Consciousness is a Form of Life

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Dear Reader, please recall—or follow the corresponding link in the list of REFERENCES, and have a look at—Vincent Van Gogh's famous painting, *The Sower at Sunset* (Van Gogh, 1888-1889). As you recalled it, or looked at it, you might also have consciously imagined yourself projected into the scene depicted in the painting. Last night, after thinking about this essay, I consciously dreamed about the nature and irreducibility of consciousness. So consciousness is manifestly real, and you, I, and the person living next door all have a capacity for consciousness. But what is consciousness?

In my opinion, in order to understand the nature of conscious mind in general and rational human conscious mind in particular, we need radically to re-think what Alfred North Whitehead so aptly called our *concept of nature* itself (Whitehead, 1920/1971), radically re-conceiving nature as inherently processual and purposive, running from The Big Bang Singularity forward, via temporally asymmetric or unidirectional energy flows, to organismic life, and then on to conscious mind in general and to rational human conscious mind in particular, which in turn entails including radically re-conceiving the mind-body relation, free agency, and emergence. In a nutshell, my thesis is that there's a single, unbroken metaphysical continuity between The Big Bang Singularity, temporally asymmetric/unidirectional energy flows, organismic life, conscious mind, and free agency (Hanna, 2024a: esp. chs. 1 and 16). For convenience and simplicity's sake, I'll call this *the forms-of-life thesis*, aka *the FoL thesis*.

More precisely, however, in *Embodied Minds in Action* (Hanna and Maiese, 2009), Michelle Maiese and I claim that the mental-physical relation in minded living organisms like us is nothing more and nothing less than (i) a synthetic a priori two-way necessary complementarity relation, and also (ii) a neo-Aristotelian hylomorphic relation, that is, a mental-to-physical and also physical-to-mental entangled necessary equivalence of "fused" inherently activating irreducible formal or morphetic mental properties on the one hand, and complex non-equilibrium thermodynamic material or hyletic biological physical properties on the other, such that, (iii) as minded animals, i.e., as conscious living organismic animal bodies, we're an indissoluble and physically irreducible form-matter composite, by virtue of which we're always "minding our bodies" (Hanna, 2011), that's (iv) inherently poised for causally efficacious intentional action, spontaneously initiated and creatively guided by our synchronous acts of desire-based willing (Hanna, 2020). In short, our minds are physically irreducible forms of animal life and we're essentially

embodied minds in action; and this is what Maiese and I call *the essential embodiment theory* of the mind-body relation and mental causation.

So that we're all on the same page, I'll provide a quick critical synoptic sketch of recent and contemporary mainstream Analytic philosophy of mind (see, e.g., Chalmers, 1996; Kim, 2005, 2006) for comparison and contrast.

As I see it, the two fundamental problems in recent and contemporary mainstream Analytic philosophy of mind are these:

> *The mind-body problem*: what accounts for the existence and specific character of conscious, intentional minds like ours in a fundamentally physical world?
>
> *The problem of mental causation*: what accounts for the causal efficacy and causal relevance of conscious, intentional minds like ours in a fundamentally physical world?

Correspondingly, there are three standard approaches to these problems, whether defended by Analytic philosophers or by non-Analytic philosophers: (i) *dualist* approaches, (ii) *materialist or physicalist* approaches, and (iii) *metaphysical idealist* approaches.

Now, *classical Cartesian interactionist substance dualism* in the philosophy of mind holds that the human mind and the human body are essentially distinct substances: one of them fundamentally non-material or non-physical, and the other one fundamentally material or physical, hence fundamentally non-mental. These essentially distinct substances are held together by metaphysically mysterious contingent causal relations, including both mind-to-body or mind-to-mind causal relations (aka "mental causation") and body-to-mind causal relations. From a classical Cartesian interactionist substance dualist point of view, only body-to-body causal relations are non-mysterious, although of course Hume thoroughly "problematized" *that* kind of causal relations too in his "unfortunate" *Treatise* (Hume, 1776/2024: p. 6), thereby setting the philosophical stage for Kant's thrilling transcendental idealist modal-metaphysical rescuscitation of the very idea of manifestly real efficacious causation, via his conception of the synthetic a priori (see, e.g., Hanna, 2006a: ch. 8).

