Reply to Woerlee's Rejoinder on the Pam Reynolds Case

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The recent edition of the *Journal of Near-Death Studies* (Fall 2011: vol. 30, number 1) contains a critique by Gerald Woerlee of the famous NDE case of Pam Reynolds. It also contains an article of mine in which I reply in detail to all of Woerlee's points, and then a final rejoinder by Woerlee. Since I am unable to reply directly to Woerlee's final rejoinder in the JNDS (due to the tradition of the initiator of an exchange having the final word), I make my reply here.

Woerlee begins his final rejoinder by writing:

1. Both Carter and Hameroff ignored the basic construction of the Midas Rex® bone saw. I believe that details of the construction and use of this apparatus explain the differences in the first two veridical sounds that Reynolds reported.
2. Both Carter and Hameroff ignored the fundamental differences between bone conduction of sounds and air conduction.
3. Carter made a correct point regarding the brainstem auditory evoked response (BAER). He stated that the fact that sounds register in the brainstem does not mean they are consciously perceived.
4. Hameroff stated incorrectly that the BAER is the gold standard to monitor depth of anesthesia and to detect consciousness during general anesthesia. BAER is also known as the brainstem auditory evoked potential (BAEP).
5. Carter cited an excellent large-scale prospective anesthetic awareness study to supposedly, and misleadingly, demonstrate that awareness experiences are very different from those that Reynolds reported.
6. Both Carter and Hameroff consider it possible for an immaterial conscious mind to perceive physical sounds and perceive physical light while separated from the physical body during an out-of-body experience.

Point #3 above is an admirable concession, while points #1, 2 and 4 are peripheral to the central issue addressed in our exchange: could auditory awareness during anesthesia combined with imaginative reconstruction explain Pam Reynolds' remarkable NDE? As such, I will concentrate my comments on points #5 and 6.

Awareness during General Anesthesia

In my reply to Woerlee's article I cited findings from a large scale prospective study of awareness during anesthesia, from which Woerlee claims I *"misleadingly demonstrate that awareness experiences are very different from those that Reynolds reported."*

The study was performed using data from 19,575 patients, all of whom were interviewed in the recovery room and at least a week after surgery (Sebel, Bowdle, Ghoneim, Rampil, Padilla, Gan,

& Domino, 2004). The researchers found a total of 25 cases of awareness during anesthesia (0.13% incidence), suggesting an awareness rate of 1-2 cases per 1,000 patients.

The following table summarizes the patients' descriptions of awareness during anesthesia:

Symptoms Reported by Patients Who Experienced Anesthesia Awareness

Variable	*n*	%
Auditory perceptions	12	48
Unable to move or breath	12	48
Anxiety/stress	9	36
Pain	7	28
Sensation of endotracheal tube	6	24
Feeling surgery without pain	2	8

Source: Sebel et al. (2004), p. 836.

Unimpressed, Woerlee noted that "64% of persons experienced no anxiety or stress" and that "72% of people reported experiencing no pain" and so concludes that "these statistics demonstrate that most people feel no pain and are not anxious during periods of awareness occurring during surgical procedures performed under general anesthesia." However, this does not follow from the data as presented. The statement should have been "most people feel no pain *or* are not anxious during periods of awareness." For it *may* be that 36% of patients reported anxiety/stress, and another 28% reported pain, for a total of 64% of patients reporting one *or* the other. Patients were able to provide more than one description, and there surely must have been some overlap between those who reported anxiety/stress and those who reported pain. However, we have no reason to assume complete overlap, and there is simply not enough detail provided in the study to conclude that "most people feel no pain *and* are not anxious during periods of awareness."

How unpleasant is awareness during anesthesia? Sebel et al. wrote that "awareness is often associated with significant adverse psychological sequelae, including posttraumatic stress disorder." Twenty-five patients' descriptions of their experiences are provided by the authors, and – with only one remarkable exception – *none included a visual component*. Here is a sample of the descriptions in which – as in Pam Reynolds' experience – conversations were heard, but *no pain and anxiety* were reported. I maintain that any unbiased reader will agree that these descriptions are strikingly different from Reynolds' experience.

> The patient reported waking up during the operation and felt the surgeons working on her eye and could hear them talking. She tried to move and talk but could not and felt helpless. There was no pain.

> The patient recalled "a great deal of conversation." She recalled hearing conversations about her tattoos and what they found in her abdomen. She remembered being unable to move and "it was like being in a box. It was dark and I could not move at all."
>
> He tried to open his eyes but couldn't; tried to move his arms, couldn't. Heard conversations in OR.

