Consciousness Science Is Broken. Can It Be Fixed?

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1 Introduction

For about five years, leading figures have authored articles in prominent journals promoting the truly-scientific, completely-trustable, *bound-to-eventually-succeed* nature of allegedly-remarkable advances in conscious-experiential science [e.g. (Block et al., 2014; Storm et al., 2017; Koch, 2018; Michel et al., 2018, 2019)]. A central and potentially-tragic feature of this marketing campaign is its assertion of a basic scientific-untruth: that conscious experience [or phenomenal consciousness (Block, 2005)] can *be* studied scientifically, *within the dynamical-regime inherent in current mainstream physical-theory*. And mainstream conscious-experiential science is clear about explicit adoption of conventional physics *as* its explanatory basis: it's a defining-property of 'the mainstream'. This article blows the whistle on the whole scientifically-incoherent mainstream project, and initiates a broad conversation about appetite and resource for starting an eminently-feasible, scientifically-pristine, replacement.

2 Hypothesis: mainstream conscious-experiential science is profoundly mistaken

Perhaps ironically, given its well-meaning intention to help *address* mental-health challenges (Michel et al., 2019), mainstream conscious-experiential science itself seems to *enact* distorted thinking! The current-mainstream simultaneously makes these three claims: (a) conscious experience doesn't have any explicit, *additional*, effect on brain-dynamics (the only position consistent with insistence on conventional-physics); (b) first-person subjective reports in experiments are scientifically-reliable data *about contents-of-experience* [or can be made so within ingenious frameworks, e.g. (Chalmers, 2013)]; and, (c) the mainstream is *contradiction-free*. Notably, advancing (a)-and-(b) simultaneously *isn't* a direct contradiction: in fact, it meets the highest standards of scientific rationality. Nevertheless, (a) and (b) are *plainly* contradictory. (See the next subsection for a straightforward demonstration.) And the (a)/(b)-contradiction further contradicts the *non*-contradictory assertion of (c). So, the (a)-(b)-(c) claims generate a vicious circle of contradiction-of-contradiction, denied *again* by (c) – thus further contradicting truth ... This inner landscape must generate confused thinking. More directly, we simply *don't* live in the mainstream's imagined reality, where the dynamical-structure of conventional-physics holds, *and* a recognizably-scientific approach to conscious experience is possible. In fact, it's possible to *prove* that realities with those *joint-properties* *can't* exist¹— here or anywhere! That's how consciousness science can *know* we don't inhabit that imagination.

¹ Rosseinsky, N. M. (2019). The meter-Hamiltonian argument: conscious experience cannot be explained scientifically under current physics.

Figure 1. *Experimental* conscious-experiential science is impossible under conventional physics. In both panels A and B: the conventional laws-of-physics govern spatiotemporal evolution of all brain-dynamics; information from the environment ($I_{Environment}$, red arrow) is converted into brain-encoded information (I_{Brain} , blue spikes); and this brain-encoded information governs speech acts (such as “I see green” or “I consciously experience greenness”, blue speech-bubble). **A.** Imagine that certain brain-states act as *creation-operators* ($\hat{a}^\dagger$ symbol, purple arrow). This process realizes conscious-experience as a collection of near-zero-mass-energy new-particles (schematically separated from conventional physical entities by the dashed-purple arrow). Specifically, brain-states create (and therefore dynamically-influence) new conscious-experiential particles, but conscious-experiential particles do *not* influence brain-dynamics. Thus, first-person reports in experiments cannot really ever be ‘about’ conscious experience, because experiential-information ($I_{Experience}$) is never transferred to the brain. **B.** Now shift the picture in A slightly, replacing creation-operators $\hat{a}^\dagger$ by a ‘self-attribution’ process s . In this view, brain-states first ‘create’ conscious-experience, and then attribute the created-product to themselves. This is clearly effectively-equivalent to mainstream conscious-experiential science’s basic identity/emergence-proposal. But *nothing has changed dynamically from panel A (because the laws of physics for the evolution of brain-dynamics are the same in both panels)*. Thus, here too, $I_{Experience}$ cannot affect, influence or couple with report. This means that, *under conventional physical dynamics*, first-person report is not a scientifically-valid data-source concerning conscious experience, and there are no scientifically-valid experiments about conscious experience. Emphatically, this result does *not* mean experimental conscious-experiential science is impossible. And it does *not* imply that report isn’t *actually* about experience, in everyday life and in consciousness-science experiments. It simply means that reports-about-experience and valid conscious-experiential science *can only take place under specific divergences from the dynamical regime enshrined in currently-conventional physics*.

