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Thoughts on the Scientific Study of Phenomenal Consciousness

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This article is about the hard problem of phenomenal consciousness (i.e., how is subjective experience possible given the scientific presumption that everything from molecules to minerals to minds is wholly physical?). I first argue that one of the most valuable tools in the scientific arsenal (metaphor) cannot be recruited to address the hard problem due to the inability to forge connections between the stubborn fact of subjective experience and physically grounded models of scientific explanation. I then argue that adherence to the physicalist tenets of contemporary science has a limiting effect on a full appreciation of the phenomenon under discussion.

Keywords: consciousness, subjectivity, science, metaphor, qualia

Consciousness is a subject whose explication (much less existence) has captured the attention of dedicated and able thinkers for thousands of years. Despite the optimistic claims of a few (see below), perennial struggles with this topic show little evidence of imminent resolution.

According to contemporary thought, consciousness comes in a variety of kinds (e.g., sentience, access consciousness, noetic consciousness, auto-noetic consciousness, temporal consciousness, core consciousness, reflective consciousness, primary consciousness, phenomenal consciousness; e.g., Klein, 2014a). My use of the term consists in the proposition that *X* is conscious if and only if there is “something it is like” for subject “*X* to be in mental state *Y*” (e.g., Nagel, 1974). As Hacker (2002) observed, “the subjective or qualitative feel of a consciousness experience . . . is characterized in terms of there being *something it is like* for an organism to have the experience” (p 160; emphasis in original). That is, consciousness, as I use the term, consists in first-person subjectivity. This usage is what most philosophers have in mind when discussing phenomenal consciousness (e.g., Chalmers, 1996; Klein, 2014a; Strawson, 2009), although a precise definition


of “what it is like to be in a particular state” has proven to be notoriously difficult (e.g., Block, 1995).¹

The explanatory challenge of phenomenal consciousness is called the hard problem: How does subjective experience (i.e., qualia) arise from physical² objects and their relations (e.g., Banick, 2019; Chalmers, 1996; Clement & Malerstein, 2003; Georgalis, 2006; Jackson, 1982). Put differently, how is experiential reality (the aspect of reality of which we can be most certain; e.g., Gallagher & Zahavi, 2008; Midgley, 2014; Strawson, 2009; Wittgenstein, 1958) possible, given that the dictates of contemporary science stipulate that everything from molecules to minerals to minds is wholly physical (for reviews, see Crane & Mellor, 1990; Klein, 2016; Strawson, 2009).

Some argue that the hard problem is, and will remain, intractable in consequence of its incommensurability with the requirements of scientific method and explanation (e.g., Levine, 2003; Wright, 2007). Others attribute its recalcitrance to

¹ To avoid expositional repetition, I use several terms to refer to phenomenal consciousness—for example, *subjectivity*, *qualia* and *experiential reality*. Although these designations are not exact synonyms, their family resemblances are sufficiently close to allow one to stand proxy for another.

² The terms *material* and *physical* both are used to refer to the doctrine that everything that exists, exists wholly as matter. Although they are not strictly synonymous (for a discussion, see Klein, 2016), in what follows, I will not distinguish between them when discussing the metaphysical doctrine that nature is limited to facts about matter and its interactions.

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conceptual limitations of the human mind (e.g., McGinn, 1991; Plonitsky, 2010). Still others deny the hard problem exists, arguing either (a) a scientific solution already is at hand (e.g., Graziano, 2019; Tsuchiya, 2017) or (b) the problem is chimeric—a quixotic attempt to imbue substance to an ill-formed question (e.g., Carruthers, 2000; Dennett, 1991; Jackson, 2003).

Perhaps the most common stance among psychologists and neuroscientists is to allow that qualia constitute an aspect of reality, but do so solely as epiphenomena (e.g., Crane & Mellor, 1990; Jackson, 1982; Oakley & Halligan, 2017; for a recent review, see W. Robinson, 2019). This existential devaluation is dictated by a robust, though often unreflective, allegiance to the metaphysical dogma of physicalism (for discussions see Klein, 2014a, 2016; D. N. Robinson, 2008). Because nonphysical aspects of reality are stipulated to be incapable of partaking in causal relations with the physical world (i.e., the principle of causal closure under the physical; e.g., Collins, 2008), consciousness, by definitional fiat, is stripped of any capacity to participate in physical reality. This, of course, is the modern version of Descartes's dilemma (e.g., Almog, 2002).