Recall that Pam's eyes were taped shut during the operation. Here is a description in which the patient's eyes were also taped shut:

> "I remember trying to talk to them and telling that I was awake. I woke up during surgery enough to know that I was in surgery and was trying to figure out a way to tell them I was awake. I knew my arms were tied and my eyes were taped shut. PANIC!!" (p. 835)

Almost all of the reported experiences from the study contrast strongly with Reynolds' experience, in which there was no pain or panic, and which included *visual* experience:

> "I remember seeing several things in the operating room when I was looking down. It was the most aware that I think I have ever been in my entire life… I was metaphorically sitting on Dr. Spetzler's shoulder. It was not like normal vision. It was brighter and more focused and clearer than normal vision…. There was so much in the operating room that I didn't recognize, and so many people." (Sabom, 1998, p. 41)

Only one of the 25 descriptions (frequency = .005% of sample) in the study included a visual component:

> The patient reported an "out of body experience" at some point during the surgery with her floating out of her body and watching the surgery from above. She thought it was very "weird." She thought frequently about it.

So, it would seem that visual experiences occur only when the patient reports an out-of-body experience (OBE). It also appears that these experiences are very different from other instances of awareness during anesthesia, in which only auditory perceptions are reported and which are frequently accompanied by darkness, anxiety and pain – all very different from Reynolds' reported experience. The Appendix to this article contains all 25 of the patients' descriptions.

Conclusions

I will leave it to the reader to judge Woerlee's claim that I "cited an excellent large-scale prospective anesthetic awareness study to misleadingly demonstrate that awareness experiences are very different from those that Reynolds reported."

Woerlee apparently believes Reynolds heard various sounds and conversation while under the anesthetic with her eyes taped shut and then used these sounds to conjure up an accurate visual image of what was going on in the operating room.

However, a final strike against this theory is this: when patients who had been under general anesthesia during a major operation have been later hypnotized and regressed back to the time of the operation, they can sometimes recall conversations among the attending physicians and nurses, but not visual impressions. Such recall, even when frightening, has been reported by these patients to be of an auditory nature, quite unlike the detailed visual impressions of an NDE. Sabom (1982, 153-156)

Ability of Separated Consciousness to Hear Sound: Consciousness and Materialism

In his rejoinder Woerlee deals very briefly with this issue, writing:

> Carter and Hameroff considered it possible for a disembodied immaterial conscious mind to "see" light waves and to "hear" sound waves in air. Both claim that because scientists have no idea how physical perceptions are converted into conscious perceptions, a non-material explanation is as valid as a material explanation. Unfortunately, the logic of this argument *ignores the fact that* translation of nerve impulses from the organs of perception into a consciousness generated by a physical brain whose structure and organization is largely understood *is very much more likely* than transfer of information contained within physical nerve impulses to an immaterial conscious mind whose coupling with the physical body is as speculative as its structure and function. (emphasis added)

In the above remark Woerlee clearly confuses fact with opinion. He simply has no grounds for asserting that it is a *fact that* the hypothesis that the brain produces consciousness *is very much more likely* than the rival hypothesis that the brain functions as a two-way receiver-transmitter: that is, sometimes from body to mind, as in sense perception; and sometimes from mind to body, as in willed action.

The above description of a brain "whose structure and organization is largely understood" is a red herring fallacy, because our knowledge of the structure and organization of the brain is not the issue here: the issue here is the true relationship between the mind and the brain. The extent of our knowledge of the structure and organization of the brain is simply irrelevant to the choice between the two hypotheses. For there is simply no direct evidence that anything material is capable of generating consciousness. As Rutgers University philosopher Jerry Fodor says,

> Nobody has the slightest idea how anything material could be conscious. Nobody even knows what it would be like to have the slightest idea about how anything material could be conscious. So much for the philosophy of consciousness.

Regardless of our knowledge of the structure of the brain, no one has any idea how the brain could possibly generate conscious experience. As Nobel neurophysiologist Roger Sperry wrote,

> Those centermost processes of the brain with which consciousness is presumably associated are simply not understood. They are so far beyond our comprehension at present that no one I know of has been able even to imagine their nature.

From modern physics, Nobel prize-winner Eugene Wigner agreed:

> We have at present not even the vaguest idea how to connect the physio-chemical processes with the state of mind.

Contemporary physicist Nick Herbert states,

> Science's biggest mystery is the nature of consciousness. It is not that we possess bad or imperfect theories of human awareness; we simply have no such theories at all. About all we know about consciousness is that it has something to do with the head, rather than the foot.