In any case, there's also a more cautious 20th and 21st century variant of classical Cartesian interactionist substance dualism, known as *property dualism*, which says that even though there aren't, at least in the actual world, any Cartesian mental substances per se, nevertheless there are essentially distinct fundamentally mental properties and

fundamentally physical properties, each of which can be instantiated without the other in conceivably and logically possible worlds, for example, in bodiless spiritual minds, or in mindless zombies that are particle-for-particle and behavior-for-behavior duplicates of our actual-world minded bodies.

By sharp contrast, recent and contemporary mainstream Analytic philosophy of mind can be generally characterized by its official and orthodox rejection of classical Cartesian interactionist substance dualism, and correspondingly by its central, ongoing commitment to materialism or physicalism as regards the nature of the mind-body relation and mental causation. Materialism or physicalism, as such, says that all properties of or facts about the human mind are constitutively determined by fundamentally physical facts. But there are three interestingly different types of materialism or physicalism: (i) *reductive* materialism or physicalism, (ii) *eliminative* materialism or physicalism, and (iii) *non-reductive* materialism or physicalism. Reductive materialism or physicalism—a prime example of which is the mind-brain identity theory so famously criticized by Kripke in *Naming and Necessity* (Kripke, 1972/1980: pp. 144-155)—says that all properties of or facts about the human mind are wholly constitutively determined by fundamentally physical properties or facts, or, as the technical terminology has it, mental properties or facts are *logically strongly supervenient* on fundamentally physical properties or facts.[1] That is: the human mind is really nothing

[1] For the record, strong supervenience (Kim, 1993: esp. part 1; Horgan, 1993; Chalmers, 1996: chs. 1-3) is a necessary determination-relation between sets of properties or states of different ontological "levels," a relation that is weaker than strict property/state-identity, and is usually taken to be asymmetric, although two-way or bilateral supervenience is also possible. But assuming for the purposes of simpler exposition that strong supervenience is asymmetric, then, more precisely, *B*-properties/states (= the higher level properties/states) strongly supervene on *A*-properties/states (= the lower-level properties/states) if and only if (i) for any property/state *F* among the *A*-properties/states had by something *X*, *F* necessitates *X*'s also having property/state *G* among the *B*-properties/states (upwards necessitation), and (ii) there cannot be a change in any of *X*'s *B*-properties/states without a corresponding change in *X*'s *A*-properties/states (necessary co-variation). It follows from strong supervenience that any two things *X* and *Y* share all their *A*-properties/states in common only if they share all their *B*-properties/states in common (indiscriminability). In turn, *logical* strong supervenience is a super-strong version of strong supervenience which says that the necessitation relations between the *B*-properties/states and the *A*-properties/states are *logical* and *a priori*. Or more simply put: The *B*-properties/states are "nothing more than" and "nothing over and above" the *A*-properties/states. If logical strong supervenience holds, then if there were such a being as an all-powerful and all-knowing creator God, and if They were to create and/or know all the *A*-properties/states, then They would have nothing more to do in order to create and/or know all the *B*-properties/states. By contrast to logical strong supervenience, *natural* or *nomological* strong supervenience is a modally weaker notion which says that the necessitation relations between the *B*-properties/states and the *A*-properties/states are determined by laws of nature, and hold in all and only the worlds in which those natural laws obtain. It's crucial to recognize that no matter what its level of modal strength, strong supervenience specifies at best a set of *extrinsic modal properties and relations* (namely, upwards necessitation, necessary co-variation, and indiscriminability) between a thing's *A*-properties/states and its *B*-

over and above the fundamentally physical world. Eliminative materialism, by contrast, says that, given the truth of reductive materialism, minds are really nothing at all: our belief in the existence of minds is a mere illusory folk belief and a conceptual myth. Non-reductive materialism or physicalism, by another contrast, says that some but not all properties of or facts about the human mind are wholly constitutively determined by fundamentally physical properties or facts. That is: certain causally inert or epiphenomenal properties or facts about the human mind—for example, properties or facts about the normative character of rational human intentionality, or about the qualitative specific character of consciousness—vary independently of fundamentally physical properties or facts, even though all of the human mind's causally efficacious properties or facts are still wholly constitutively determined by fundamentally physical facts.