Saving the Phenomenon

Epistemic recalcitrance, however, does not sanction consigning “the feeling of what it is like” to ontological oblivion. Although no means currently are available for capturing phenomenal consciousness in scientific or philosophical discourse (e.g., Klein, 2012; McGinn, 2004; Plonitsky, 2010), subjective experience is “as real as rabbits and rocks” (Strawson, 2009; p. 103). Indeed, its reality is the thing of which we can be most certain (e.g., Gallagher & Zahavi, 2008; Georgalis, 2006; Klein, 2014a; Shoemaker, 1968; Strawson, 2009; Varela, Thompson, & Rosch, 1993). To ignore experiential reality in consequence of scientific-philosophic intractability is to ignore what arguably is the most salient aspect of being.

The psychological topography of our mental constructs ultimately is based on personal acquaintance (cf. Russell, 1912/1999) with the experiential acts in which they are realized (e.g., Gallagher & Zahavi, 2008; Klein, 2012, 2014a; McGinn, 2004). There simply is no other way to reliably know what a mental state, qua mental state, entails (e.g., Klein, 2015; D. N. Robinson,

2008; Varela et al., 1993). While phenomenal experience eventually may prove grounded in events taking place at the neural, molecular, atomic, or subatomic level, reducing our phenomenology to the motion, shape, and size of its physical constituents (or knowledge thereof) cannot provide the knowledge we acquire in virtue of having the experience (e.g., Jackson, 1986; Klein, 2014a; Strawson, 2009). As Varela et al. (1993) noted, “When it is cognition or mind that is being examined, the dismissal of experience (i.e., consciousness) becomes untenable, even paradoxical.” They continued, “To deny the truth of our own experience in the scientific study of ourselves is not only unsatisfactory; it is to render the scientific study of ourselves without a subject matter” (pp. 13–14; parenthetical added for clarification).

In short, with mental states, subjective experience comes first. What remains in doubt is the explanation, not the phenomenon. In the next section, I suggest one reason for this epistemological impasse.

The Problem of Metaphor and Phenomenal Consciousness: “What Is It Like?”

It is a natural impulse, when confronted with a phenomenon that we do not understand, to try to relate it to things that we do understand or at least are more familiar with. (Roediger, 1980, p. 231)

Metaphors are indispensable to scientific and philosophical practice (e.g., Arbib & Hess, 1986; Bhushan & Rosenfeld, 1995; Hallyn, 2000; Konopka, 2002; Ortony, 1993; Stahl, 1987; Taylor & Dewsbury, 2018). They provide a way of understanding the character of epistemologically elusive phenomena by likening them to expressions that relate to other, better understood phenomena (e.g., Black, 1962; Boyd, 1993; Guttenplan, 2005; Kuhn, 1993).

To take a well-known example, in the early days of atomic research uncertain relations between components of atomic structure were likened to better understood relations between the heavenly bodies comprising our solar system (the so-called Bohr model of the atom—according to which electrons were likened to planets orbiting a solar nucleus). Not only did this mapping help explain the wavelengths of spectral lines obtained from chemical elements, it also provided justification for the physical constants describing energies of transitions between orbital levels (e.g.,

Bohr, 1913, 1934; Margenau, 1950). In Jaynes's (1976) terminology, the solar system metaphier (that which is understood) helped explicate the metaphrand (that which currently lacks a satisfactory explanation).³

Even when a phenomenon is not accessible to direct observation, a metaphor can provide a context in which the mechanisms of the "hidden phenomenon" can be illuminated. As one example, for more than half a century psychologists and philosophers have enlisted Turing's (1936) idealized computing device as the metaphier for the hidden workings of the neural machine (for a review, see Gigerenzer & Goldstein, 1996).

In short, metaphors shed light on novel, puzzling or unobservable phenomena by forging connections between seemingly recalcitrant facts and scientifically sanctioned models. In consequence, they are widely considered an indispensable scientific tool (e.g., Black, 1962; Lakoff & Johnson, 1980; Ortony, 1993).

However, as valuable as metaphorical practice has been to scientific theory construction, its relevance to phenomenal consciousness can be called into question. Specifically, phenomenal consciousness appears to have a categorical irreducibility that makes it impossible to relate to or explain in terms of other categories of nature (e.g., Chalmers, 1996; Kant, 1998).