Physician and author Larry Dossey wrote:

> No experiment has ever demonstrated the genesis of consciousness from matter. One might as well believe that rabbits emerge from magicians' hats. Yet this vaporous possibility, this *neuro-mythology*, has enchanted generations of gullible scientists, in spite of the fact that there is not a shred of direct evidence to support it.

The sort of materialism Woerlee espouses is known as “promissory materialism”, with its promise that some day we will be able to explain the mind in terms of the brain. The problem here of course is that “some day” never comes. Noble Laureate neuroscientist John Eccles and philosopher of mind Daniel Robinson wrote:

> We regard promissory materialism as superstition without a rational foundation. The more we discover about the brain, the more clearly do we distinguish between the brain events and the mental phenomena, and the more wonderful do both the brain events and mental phenomena become. Promissory materialism is simply a religious belief held by dogmatic materialists who often confuse their religion with their science.

Wilder Penfield started his career as a brain surgeon trying to explain the mind in terms of physical processes in the brain. On the basis of his experiments and examinations of patients with various forms of epilepsy, Penfield concluded that the mind interacts with the brain in the upper brain stem, an ancient structure that humans share with reptiles. Penfield concluded:

> To expect the highest brain-mechanism or any set of reflexes, however complicated, to carry out what the mind does, and thus perform all the functions of the mind, is quite absurd. … I conclude that it is easier to rationalize man's being on the basis of two elements than on the basis of one.

It needs to be stressed that the findings of modern neuroscience do not alter the argument one bit, as they are equally compatible with both production and transmission. Gary Schwartz, professor of psychology, neurology, psychiatry, medicine, and surgery at the University of Arizona, points out that among neuroscientists with a materialist bent, the belief that consciousness arises from physical processes in the brain is based on three kinds of investigation:

1. Correlation studies (e.g., EEG correlates of visual perception)

2. Stimulation studies (e.g., electrical or magnetic stimulation)

3. Ablation studies (e.g., the effect of brain lesions).

However, analogous methods are applied during television repair with parallel results, yet no one comes to the conclusion that pictures on the screen are created inside the television. Schwartz describes the brain as the "antenna-receiver" for the mind and correctly points out that the evidence from neuroscience, like the evidence from television repair, is just as compatible with the hypothesis of reception-transmission as it is with the hypothesis of production.

Like Penfield and Eccles before him, Schwartz has also come to the conclusion that the mind is a separate entity from the brain and that mental processes cannot be reduced to neurochemical brain processes but on the contrary direct them. Like Penfield and Eccles, he also thinks that a mind may conceivably exist without a brain.

Conclusion

We can see from the above considerations that Woerlee has no grounds for asserting that it is a *fact that* the hypothesis that the brain produces consciousness *is very much more likely* than the rival hypothesis that the brain functions as a two-way receiver-transmitter. His statement is not fact but merely faith, for as physicist Nick Herbert wrote, "our utter ignorance concerning the real origins of human consciousness marks such criticism more a matter of taste than of logical thinking."

If we are to be scientific in our thinking on this matter, then our choice between the two rival hypotheses must be based upon evidence, and not merely taste. An empirical matter cannot be rationally settled merely by dogmatic assertion, whether based on religious or materialistic faith.

The sort of evidence that is relevant to this problem would include: the placebo effect; the effectiveness of cognitive behavior therapy; the existence of psi abilities; and of course, the

reality of the NDE as involving a genuine separation of mind from body. These lines of evidence strongly refute the doctrine of materialism and its corollary that the mind produces the brain.

The Pam Reynolds case included a reported out-of-body experience involving accurate perception, plus meeting with deceased relatives, feelings of joy, and a desire not to return to the body. The experience was described as uninterrupted and continuous, and seemingly continued during a period in which Pam was clinically dead, with a flat EEG, no brain stem activity, and no blood flow to the brain.

Science advances with the refutation of theories, and so failure to accept data that refute a hypothesis must be the defining characteristic of pseudoscience. Woerlee's assertion is that Pam Reynolds heard the various sounds and conversation – despite being heavily anesthetized; despite having molded speakers inserted in her ears that emitted either white masking noise or continuous clicking sounds at a rate of 11.3 per second at an intensity of 100 decibels; with her eyes taped shut – and then used these sounds to conjure up a visual image of what was going on that was later found to be accurate by the medical personnel involved. Woerlee has so far not responded to my invitation to travel to the Barrow Institute in Pheonix Arizona to test this hypothesis under the exact conditions – except for the heavy anesthesia – that Pam Reynolds experienced.