At the same time, however, even despite its official anti-Cartesianism, this recent and contemporary mainstream Analytic materialist or physicalist tradition remains entirely but (mostly only) implicitly and unself-consciously committed to a three-part metaphysical presupposition that Maiese and I call *Cartesian fundamentalism*, according to which (i) the mental (if it indeed exists at all) is fundamentally (that is, inherently, necessarily, and exclusively) non-physical, (ii) the physical is fundamentally (that is, inherently, necessarily, and exclusively) non-mental, and (iii) no actual or possible substance has or can have a complementary dual essence that's inherently and necessarily both mental and physical. Of course, Descartes himself was a Cartesian fundamentalist. But it's crucial to recognize that the presupposition of Cartesian fundamentalism is also held by 20th and 21st century property dualists, like Kripke in *Naming and Necessity* (Kripke, 1972/1980) and Chalmers in *The Conscious Mind* (Chalmers, 1996), who both postulate the conceivable and logically possible existence of essentially distinct mental and physical substances—for example, bodiless spiritual minds in pain ("pains without brains") and mindless, pain-lacking zombies ("brains without pains")—even though neither of these exists in the actual world. Indeed, all classical Cartesian interactionist substance dualists, 20th and 21st century property dualists, and also all reductive, eliminative, or non-reductive materialists or physicalists, alike, are committed to Cartesian fundamentalism. They differ among themselves only as to whether, on the

properties/states, or between any two things' *A*-properties/states and *B*-properties/states. If relations of strong supervenience hold for a thing or things, as such, then there is no further implication that these are relations of *constitution*, *essence*, or *efficacious causal power*, such that a thing's or things' immanent structural characteristics—and in particular, if the thing or things are natural or physical, their efficacious causal powers—depend on these relations. Conversely, if relations of constitution, essence, or causal efficacy hold for a thing or things, then there is no further implication that strong supervenience holds for them. In short, the metaphysics of strong supervenience is modally *shallow*, not modally deep, unlike the *real* metaphysics of manifestly real constitution, essence, or causality (Hanna, 2017).

one hand, *either* mental and physical substances or mental and physical properties possess equal but opposite ontological status—which captures classical Cartesian interactionist substance dualism and 20th and 21st century property dualism—*or*, on the other hand, the mental asymmetrically ontologically depends on the physical, or else is nothing but a folk-psychological illusion or conceptual myth—which captures reductive, eliminative, or non-reductive materialism or physicalism. Hence all reductive, eliminative, or non-reductive materialists or physicalists, at bottom, are Cartesian materialists or Cartesian physicalists, because they are fully committed to Cartesian fundamentalism, just like the classical Cartesian interactionist substance dualists and the 20th and 21st century property dualists.

In diametric opposition to recent and contemporary mainstream Analytic philosophy of mind, the essential embodiment theory completely rejects Cartesian fundamentalism, and therefore it also completely rejects classical Cartesian interactionist substance dualism, 20th and 21st century property dualism, and also reductive, eliminative, and non-reductive materialism or physicalism, alike. The essential embodiment theory also completely rejects that I call *the thesis of universal natural mechanism* and *the mechanistic worldview*. By "the thesis of universal natural mechanism," I mean the doctrine which says (i) that everything in the world either just is or is a sub-part of natural or physical processes that are either deterministic, indeterministic, or some mixture of both (say, macroscopically deterministic but microscopically indeterministic at the quantum level), and (ii) that all the causal and quantitative characteristics of those happenings are not only (ii.a) strictly fixed by the general causal laws of nature and/or the mathematical laws of probability, especially those laws governing the conservation of quantities of matter or energy, together with all the settled facts about the past, especially including The Big Bang, but also (ii.b) calculable from those laws and facts on a Turing machine, i.e. a digital computer (see, e.g., Boolos and Jeffrey, 1989). In turn, the thesis of universal natural mechanism properly belongs to the mechanistic worldview, which says that

> everything in the natural universe is fundamentally either a formal automaton or a natural automaton, operating strictly according to Turing-computable algorithms and/or time-reversible or time-symmetric deterministic or indeterministic laws of nature, especially the Conservation Laws (including the First Law of Thermodynamics) and the Second Law of Thermodynamics, which also imposes always-increasing entropy—i.e., the always-increasing unavailability of any system's thermal energy for conversion into causal (aka "mechanical") action or work—on all natural mechanisms, until a total equilibrium state of the natural universe is finally reached (see also Hanna and Paans, 2020).

