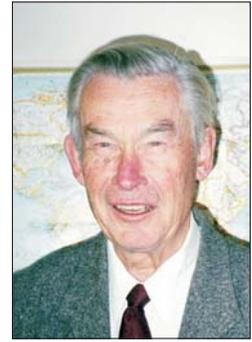


Conscious Experience and Science: Signs of Transition

Thaddeus J. Trenn



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Available neurological correlates of personal conscious experience can often be detected, identified, and measured objectively. Substituting neurological correlates uncritically for personal conscious experience per se, if unintended, would constitute the error of reductionism. If intended, such substitution reflects decisions already taken on basic and highly contentious issues concerning the acceptable nature of the human person, offering no middle ground. Should personal aspects of individual conscious experience be disregarded out of hand simply for not being in conformity with available standards of objective scientific measurement? This logical quandary presents a serious bifurcating challenge bearing significant implications for current research in neuroscience cum neurophysiology, as discussed in the following article.

Preamble

Neuroscience cum neurophysiology stands at the cusp of a transition in thought regarding conscious experience. Whereas detectible correlates of conscious experience can be identified and measured scientifically, a relationship between objective measurements and individual consciousness experience remains open to further consideration. History of science is replete with fundamental transitions concerning scientific thought over time, a positive characteristic attesting to the dynamic emergence of many advances within science. Nevertheless, intradisciplinary transitions during such critical moments typically harbor considerable tension. Anomalies are often bracketed to “save the phenomena,” albeit only temporarily. Expected results may elude standardized methods, yet unwanted alternative approaches are resisted, even dismissed outright. Dominant metaphysical presuppositions become effectively impervious to modification. The dialogue of the deaf, resulting in such cases, bears classic features of denial, bipolarity, and rejection well identified by Thouless, Fleck, and Kuhn.

The following brief article features transitions regarding scientific thought in general; neurophysiology, in particular. The didactic approach taken is necessarily multifaceted in virtue of the considerable complexity characteristic of deep transitions, whatever the discipline. A more general background may also assist to identify and facilitate an appreciation regarding this nascent and perhaps professionally invisible transition presently in train within neurophysiology.

The primary focus of this article is the current state of affairs in neurophysiology, laden as it is with ingrained assumptions even about what constitutes conscious experience. Whether a personal dimension, even a spiritual

Thaddeus Trenn holds a PhD in history of science from the University of Wisconsin-Madison and degrees in physics and philosophy from Notre Dame. He has taught at various educational institutions in America and Europe while conducting research over a wide range of disciplines. During the 1990s, Thad continued to teach special courses concerning science and religion at the University of Toronto where he also acted in a leadership capacity for all of Canada on behalf of the international Templeton Program on Science and Religion. Thad is a Fellow of the ASA, currently serving as president of the CSCA. He can be contacted at t.trenn@utoronto.ca

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one, is to be precluded may well remain beyond the range of science to properly adjudicate. As stressed below, the fractured professional response to the seminal work of Noë, for example, offers a wake-up signal as to the pervasive depth of this unfolding transition within neurophysiology. Gestalt-switch “seeing” typically requires looking at problems in a different way rather than merely looking harder in a standardized way. Although it may be methodologically expedient to exclude individual personal experience as not in conformity with objective criteria, uncritical adherence to this narrow approach may artificially truncate the domain of reality.¹ Rendering superfluous the critical personal aspect of conscious experience is at the core of a decades-old problem entailing considerable complexity.²

The Problem Identified

Key interlinked issues may be highlighted with the standard headache case. Jones claims to be experiencing a headache. Various ancillary cranial measurements could corroborate his claimed experience. Nevertheless Jones himself is certain about his own headache experience apart from these correlative measurements. Invasive chemical or other treatment blocking nerve signals might temporarily alleviate his personal painful experience. External cranial measurements, however, might continue to indicate that Jones still exhibits expressions associated with having a headache. Will the real headache experience now stand up? Over recent decades, considerable neurological research has been conducted along reductionist lines, following the working assumption that objective measurements constitute the essence of detected experience.³