In summary, I agree with the assessment of this case by neuroscientist Mario Beauregard, who in his review of this remarkable case, concluded:

> Pam Reynolds' case strongly suggests that (1) mind, consciousness, and self can continue when the brain is no longer functional and clinical criteria of death have been reached; and (2) [spiritual experiences] can occur when the brain is not functioning. In other words, this case seriously challenges the materialist view that mind, consciousness, and self are simply by-products of electrochemical brain processes and that [spiritual experiences] are delusions created by a defective brain.

Appendix

Descriptions of Awareness

1. The patient reported waking up during the operation and felt the surgeons working on her eye and could hear them talking. She tried to move and talk but could not and felt helpless. There was no pain.
2. The patient said that she heard the chief surgeon or a male voice saying "careful, careful" and "to the left." The voices "faded in and out." No other sensation or discomfort. The experience did not bother her at the time.

3. The patient recalled “a great deal of conversation.” She recalled hearing conversations about her tattoos and what they found in her abdomen. She remembered being unable to move and “it was like being in a box. It was dark and I could not move at all.”
4. The patient reported an “out of body experience” at some point during the surgery with her floating out of her body and watching the surgery from above. She thought it was very “weird.” She thought frequently about it.
5. She remembered waking up and feeling the tube in her throat. She wanted to make sure that the anesthesiologist knew that, because she did not know whether the surgery was still going on or not.
6. “Feeling tube going down throat and could not breathe” was last thing remembered. “I tried to open my eyes and couldn’t. I tried to move my fingers. I then tried to breathe and couldn’t.”
7. Reported choking on tube. Worst thing was “felt like couldn’t breathe.”
8. “During this surgery I became conscious. I was in total darkness; I was paralyzed. I felt as if I wanted to take a few breaths, but I couldn’t. It was a terrible experience. After a few minutes I lost consciousness.”
9. Reported “Yes, feeling pain, cutting, someone asking for scalpel, feeling of cutting.” Worst thing was “waking up in OR while paralyzed.” “I woke up during the procedure and could hear the doctors talking and I could feel the pain in my wound. I was not able to move or speak and it is one of the worst scares I’ve had in my long history of serious illness.”
10. Reports “not being able to breathe, trying to move my hand to let them know I felt the mask being forced on my face and no air, couldn’t breathe, finally said this is it, I’m going to die and thought to myself ‘Oh well, the hell with it’ and just gave up.”
11. “I remember trying to talk to them and telling that I was awake.” “I woke up during surgery enough to know that I was in surgery and was trying to figure out a way to tell them I was awake. I knew my arms were tied and my eyes were taped shut. PANIC!!”
12. He tried to open his eyes but couldn’t; tried to move his arms, couldn’t. Heard conversations in OR.
13. Experienced the sound of somebody asking about liquid on floor. Heard that the doctor forgot to connect the catheter of the bag; the floor was full of urine. Other jumbled conversations, someone was angry and yelling about it. All these ran together.
14. Recollections with lights, sounds, noises, lots of noises, pain, sound of somebody asking “Where are you going? What are you doing?” The patient was unable to talk; felt like she was in a hurricane and had a sensation of wanting to get out.
15. People were talking to each other saying things were okay. He tried to talk to tell them that he couldn’t breathe. No one was paying attention. Arms felt to be fastened down, had severe chest pain.
16. He heard the doctor ask for a stent which was identified by a number. He heard conversations off in the distance. No pain, no sensation of paralysis.

17. Sensation of two flat surfaces moving on each other leaving sharp, intense pain. Felt sensation in the neck, sensation of choking and felt bone being cut away from the neck.
18. The patient said she felt the incision and characterized the awareness as having associations with pain, paralysis, or stress. Patient said she had had recurrent memories about the operation. Patient states she has awareness of "the cut" but was unable to tell anyone. Afraid the pain was going to get worse, but it didn't and then she went to sleep.
19. Claimed to remember a tube being put down his nose and vomiting. Characterized the experience as associated with pain, paralysis, or stress.
20. Patient remembers waking up on her side, unable to move, left arm suspended, with a breathing tube in her mouth. Remembers feeling pain on incision and the surgeon's voice saying "she's moving."
21. Patient told the anesthesiologist he felt pressure at the surgical site during the operation but had no pain. He also heard voices and the instruments clanging.
22. He reported hearing the sound of something being "screwed into my head." He recognized and remembered the sound when he heard the ICP monitor being removed after the operation.
23. Reports remembering feeling pain in hip and having a dream that "was interrupted by the pain."
24. Reports remembering "being intubated." Remembers "the tube in my mouth."
25. Reports awareness of intubation, "tube going down throat," as last memory before falling asleep.

Source: Sebel, et al., p. 835.

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