UWS than first-order pain.

Second, regardless of whether unreflective and unreported pains are p-conscious, there seems to be a sense in which reflective pains carry extra weight in the clinical-ethical context. I’m not claiming first-order pain has zero moral relevance because it’s plausible we have a prima facie duty to reduce needless first-order pain in virtue of its experiential badness. However, there is a special reason why r-consciousness is important for the clinical management of both first-order and higher-order pain. Imagine we have two patients hooked up to a computer screen through a BCI device. Both patients are in an equal amount of first-order pain but only the second patient has any capacity for r-consciousness. The only thing that registers on the first patient’s computer screen is a color-coded graphical representation of the pain. However, this interaction with the computer is entirely one-way and passive, like a thermometer registering the outside temperature. In contrast, the second patient has some capacity for Turing competence so the clinicians were able to establish an arbitrary symbolic code with the patient using the BCI device. In this way, the patient is able to use the computer to use 10 point pain
scales or point a computer cursor to a corresponding smiley face. Furthermore, the second patient can answer more fine-grain questions such as “Does the pain bother you? Is the pain sharp or dull? Where does it hurt?” etc.

My point is not to diminish or downplay the moral significance of phenomenal badness. Clinicians clearly have an obligation to alleviate that pain but in the context of UWS this duty is difficult to implement. How do you verify that you have alleviated pain in a completely unresponsive patient? Suppose clinicians do treat the first patient with a standard amount of painkillers and the color-coded activity turns from red to blue on the computer screen. Can we therefore infer that the patient is experiencing absolutely no first-order pain? I don’t see how we could rule out the possibility of a whisp of pain being left intact despite the reduction of activity in areas related to pain in more responsive patients. Conversely, from a philosophical point of view I don’t see how we could rule out the possibility of cognitive function occurring without p-consciousness. For this reason alone it seems more sensible for practicing clinicians to focus more on detecting and nurturing functional r-consciousness.

Of course, that something cannot be easily measured doesn’t thereby negate it’s moral status. But there are good reasons to think Turing competence is highly valued by humans not just because it reliably establishes a communicative link with an otherwise unresponsive loved one. Ask yourself: other things being equal, if a chimpanzee and a chicken were in a burning building and you could only save one, I imagine that most people would choose the chimpanzee and justify their decision by citing the chimp’s greater cognitive skill set. Similarly, if the choice was between a chimpanzee and the adult human, most people would choose the human, again citing human cognitive abilities, especially the capacity for r-consciousness. If the choice was between a UWS patient and a LIS patient, I guess people would choose the LIS patient for similar reasons: they have a greater moral status in virtue of
their capacity for r-consciousness. Furthermore, I speculate that people would choose the LIS patient regardless of the amount of first-order pain the UWS patient is in. Imaging what-it-is-like to be in a pure pain state is near impossible for normal humans.

### 5.2 Implementing the Turing Test

**Conclusion**

The standard view says that scientists and clinicians should be using the tools of neuroscience to look primarily for signs of *phenomenal* consciousness because phenomenology is what makes life worth living. I believe the standard view is too narrow to capture what makes human lives worth living. Although p-consciousness undoubtedly marks a morally relevant dividing line, I have argued that r-consciousness also makes human lives worth living and that the value of reflection in UWS is independent of its connection to p-consciousness. That is, even if r-consciousness is always accompanied by p-consciousness it’s a mistake to value r-consciousness *only* because its a reliable indicator of p-consciousness. The value of r-consciousness largely but not entirely stems from its relation to informed consent and autonomy, which are respected through the social practice of asking and answering questions about our mental states that require reflection.

### References


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