Exposing Hidden Assumptions

Science extols objectivity in research, so it attempts to exclude subjective factors. While this well-known ideal may be appropriate for cases of “matter and motion,” as Sullivan avers, it is questionable whether this approach could adequately deal with conscious experience. Since the experiential aspect is inherently personal, then without some further assumptions, conscious experience could not even qualify for meeting criteria of significant objectivity and stipulated repeatability. Operational methodology for neurophysiology could circumvent this inconvenient dilemma by adopting, as surrogates, observations

and measurements carried out on the physiological expressions associated with the claimed experience. To confirm objectivity, similar measurable expressions should be artificially induced using various cortical stimuli, whether magnetic, electrical, physical, or chemical. *Prima facie*, then, any such *equivalency* maneuver would seem to close the measurable loop-of-experience without leaving any residue. Unfortunately, this approach bears a hidden assumption of serious methodological and logical import.

Consider the personal experience reported by Jones along with the detectible physiological expression of his reported experience, as duly measured and corroborated scientifically. The basic issue concerns what type of direct linkage is being assumed between his personal experience and the physiological expression of that experience. Direct linkage would not be inherently problematic since some degree of association would normally be expected physically between conscious experience and the physiological and externally detectible expression of that experience.

Indeed, in the first instance, it might even be useful to compare associative classification nomenclature regarding varieties of conscious experience, on the one hand, with correlative, externally detectible physiological expressions of such experience, on the other. In doing so, however, due diligence would be advisable to avoid directly conflating classification association with ontological association. Uncritically imputing ontological status to this association by default would transgress the boundary between classification and ontology by positing *identity* between the personal experience and the externally detectible physiological expression of said experience. Left unexposed, however, this logical faux pas paradoxically remains speciously beneficial insofar as it artificially provides, and appears to guarantee, for conscious experience the holy grail of objectivity deemed essential for conducting neurophysiological research on consciousness. Furthermore, reductive conflation of externally detectible physiological expressions of conscious experience with conscious experience per se can elude detection under protective assumptions inherent in scientific materialism. Conflating classification with ontology would thus indirectly appear to validate first-order physicalism replete with inherent constraints of space and time.

Reality Check

The working assumption for science guided by restrictive metaphysical principles, as noted by Sullivan, entails general acceptance that the reality being investigated should be accessible for general research. Yet when delving into personal conscious experience, this working assumption would require augmentation to maintain and foster a high degree of objectivity. So the association between conscious experience and the measurable expression of that experience is construed, without mention, as an ontological identity. Far more than providing merely reliable indicators of experience, following this dubious assumption to its logical conclusion, measurements of physiological expressions of personal, conscious experience could be alleged to constitute the very essence of such experience! Claims for distinctly personal experience, over and above measurements thereof, would be dismissed as peripheral, illusory, and, at best, of secondary interest. This result conforms to the general working assumption whereby any knowledge claim ought ideally to be depersonalized. Therefore, what counts as reality is deemed to be limited to those features of the world which can be addressed objectively by an exclusive scientific methodology. Above all, purported spiritual reality would have no status other than as representing neurological correlates when deemed useful for neurotheology.

A Change of Viewpoint

Recent literature provides reasons to believe that this low-order reductionist model of mind, brain, and consciousness may have reached a serious impasse.⁴ Early signals of transition have long been available. After all, how could a 2% difference in DNA alone ever suffice to account for a much higher order in human consciousness?⁵ On the standard model, as Noë avers, the brain is typically construed as the generative source of consciousness, a view consistent with the standard model of scientific methodology extolling unmitigated objectivity. If this were the case, individual conscious experience, once depersonalized, should be readily accessible and available for general cognitive research. Yet scientific research has gradually become stymied, primarily because other factors must be taken into consideration. In particular, Noë draws attention to the role of interaction between the individual experiential entity and its en-

vironment, with the brain being tasked with proper coordination. Put plainly, Noë is unconventionally claiming that “we are looking for consciousness in the wrong place if we look for it in the brain.”⁶

Once confirmed, this challenging claim may also herald the end of naive reductionism regarding brain, mind, and consciousness. As regards “questions of mind, self, consciousness, and their basis,” neurologist Oliver Sacks finds Noë’s concepts “both astounding and convincing.”⁷ Sensing here a fundamental revolution in “scientific thought about the nature of consciousness,” Hilary Putnam affirms that “most of what he says is true.”⁸ Even “those of us who disagree,” Daniel Dennett admits, “have our work cut out for us” in order to defend “current orthodoxy.”⁹ Comments this serious coming from the top echelon would seem to be signals of transitional distress.

