

Transcending the Brain

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Despite significant advances in neuroscience, consciousness remains a vexing mystery. Because the qualities of experience seem to be irreducible to physical parameters,¹ a hypothesis that has been garnering attention is that consciousness is fundamental and spatially unbound, the brain corresponding to a dissociation or localization of its contents.² At first sight, simple observation seems to contradict this hypothesis: [as pointed out by neuroscientist Sam Harris](#), if a normally functioning brain corresponds to a limitation of cognition,

...one would expect most forms of brain damage to unmask extraordinary scientific, artistic, and spiritual insights... A few hammer blows or a well-placed bullet should render a person of even the shallowest intellect a spiritual genius. Is this the world we are living in?

Harris's rhetorical question alludes to the indisputable fact that *most* forms of brain function impairment correlate with cognitive deficit. However, a more interesting question is perhaps this: Do *some* forms of impairment correlate with an enrichment of consciousness or cognitive skill? After all, even if only one black swan can be conclusively discerned in a herd of white swans, our theories about the origin and nature of swans must be able to make sense of those black individuals.

As it turns out, there are reliable reports in the medical literature of—yes—bullet wounds to the head, stroke, concussion, meningitis, and even the progression of dementia leading to expanded cognitive and artistic skills.³ Ironically, therefore, Harris' rhetorical question has an affirmative answer: somehow, this is indeed the world we are living in.

And that's just the tip of the iceberg. Many forms of brain function impairment associated with seeming unconsciousness are now known to be accompanied by richer inner life. For instance, the dangerous "choking game" played by teenagers worldwide⁴ is an attempt to induce rich feelings of self-transcendence through partial strangulation and fainting.⁵ The psychotherapeutic technique of holotropic breathwork⁶ also uses hyperventilation-induced fainting to achieve what is described as an expansion of awareness.⁷ Even pilots undergoing "G-force induced Loss Of Consciousness" (G-LOC)—whereby blood is forced out of the brain—report "memorable dreams."⁸

Generalized physiological stress caused, for instance, by cardiac arrest—which severely compromises brain function—is sometimes accompanied by reports of "Near Death Experiences" (NDEs).⁹ NDEs reportedly entail life-transforming insights, emotions and inner imagery far richer than ordinary experiences,¹⁰ despite overwhelming disruption to the brain's ability to operate.

This pattern of correlations between brain function impairment and a seeming expansion of awareness is surprisingly broad. For instance, during the practice of so-called "psychography," an alleged medium enters a trance state and writes down information allegedly originating from a transcendent source. A detailed neuroimaging study revealed that experienced mediums

displayed marked reduction of activity in key brain regions—such as the frontal lobes and hippocampus—when compared to regular, non-trance writing.¹¹ Despite this, text written under trance scored consistently higher in a measure of complexity than material produced without trance.

Even more intriguingly, it is well known that psychedelic substances induce powerful experiences of self-transcendence.¹² It had been assumed that they did so by *exciting* parts of the brain. Yet, recent neuroimaging studies have shown that psychedelics do largely the opposite.¹³ Moreover, “the magnitude of this decrease [in brain activity] predicted the intensity of the subjective effects.”¹⁴ In other words, the less activated the brain becomes, the more intense the psychedelic experiences.

If this pattern is consistent, we should expect some types of physical brain damage to also lead to experiences of self-transcendence. And indeed, this has been reported. In a recent study, CT scans of more than one hundred Vietnam war veterans showed that damage to the frontal and parietal lobes increased the likelihood of “mystical experiences.”¹⁵ In an earlier study, patients were evaluated before and after brain surgery for the removal of tumors, which caused collateral damage to surrounding tissue. Statistically significant increases in “feelings of self-transcendence” were reported after the surgery.¹⁶

Clearly, there is a broad and consistent pattern associating impairment of brain function with—in the words of Harris—“extraordinary scientific, artistic, and spiritual insights.” That this happens in but a small minority of cases isn’t surprising: damage affecting memory pathways, metacognition, language centers, or any other cognitive function necessary for recalling or reporting inner life erases the signs of such insights. A person lying in a vegetative state could be having indescribably rich inner experiences and we would be none the wiser. The evidence is necessarily constrained to a narrow window between brain function impairment insufficient to trigger self-transcendence and impairment that renders self-transcendence unreportable to self or others.