3 Creation-operator thought-experiment: the current mainstream's basic contradiction

To see that (a) and (b) *are* contradictory, consider the following demonstration. This will show that the mainstream's *dynamically-conventional-physics* identity/emergence-theories can't be experimentally-tested, because they imply first-person report *isn't about* conscious-experience.

First, imagine temporarily that conscious experience is made up of novel, beyond-Standard-Model particles (Fig. 1A). (Those who instantaneously reject this out-of-hand are already outside science: there's no conceptual, theoretical, or empirical basis for rejecting this *as a hypothesis*. But in any case, this is *just an intermediate demonstrative step*, not a final hypothesis. So, recoil-in-horror is unnecessary!) The idea in this imagination is that detailed-information inherent in brain-states [e.g. encoding of 'red'-at-a-certain-visual-field-location] acts as creation-operators for new-particle-states [e.g. an experience-of-'redness'-particle at a corresponding-experiential-space-location (Wagner, 2006)]. ['Creation-operators' are standard mathematical-machinery in quantum field theory (Mandl, 2010). While 'creation' isn't usually attributed to physical states in this way, attribution is again merely demonstrative, and temporary.] As long as new-particles *don't* dynamically couple 'back' to brain-dynamics, this imagination is completely consistent with the conventional dynamical laws-of-physics for the physically-conventional brain. Specifically, this imagination is consistent with everything in current science, including all empirical observations of brain-activity. (Mass-energy conservation can be simply accommodated by hypothesizing near-zero mass-energy for short-lived new-particle-states, which, on annihilation, return 'borrowed' energy to brain-states.)

Crucially, *conscious-experiential science is obviously impossible* in this new-particle imagination. Conscious-experience is causally downstream-of, and subsequent-to, brain-activity, and can't influence it in any way. Thus, reports purporting to be 'about' conscious-experience would have to be mistaken, no matter how compelling the subjective sense that experience *really does* drive report: *information about conscious experience simply can't 'make it into' report*.

Next (Fig. 1B), amend the new-particle imagination, converting it into the mainstream's identity/emergence-approach [e.g. (Kim, 2005; Gamez, 2014)]. To do this, we simply change 'creation operators' into 'self-attribution operators'. Now, brain-states create components-of-conscious-experience, as before. But these are then attributed back to the brain, rather than realized as new-particles. Crucially again, when we make this change, *nothing at all changes in terms of brain-dynamics, and therefore nothing at all changes in terms of information-flows*. Thus, reports that couldn't be about experience before *are still not about experience*. And *conscious-experiential science is still impossible*, for the same reasons: information about experience can't be in report.

This simple reasoning also shows what's necessary *for* rational, recognizable, conscious-experiential science. Imagine that the new-particles *did* 'act back' on brain-activity, transferring detailed conscious-experiential information. Obviously, this would change dynamical descriptions of brain-activity (*i.e.* the 'laws' of physics). But it would also enable scientifically-reliable experiments! And experiment-enabling information-transfer doesn't *require* new-particles (which are often – incorrectly – criticized as being a form of *dualist* interactionism). Just as in the previous 'no back-action' case, creation-operators here can be converted to self-attribution, leading to contingent/emergent/identity-theories with '*dynamical*' interactionism (or 'downward causation', as it's sometimes called).

4 Mistaken beliefs have become institutionalized: no corrective mechanisms exist

In 2014, I submitted a detailed, complete, mathematical, expression of the previous subsection's logic (including rebuttal of the myriad of field-typical counter-arguments), to *Frontiers in Consciousness*

Research. After a brief, extraordinary, detour involving a direct editorial-invitation to ‘withdraw the manuscript without review, because it’s dualism’, the article went out to reviewers. Helpful comments were gratefully received, and revisions made. However, reviewer-2 was clearly unable to psychologically accept the article’s implications, and withdrew abruptly, without establishing any logical or scientific flaws. Rather than trying to recruit a second referee (or even discussing status with me), the editorial team simply and shockingly rejected the manuscript out of hand, ‘because I couldn’t amend it to meet reviewer-2’s concerns’. Unfortunately (or fortunately!), it’s often simply not possible to amend truth to meet the concerns of psychological-discomfort.