An Integrative Approach

Noë identifies at least two interrelated problems: (1) conscious experience cannot be reduced to isolated, objectively measurable brain states; (2) environmental cum interpersonal factors are involved which require holistic coordination, since these factors are constitutive of the experience in some integral way. The significance of these fundamental issues extends far beyond possibly establishing some novel trend in neuroscience.

While openly affirming that excellent experimental and theoretical work continues in cognitive science, Noë claims that this entire research program is built upon misguided presuppositions.¹⁰

It is misguided to search for neural correlates of consciousness—at least if these are understood, as they sometimes are, to be neural structures or processes that are alone sufficient for consciousness ... More generally, it is untenable to suppose that the brain’s job is to do our thinking for us, and so it is untenable to think that the brain manages this task by performing complex computations.¹¹

Being quite beyond stand-alone computational capacity, seeking “to understand the brain basis of experience” requires appreciation of “our dynamic transactions with the world around us.”¹² Might the brain then be an instrument of interconnection,

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inclusive also of spiritual reality? Because environmental factors would embrace “the cultural habitat of the organism,”¹³ this alternative approach manifests a wide-ranging viewpoint. Furthermore, Noë frankly acknowledges that his claim, that “the foundations of consciousness are not distinctively neural,”¹⁴ effectively constitutes a direct attack upon orthodoxy.

Holism Revisited

Emergent holism, as noted by Sullivan, may correct our fragmented views of reality.¹⁵ In this same vein, Noë is reintroducing holism to the attention of neuroscience.

The central claim of this book is that the brain is not, on its own, a source of experience or cognition. Experience and cognition are not bodily by-products. What gives the living animal’s states their significance is the animal’s dynamic engagement with the world around it.¹⁶

Noë clarifies this unorthodox alternative as follows:

The last twenty-five years have witnessed the gradual shaping of an embodied, situated approach to mind. This approach has flourished in certain regions of cognitive science ... but it has been all but ignored in neuroscience ... and, more generally, in the domain of consciousness studies ... It is now clear ... that consciousness, like a work of improvisational music, is achieved in action, by us, thanks to our situation in and access to a world we know around us.¹⁷

Limitations of Science

Many decades ago, Sullivan identified the poverty of science, if artificially restricted in its scope by a methodology appropriate for simple problems of “matter and motion.”¹⁸ Meantime, this limitation has become increasingly embedded within the culture of science leaving the illusion that, in the long run, no unreachable goals of any significance exist for science today. Unfortunately, personal experience does not fit this restrictive methodology. So to bring it within the range of scientific investigation, conscious experience is virtually depersonalized in order to meet acceptable methodological criteria.¹⁹ Summarily discounting personal conscious experience in this way could also be viewed as truncating reality at the altar of objectivity, attempting to gain access to this personal experiential domain for scientific research.

Signals of Transition

The findings identified by Noë arising internally from within the system of scientific investigation are unsettling. Lack of *specified* coupling between the measurement and some physiological entity is considered quite problematic.²⁰ The absence of direct and univocal correlation between detectable measurements makes it much more difficult to measure and control the specified reality purportedly being investigated. According to Noë, the brain is neither causative of the experience nor an adequate representation of it: something far grander is evidently involved. The brain seems to be functioning more like an integrating operator within a larger system involving multiple agencies. Perhaps the emergence of such unexpected indicators, in addition to other constraining factors, constitutes a signal heralding an impending shift in thought style or paradigm change.