Consider, as one example, the subjective experience of pain. "Painfulness is not a contingent property of pain, painfulness is the essence of pain; there is no appearance beyond the pain itself; I feel pain, the sensation of the pain is all I feel" (Antonietti, 2008, p. 52). It is nonsense to say that the experience of pain can be likened to something other than itself. Although we understand how the workings of, say, the brain might be understood in terms of the properties of a computational machine, we cannot understand how the experience of pain or any other mental state can be conceived in terms of anything other than the state itself (e.g., Gallagher & Zahavi, 2008; Jackson, 1986; Klein, 2014a; Strawson, 2009). If this is the case, then, contra Nagel, there is nothing it is like for subject X to experience mental state Y, other than Y itself.

Nagel (1974), however, was adamant that his claim that the term *like* in the proposal that "there is something it is like for subject X to have experience Y" does *not* imply Y can be likened, compared or reduced to something other than itself: "... the analogical form of the

English expression 'what it is like' is misleading. It does not mean 'what (in our experience) it resembles,' but rather 'how it is for the subject himself'" (p. 440). For Nagel, "the feeling of what it is like for subject X to experience Y" consisted of an irreducible first-person thought about mental state Y qua mental state Y (in Lewis's, 1979, terminology, these are referred to as *de se* thoughts or indexicals; see also Castañeda, 1966; Nagel, 1986; Perry, 1979).

One way of construing Nagel's dictum is that he intended to set boundaries on the scope of discourse about *de se* thought.⁴ However, as Nagel clearly regarded considerations of resemblance and comparison inappropriate for treatment of *de se* thought, his proposition also is consistent with the position that attempts to liken phenomenal consciousness to properties of better-understood phenomena are epistemologically meaningless. The only thing phenomenal conscious is "like" is "what it is like for the subject himself."⁵

³ The solar system metaphier ultimately proved unsatisfactory, generating numerous paradoxes and inconsistencies (e.g., Lakhtakia, 1996).

⁴ Because Nagel has never been entirely clear what "an irreducible first-person thought about mental state Y qua mental state Y" implies (e.g., Block, 1995), analysis of his thesis, even in his carefully circumscribed domain, has generated considerable debate and analysis (e.g., Banick, 2019; Block, 1995; Clement & Malerstein, 2003; Hacker, 2002; Georgalis, 2006; Stone, 2001; Tsuchiya, 2017; Wider, 1990).

⁵ Some of my reviewers argue that metaphors for pain readily are available: For example, widely used pain scales request the patient rate pain sensation in terms of its degree of stabbing, dullness, burning, etc. But likening pain to a feeling of stabbing or burning (which is to engage in simile, not scientific use of metaphor) is substituting one unknown (the feel of pain) for another unknown (e.g., the feel of stabbing). That is, both metaphrand and metaphier are irreducibly subjective, thus rendering the use of metaphor (actually simile) an exercise in logical circularity. While one can liken a particular experiential state Y (e.g., the experience of the color blue) to another, non-Y mental state Z (e.g., the experience of the color blue is like [the experience of] a cloudless, midday sky; the experience of the color blue is like the feeling of cool tranquility), the metaphrand and metaphier both remain firmly embedded within the same "to-be-explained" ontological domain—subjective phenomena. In short, metaphorical treatment of experiential reality (e.g., phenomenal consciousness) is tautological. By contrast, the use of metaphor in the scientific exploration of physical reality does not fall victim to this logical *cul-de-sac* (compare: "The brain is like a computer." Here, the metaphrand and metaphier occupy clearly distinct ontological categories—organic and inorganic—one of which is better understood than the other).

In short, Nagel's "like" can be read both as an appeal to limit the scope of scholarly discourse as well as a de facto restriction on metaphoric applicability. The implication of the latter reading is particularly troubling for the scientific study of phenomenal consciousness. If one aspires to fit subjectivity into a scientifically proper epistemological framework, the proposition that *de se* indexicality cannot reach beyond "what it is like for the subject himself" ensures that the question "what is it like for subject X to experience Y?" cannot, in principle, be addressed metaphorically. Accordingly, one of science's most valuable tools cannot be enlisted to address the hard problem of consciousness.

Science and Consciousness

While a scientific answer to the hard problem is difficult to envision, the existential status of the phenomenon is not in doubt. As Wittgenstein (1958) famously remarked, asking someone "are you sure it's you who have pains?" (p. 67) is patent nonsense. It is nonsense because although our interpretation of the content of our experience may be inaccurate (e.g., two parallel lines appear to converge in the distance), we cannot be mistaken about having the experience (e.g., Shoemaker, 1968).