It is conceivable that brain function impairment could disproportionately affect inhibitory neural processes, thereby generating or bringing into awareness other neural processes associated with self-transcendence. However, if experience is constituted, generated, or at least fully modulated by brain activity, an increase in the richness of experience must be accompanied by an increase in the metabolism associated with the neural correlates of experience.¹⁷ Any other alternative would decouple experience from the workings of the living brain information-wise. As such, it is difficult to see how partial strangulation, hyperventilation, G-LOC, cardiac arrest, etc.—which reduce oxygen supply to the brain as a whole—could selectively affect inhibitory neural processes whilst preserving enough oxygen supply to fuel an *increase* in the neural correlates of experience.

Alternatively, one could speculate that experiences of self-transcendence occur only *after* normal brain function resumes. This, however, cannot account for several of the cases mentioned. For instance, during the neuroimaging studies of the psychedelic state researchers collected subjective reports of self-transcendence while *concurrently* monitoring the subjects’ *reduced* brain activity levels. The same holds for the neuroimaging study of psychography. Finally, in cases of acquired savant syndrome the savant skills are often *concomitant* with the presence of physical damage in the brain.



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It is conceivable that individual cases of self-transcendence could have their own idiosyncratic explanation, unrelated to the other cases, and that the overall pattern suggested here is a red herring. However, all cases mentioned here, besides being associated with brain function impairment, also share strikingly consistent subjective reports. Consider the two passages below:

Passage 1:

I certainly don't feel reduced or smaller in any way. On the contrary, I haven't ever been this huge, this powerful, or this all-encompassing. ... [I] felt greater and more intense and expansive than my physical being.¹⁸

Passage 2:

My perception of my physical boundaries was no longer limited to where my skin met air. I felt like a genie liberated from its bottle. The energy of my spirit seemed to flow like a great whale gliding through a sea of silent euphoria.¹⁹

Passage 1 was reported by the subject of an NDE caused by generalized physiological stress, while passage 2 was reported by the subject of a stroke.

Such similarities suggest that normal brain function corresponds to a dissociation or localization of the contents of consciousness, and that certain forms of impairment of brain function reduce this dissociation or localization, thereby leading to expanded awareness and self-transcendence. The implications of this hypothesis for both neuroscience and neurophilosophy are far-reaching.

*This essay is based on the paper "[Self-Transcendence Correlates with Brain Function Impairment](#)," published in the *Journal of Cognition and Neuroethics*, volume 4, number 3, pp. 33-42.*

Notes

1. Chalmers (2003).
2. Kastrup (2015), pp. 10-36, Shani (2015), and Nagasawa and Wager (Forthcoming).
3. Lythgoe et al. (2005), Treffert (2006), Treffert (2009), p. 1354, Piore (2013), Miller et al. (1998), and Miller et al. (2000).
4. Macnab (2009).

5. Neal (2008), 310-315.
6. Rhinewine & Williams (2007).
7. Taylor (1994).
- 8 Whinnery & Whinnery (1990).
9. van Lommel (2001).
10. Kelly et al. (2009), 367-421.
11. Peres (2012).
12. Strassman (2001), Griffiths et al. (2006), and Strassman et al. (2008).
- 13 Carhart-Harris et al. (2012), Palhano-Fontes et al. (2015), and Carhart-Harris et al. (2016).
14. Carhart-Harris et al. (2012), 2138.
15. Cristofori (2016).
16. Urgesi et al. (2010).
17. Kastrup (2016).
18. Moorjani (2012), 69.
19. Taylor (2009), 67.

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