Reactions to the work of Noë exhibit serious professional interest. Viewed classically, significant challenges to entrenched viewpoints signal incipient adjustments in thought style. Science history is replete with examples of worldviews and fundamental beliefs that underwent unanticipated change. Such shifts result largely as a function of new evidence and the reinterpretation of evidence. Examples of worldview change or paradigm shifts abound. The variable manner by which an entrenched worldview could be displaced or significantly modified is complex, usually involving cultural and sociological factors transcending what is usually deemed to constitute scientific evidence.²¹

Belief-Bifurcation and Worldview Shifts

The central parameters and features of typical transformations within scientific thought were well described in the classic 1935 work of Ludwik Fleck, who described how theories formulated within science, when entrenched, often exhibit extraordinary tenacity of conviction.²² In that same year, philosopher Robert Thouless published his insightful study on the tendency toward degrees of certainty assigned inversely as a function of available evidence.²³ He showed that lack of available supporting evidence for a particular belief position tended to correlate directly with a reinforced tenacity in belief conviction, often leading to increasing divergence, even utter belief-bifurcation. Both studies indicated that

claims for certitude tend to correlate with a high degree of rigidity and polarized conviction. This easily leads to discounting ostensibly unbiased evidence that ought to be deemed acceptable even by staunch opponents of a particular theory or another belief position, further polarizing the entrenched bifurcation. At the higher level, even the basic terms of legitimating and adjudication could become fixed. However, when the “rules” become dogmatically controlled by a particular belief system, transition or “conversion” can be extremely difficult to achieve.

Methodological Constraints Revisited

Viewed historically, acceptable feedback of scientific information from experimentation has traditionally resolved many cases of belief-bifurcation within science. Nature “communicates,” as it were, when we listen perceptively. Contending with polarized presuppositions within science has often been very challenging, especially when deeply embedded viewpoints are involved.²⁴

It is considerably more difficult to deal with embedded methodological constraints, setting preconditions for what is allowed to count as evidence. Accordingly, the findings recently identified by Noë, along with quoted peer commentaries, are particularly interesting since they seem to reveal internal signals of confusion and potential transition. Dennett expresses hope that these extraordinary findings can be treated as anomalies in need of special attention. On the other hand, perhaps these distress signals will expose grounds for really serious tension being exhibited within the system as currently understood. After all, it is imperative to recognize that a dominant working assumption is just that: an assumption. While not a religious type of belief, the allegedly “misguided” assumption identified by Noë, “to search for neural correlates of consciousness,”²⁵ nevertheless functions as a guideline demanding professional adherence in order to foster continued operation of normal science within this restrictive methodological paradigm. Clarifying this broadly held working assumption can facilitate proper understanding of the general operational role of beliefs within science. Far more problematic, however, are deeply embedded and tenaciously held methodological constraints controlling what counts as acceptable evidence.²⁶

Inner Experience

Inner conscious experience is well documented in the literature. In a rather prescient manner, Thomas Merton unpacks entry-level physiological experience often associated with spirituality, by identifying differences between conscious experience originating from beyond or from within the physiological system. Chemicals such as peyote can induce the kind of physiological ecstasy that Aldous Huxley felt was “truly spiritual.”²⁷ Although induced experience remains a poor reflection of spontaneous experience, at least some type of spiritual reality was hereby being associated with the physiological dimension of the human person. Thus some type of allegedly spiritual realm, whether internal or external, was unexpectedly discovered by artificially triggering physiological sensors.²⁸ However, this maneuver could not replicate spontaneous inner experience without leaving detectible differences. Peyote-induced experience, though superficially similar, was reportedly lacking meaningful depth and duration which contrasted with conscious spiritual experience arising spontaneously, presumably from outside the physiological system.²⁹

Conscious experience identified as arising from beyond is often associated with a permanent transformation best described as the most real thing in the world.³⁰ Using chemical shortcuts as the generative source of the conscious experience is patently not transcendent. Although the detectible difference in this instance is more subjective, it may nevertheless serve to expose difficulties regarding artificial replication or reconstruction of authentic conscious experience. Despite preemptive closure from neurotheology, only if conscious experience is truly genuine can said experience express an enduring sense of transcendence without involving Linus-blanket dependence upon conscious experience. This is the virtual litmus test. Neither peyote nor apparatuses like Persinger’s “God Helmet” can provide any enduring sense of transcendent reality. Trying to replicate, force, or mimic deep experiential reality remains a charade.