I do not reject science, *per se*, as an approach to consciousness. What I take issue with is the assumption (often implicit) that current scientific method and dogma have exhausted our ways of apprehending and knowing reality (Tulving, personal communication, May 4, 2011). "Render to science what belongs to science, but we should not surrender all of reality too hastily lest we fail to encounter vast mysteries not accommodated by its particular set of assumptions and methodologies" (Klein, 2014a, p. 118).

Contemporary science simultaneously is inclusive and restrictive. It is inclusive in its belief that everything falls within its theoretical jurisdiction, but it restricts what it allows to qualify as "everything" (e.g., Martin, 2008; Papa-Grimadli, 1998). Put another way, modern science trades heavily on the assumptions that (a) those aspects of reality, as we currently understand them, are exhaustive of the whole (e.g., Jeans, 1943, 1981; Margenau, 1950; Planck, 1925/1993), and (b) the laws and constants of physics are universal in their domain of appli-

cation (e.g., Bohr, 1934; Papa-Grimadli, 1998; Poincare, 1952; Trusted, 1991).

However, although scientists assume that their laws and constants remain unchanged at all times and in all places (e.g., Poincare, 1952; Spencer Brown, 1957; Uttal, 2008), contact with reality is, in fact, limited to what we can observe locally (e.g., Earle, 1955; Shallis, 1983; Uttal, 2008). "To extend that knowledge requires both an act of faith in the uniformity of nature and a compromise with truth, for knowledge has an inbuilt uncertainty to it (e.g., Heisenberg's principle of indeterminacy)" (Shallis, 1983, p. 32; comment in parenthesis mine).

In short, to maintain that materialism, physicalism, idealism or any monistic metaphysic exhausts the nature of reality is to substitute doctrine for demonstrable fact. Such a stance forecloses what we allow to stand as reality by presuming that we have license to assert that reality, in its fullness, can be captured by our current concepts, methods and instruments of measurement (e.g., Eddington, 1958; Elvee, 1992; Feyerabend, 1979; Horst, 2007; Jeans, 1943; Marganau, 1984; Papa-Grimadli, 1998; Tallis, 2008; Trusted, 1999; Vaihinger, 1925; Van Inwagen, 2002).

To declare that consciousness cannot exist (except in a materialist incarnation) is a metaphysical conceit lying outside what can be operationally justified (e.g., Earle, 1955; Klein, 2012, 2014a, b; Martin, 2008). As Ricard and Thuan (2001) observed,

If we define the terrain field of science as what can be physically studied, measured, and calculated, then right from the start we leave out everything that is experienced in the first person (e.g., subjectivity) . . . If we forget this limitation, then we soon start affirming that the universe is everything that can be objectified in the third person. . . . (p. 241; parenthesis added for clarification)

Quite possibly we need a new, more inclusive, metaphysics—one in which reality is not reduced only to what can be manipulated by current scientific methods (e.g., Gendlin, 1962; Klein, 2012, 2014a, 2014b; Martin, 2008). At present we have no way of surveying the whole of reality (e.g., Earle, 1955, 1972). Accordingly, to maintain that all of reality can be captured by a single set of methods (e.g., scientific) is to claim that reality consists in its entirety of objects and their relations. This, I maintain, is

unreasonable (see also Earle, 1955, 1972; Feyerabend, 1979; Fodor, 1974; Kitchener, 1988; Meixner, 2008; Martin, 2008; Nagel, 2012; Papa-Grimadli, 1998; Varela, Thompson, & Rosch, 1993).

To posit that consciousness is capable of being grasped by such circumscribed aspects of reality as matter, energy, or, more abstractly, mathematical formalisms and universal laws is a very restrictive enterprise—one that presupposes we have warrant to declare (without concrete evidence) that reality, in its fullness (i.e., experiential as well as physical), can be captured by such constructs (e.g., Feyerabend, 1979; Jackson, 1986; James, 1909/1996; Marganau, 1984; Papa-Grimadli, 1998; Varela et al., 1993; van Fraassen, 2005). As the scope of metaphysical possibility gradually broadens—and I believe that, of practical necessity (cf. Kuhn, 1962), it eventually will—the fullness of reality will unfold in ways unimaginable from within the shackles of a purely materialist metaphysics.

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