Nor is this a one-off experience. Over the last *seven* years, I’ve submitted a variety of manuscripts that simply seek to point out irrationalities in mistaken mainstream-hypotheses – and received *more than twenty* completely-illogical and ungrounded rejections from editors and reviewers. Moreover, in all but one case, submissions suggested *experimental tests* to arbitrate between mainstream ideas and coherent alternatives. Thus, the institutions of consciousness ‘science’ *apparently reject the essence of doing science*: performing experimental arbitration between important, competing, logically-coherent, theoretical possibilities.

Of those twenty-ish rejections, my personal favorite so far was a claim by a former editor of Consciousness and Cognition. He said that an argument about scientific-unreliability *of report* couldn’t be correct, because it contradicted known (allegedly *report-established!*) facts about the contents-of-conscious-experience: his ‘proof’ the argument was wrong had to assume it was wrong in order to bring forward ‘evidence’.

In just *two*, notable, contrary-cases, senior figures – whose identities must apparently remain confidential to protect their scientific reputations – have privately expressed sympathy that there seems to be nowhere in the field that rationality can take hold.

5 The possibility of fundamental flaws: six-month open peer-review at TheoryOfWe.com

Of course, one possibility is that rejections occur because my work is fundamentally scientifically-flawed. Naturally, given my persistence, I see no such flaws – and I’ve yet to be shown any, by reviewers or editors. *Of course*, that could just be my stubbornness and short-sightedness ... To resolve this in a way that you, the reader, can observe directly, I’m going to publish five major new papers at the new (free!) consciousness-science website www.TheoryOfWe.com. (I’ve no commercial interest in, or non-commercial affiliation with, *TheoryOfWe*.) This website offers an ‘observatory’ feature, where the public can view discussions between professional academics. Over the next six months, I invite professionals who dispute content or conclusions *e.g.* of the simple creator-operator example, to engage with technically-precise presentations in these five papers, on *TheoryOfWe*. I’ll respond personally to any good-faith critique. Third-parties can then reach their own conclusions about reasoning on both sides. If unresolvable flaws *are* found, I’ll withdraw relevant papers, and publish retractions.

6 Quis custodiet ipsos custodes? A meta-meta-experiment

An alternative to ‘rejections were due to fundamental flaws’ is that many cultural gatekeepers (*e.g.* editors and referees) have typically had to adopt a career-long practice of *inhabiting* illogical thinking-styles, precisely in order to advance professionally to gatekeeper-status! (As noted earlier, this clearly doesn’t apply to *all* senior personnel in the field. But consider incentives and likely outcomes, in a closed-group unchecked by truth, once an irrational position becomes socially-dominant.) If this

alternative holds, many gate-keepers may simply be *incapable* by now of perceiving clear-and-simple truths.

So, two competing hypotheses could explain prior rejections: flawed work, or cognitively-conditioned gate-keepers. And the dialogue at *TheoryOfWe* can – if gate-keepers show up! – become a sort of *meta-meta-experiment*, generating data that third-party observers can use to arbitrate between these competing hypotheses. (In consciousness science, alleged-*experiments* examine the brain/consciousness relationship. Elsewhere², I’ve used the term ‘*meta-experiment*’, for a novel experimental-paradigm that can establish whether those alleged-experiments can *be* reliably scientific. Thus, *meta-meta-experiment* might describe the sociological *TheoryOfWe* exercise: it’s an experiment about engagement with the meta-experiment, to determine if mainstream consciousness-science can and should listen to meta-experimental arguments, or if, alternatively, those arguments are flawed.)

7 No agenda of personal aggrandizement: co-authors welcome, free of investment!

This isn’t an egoic exercise in asserting the correctness of my personal stance. (My personal interest isn’t actually even *in* consciousness science, ultimately, but in transforming society and economy. However, it’s impossible to get this project started without a basically-coherent science to draw on.) To give the low-ego claim credibility, I’ll offer co-author status – without any direct additional contributions - to *anyone* who convinces me they understand the technical content of a paper, *and* that they’re prepared to devote a significant proportion of their energies to advancing related-viewpoints.