A person like Bucke, who consciously experienced such in-breaking “Presence,” may more easily recognize that the experience implicates a spiritual source beyond physiological expression of the experience. Though conscious experience may provide reassurance of meaningful spiritual reality beyond the here

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and now, Merton wisely cautions against becoming dependent upon any repetition or artificial replication of such spontaneous experience, since dependence or control would inhibit authentic spiritual growth.³¹

Conclusion

Conscious experience characteristically involves an inherently personal aspect which will not be denied despite unacknowledged limitations within current scientific methodology. Conscious experience cannot be fully reduced to detectible physiological expressions associated with experience. If conscious experience is genuine, it may open the door to a deeper spiritual realm entirely beyond the restricted capacity of traditional science to recognize or adjudicate. □

Notes

¹Consider the convoluted case of the supposed coma victim, Rom Houben of Brussels, who internally yelled for twenty-three years, but no one heard him, as recently reported throughout the world's press, www.msnbc.msn.com/id/34132340/ns/health-health_care (accessed March 3, 2010).

²Over eighty years ago, Sullivan, the brilliant polymath, was able to observe how "metaphysical doctrines that accompanied science" influence and compromise methodology and content. "The philosophy based on science had made 'matter and motion' the sole reality. In doing so it had dismissed other elements of our experience ... as illusory." J. W. N. Sullivan, *The Limitations of Science* (New York: Viking Press, 1935): 148-9. Despite the prevailing mindset, Burt felt strongly that "mind ... must find its total explanation beyond the material world." E. A. Burt, *The Metaphysical Foundations of Modern Science*, rev. ed. (Garden City, NY: Doubleday, 1932), 324.

³Underlying reductionist presuppositions are often uncritically presumed to be integral to authentic science. For nearly a century, quantum mechanics has provided highly accurate measurements without clarifying the reality behind these measurements. In contrast, measurements made within neuroscience would not even recognize any deeper experiential reality.

⁴Alva Noë, *Out of Our Heads: Why You Are Not Your Brain, and Other Lessons from the Biology of Consciousness*, (New York: Hill and Wang, 2009).

⁵Sullivan, *The Limitations of Science*, 150. Sullivan anticipated infinite capacity for the growth of human consciousness, albeit not following simple materialist presuppositions in denial of the

belief that life has transcendental significance. [Yet] it is precisely this belief that the old philosophy of science made impossible. We conclude, therefore, that the truly significant change in modern science is ... to be found ... in the change in its metaphysical foundations.

This article heralds a possibly fundamental transformation currently in progress.

⁶Noë, *Out of Our Heads*, 65.

⁷*Ibid.*, dust jacket.

⁸*Ibid.*

⁹*Ibid.*

¹⁰*Ibid.*, 185.

¹¹*Ibid.* An international research team led by Randy McIntosh is reportedly constructing a virtual brain using a grid of powerful computers, www.theglobeandmail.com/news/technology/science/the-tough-task-of-building-a-virtual-brain/article1252523/ (accessed March 3, 2010).

¹²*Ibid.*

¹³*Ibid.*

¹⁴*Ibid.*

¹⁵Sullivan, *The Limitations of Science*, 125 ff. Early on, scientific method was guided by a tendency to select and abstract from the "total elements of our experience" those "elements that possess *quantitative* aspects" which allegedly made them more "suitable for scientific formulation" (p. 128). For Kepler and Galileo, the really "real world is the world of mathematical characteristics" (p. 129). Reality "identified with the quantitative" (p. 135) appeared to be fragmented. But the notion of isolated units was due to be "replaced by the notion of organism" compatible with the emergence of biology (pp. 188-9) followed by a "further synthesis [with] the science of mind" able to reach out toward ultimate unity. Potentially this could implicate a higher-order physicalism free of space-time constraints, compatible with nonlocality and entanglement, which conceivably might help to expose Chalmers' bifurcated "hard problem" analysis of experience as harboring a category error. Cf. www.sciencemag.org, vol. 323 (August 13, 2009): 1168.

¹⁶Noë, *Out of Our Heads*, 165.

¹⁷*Ibid.*, 186.

¹⁸Sullivan, *The Limitations of Science*, 148-9. What "seemed to many thoughtful men ... to have darkened life ... was the metaphysical doctrines that accompanied science." Statistical methods were being developed which could describe ensemble behavior with considerable accuracy without regard for individual instantiation. Quantum mechanics introduced refinements in measurement while holding accounts in abeyance concerning deeper reality beyond precise measurement. Einstein's allegedly "spooky" action at a distance remains an anomaly since nonlocality and entanglement appear to expose a degree of independence within the physical order surprisingly free of space-time constraints.

¹⁹The current approach to research operates efficiently by reframing the domain of reality to mate with scientific investigation. The metaphysical beliefs underlying this restrictive approach also buttress the secular philosophy of reductionist first-order materialism. Given the historical record identified by Burt and Sullivan, serious critical reflection would be required not to associate authentic science with nonscientific assumptions leading to scientism.

²⁰Statistical analysis of populations and aggregates might initially substitute for simple linkages.

²¹Classic exemplars within science include Galileo, wave-particle duality, relativity, and plate-tectonics.

²²Ludwik Fleck, *Genesis and Development of a Scientific Fact* (Chicago, IL: University of Chicago Press, 1979) is the edited translation of the German language version originally published in 1935. "Once a structurally complete and closed system ... has been formed, it offers enduring resistance to anything that contradicts it" (p. 27). Fleck focused primarily on how constraining beliefs, often held with utter tenacity, influenced medical history. The great relevance of Fleck for his own work was duly acknowledged by T. S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, IL: University of Chicago Press, 1962).

²³Robert H. Thouless, "The Tendency to Certainty in Religious Belief," *British Journal of Psychology* 26, 1935: 16-31, www.social-sciences-and-humanities.com/PDF/certainty_in_religious_beliefs.pdf (accessed March 3, 2010).

²⁴Novelty may languish under extreme polarization. Wave-particle bifurcation eventually emerged as a case of inclusive "or." Einstein long had his detractors concerning relativity, yet even he bristled at what he believed to be "spooky" action-at-a-distance, bearing potential implications for regular space-time physicalism. Cf. Louisa Gilder, *The Age of Entanglement: When Quantum Physics Was Reborn* (New York: Knopf, 2008).

²⁵Noë, *Out of Our Heads*, 185.

²⁶Fleck cautioned that dogmatism remains an ever present danger. The mere recognition of contrary beliefs within science could be prejudged as somehow heretical. Similarly, examining foundational working assumptions seems threatening to science only if uncritical adherence to prevailing metaphysical presuppositions were presumed to be methodologically integral to doing science.

²⁷Thomas Merton, *The Inner Experience: Notes on Contemplation*, ed. William H. Shannon (San Francisco, CA: Harper, 2003): 107.

²⁸Ibid. Huxley's experiments, which included LSD and other drugs, "seemed to help open up undiscovered and unknown depths" without clarifying any possible ultimate significance.

²⁹Neurotheology would counter this claim by seeking some defect or other aberration in the brain, www.clinicallypsyched.com/neurotheologywithgodinmind.htm (accessed March 3, 2010).

³⁰Self-induced experience stands in sharp contrast with the type of transcendent experience identified by Bucke who described such genuine in-breaking experience from beyond that could in no way be artificially duplicated in terms of meaning. In particular, the "waking of God in the soul is what is called in the present volume 'Cosmic Consciousness.'" Richard M. Bucke, *Cosmic Consciousness: A Study in the Evolution of the Human Mind* (New York: Dutton, 1969): 147.

³¹Merton, *The Inner Experience*, 108. The experience "is only a sign and is, furthermore, capable of being dissociated from any reality and being a mere empty figure. The illuminist is one who attaches himself to the sign, the experience, without regard for the invisible substance of a contact which transcends experience." Cf. Thomas Keating and John Osborne, *The Heart of the World* (New York: Crossroads, 1981), 65. "Christ is ... in the heart of all creation, sustaining everything in being ... even material creation has become divine in him."

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