8 This *isn’t* an eliminativist manifesto: ‘dynamical interactionism’ is a scientific possibility

I’m not repeating longstanding eliminativist critiques [*e.g.* (Wilkes, 1988; Cohen and Dennett, 2011)]: I *don’t* claim conscious-experiential science is impossible – only that it’s impossible *under the kinds of dynamics enshrined in current mainstream-physics*. Explicitly², I point out that we *may* live in a reality where conscious-experiential science *is* possible. But the logic is elementary: if we do, it can’t be a reality that’s fully-described by current physics! *So, let’s do the experiments to find out*².

9 This *isn’t* a quantum consciousness manifesto: irrationalities also exist in that sub-field

And ‘no conscious-experiential science under current physics’ isn’t just a return to well-known quantum appeals [*e.g.* (Stapp, 1982; Penrose, 1989)]. Certainly, making explicit changes in quantum aspects might be *one* way to theoretically-accommodate the kinds of *putative* novel dynamics required for coherent conscious-experiential science. But there are others. And which we end up adopting must be *guided by experimental data*² (if we’re doing science!).

10 The mainstream message suppresses experimental tests

One side-effect of the marketing campaign mentioned in opening is institutional suppression of a logically-coherent theoretical alternative that can be tested experimentally. And this is perhaps the most disturbing expression of the hypothetical mistakes the mainstream insists on: they obstruct the reality-tests (*experiments*²!) that can reveal those mistakes *as* mistakes.

² Rosseinsky, N. M. (2019). The meter-Hamiltonian argument: why comparing actual brain-data to computer simulations must be consciousness science’s first priority.

11 A real science of consciousness is vital to the future of humanity

Although space-limitations preclude full discussions, *science's* dysfunctional-treatment of conscious experience is strongly-related³ to current *societal* dysfunctions – including attacks *on* science [e.g. (Kakutani, 2018)]. I alluded to ‘tragedy’ earlier: the mainstream approach might be part of a sadly-misguided attempt to *protect* science, by asserting an allegedly-complete explanatory-reach for current physics. This will *be* tragic, if it turns out to lead to science’s *actual-dethroning*, as and when underlying-mistakes are revealed to the general public. An alternative? Do the experiments². Follow through with the implications of experimental-data, for the science of conscious experience. And put the foundations of science-as-a-whole on whatever footing ensues³. This alternative path has to be better than the covert and mistaken defense that’s apparently currently in play (whether consciously or unconsciously).

12 Paths to a real science: in-field transformational dialogue, or a ‘blue ocean’ new-start?

Assume temporarily that the mainstream field and its institutions are as deeply-dysfunctional as the conditioned-gatekeepers-hypothesis suggests. How, then, are we to establish a real science-of-consciousness? We could hope that all isn’t lost in the existing field. Notably, there’s evidence of pockets of rationality in senior ranks. And students and earlier-career professionals may have not yet been conditioned to mistaken thinking-styles. Alternatively, there’s a strong case for simply starting a new field, outside current institutional structures: is it time to ‘disrupt’ conscious-experiential science?! Given the stakes, both transformational engagement and blue-ocean innovation should be explored.

13 Discussion

October 18th 2019 sees the launch of a six-month project, for broad, communal, discussion of all these points. The bulk of activity will be online, and includes the *TheoryOfWe* peer-review forum mentioned above, a series of webinars with both presentations and Q&A sessions, a Facebook discussion group, and distribution of a large amount of additional content, in both written and video form. *Active participation* will be open to anyone with a genuinely-positive (minimally, non-disruptive!) intent; *content* will be freely available, without limitation. (This is not a commercial advertisement: it’s a public-service announcement.) At the end of the six months, I’ll convene a one- or two-day in-person debrief/discussion-workshop, either at the April 2020 Tucson conference (if invited), or at a neighboring location.

For more details, please either contact me directly, or visit www.project-10-18.net.

³ Rosseinsky, N. M. (2019). The meter-Hamiltonian argument: foundations of physics depend on conscious-experiential science and thus actual dynamical-regime.

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