Moreover, the essential embodiment theory also completely rejects *metaphysical idealism*, which says that says either (i) that everything in the natural universe is fundamentally mental (*panpsychism*—see, e.g., Goff, 2017) or (ii) that the natural universe's existence is necessarily dependent on the existence of individual minds (*subjective idealism*).

As to panpsychism, **first**, it's highly implausible that literally everything in the natural universe, including—for example, beer cans, rocks, clouds, random specks of dust, etc., etc., is actually sentient or proto-sentient—even though there's no empirical evidence of their being sentient or proto-sentient, and **second**, panpsychism implicitly commits itself to the false mechanistic worldview, by falsely attributing consciousness to mechanical systems. Correspondingly, it's a far more plausible thesis (i) that all and only living organisms are actually sentient or proto-sentient, aka *the mind-in-life thesis* (Thompson, 2007; Hanna and Maiese, 2009; Torday, Miller Jr, and Hanna, 2020; Hanna, 2024a).

As to subjective idealism, it's also highly implausible to hold that that natural universe came into existence *only after* there were any minded animals. For, since animals are parts of physical nature, it would follow that animals came into existence only after there were minded animals. And it's equally highly implausible to hold that if all individual minds were to perish, nature would go out of existence too. For in that case, since all animals die, and in most cases after animals die, their corpses continue to exist for a while, it would follow that necessarily, the last minded animal would have no corpse.

More positively now, the essential embodiment theory says (i) that the physically irreducible conscious, intentional minds of minded animals are necessarily and completely embodied in those animals, and, more specifically, (ii) that the physically irreducible conscious, intentional mind of a minded animal is the global dynamic immanent structure of the living organismic body of that very animal, a structure that synchronously activates and guides that animal's causally efficacious biological powers—or as Aristotle puts it in his own terminology: "the soul (*anima*) is the first actuality of a natural body that has life potentially" (Aristotle, 1968: II.i.412a22). Hence the essential embodiment theory is committed to an updated version of *neo-Aristotelian hylomorphism* about the mind-body relation.

According to the essential embodiment theory, consciousness is *subjective experience*, which is to say that it inherently involves a self that's egocentrically-centered in orientable space and unidirectional time (= subjectivity), and also that this self enacts or engages in mental acts, states, or processes of various kinds (= experience), and

furthermore consciousness has two basic modes: (i) *pre-reflective or non-self-conscious consciousness*, which, in being naturally directed towards cognitive or intentional targets other than itself, is immanently reflexive, or aware of itself egocentrically and subjectively, without implicitly or explicitly forming judgments or propositional thoughts about itself, and (ii) reflective consciousness, or self-consciousness, which, in being naturally directed towards, or about, itself *as* a cognitive or intentional target, is aware of itself allocentrically and objectively, by implicitly or explicitly forming judgments or propositional thoughts about itself. More simply put, pre-reflective or non-self-consciousness consciousness is just being a conscious mind that's directed towards other animals or things; whereas reflective or self-conscious consciousness is thinking about itself *as* a conscious mind that's *also* directed towards other animals or things.

Against that theoretical backdrop, the essential embodiment theory is a specially restricted version of "dual-aspectism." For other dual aspect theories, one can compare and contrast Spinoza's *theological* dual-aspect monism (in *The Ethics*), Bertrand Russell's *neutral* dual-aspect monism (in *The Analysis of Mind* and *The Analysis of Matter*), or Whitehead's *panexperientialist organicist* dual-aspect monism (in *Process and Reality*). By contrast to those three kinds of dual-aspectism, the essential embodiment theory is committed to a dual-aspect monism of complex dynamic systems, and says that in all and only appropriately complex kinds of organismic living systems, causally efficacious physically irreducible mental properties and organismic physical properties are related by two-way necessary complementarity and neo-Aristotelian hylomorphism. Or in other and fewer words: physically irreducible minds are forms of life, and nothing in nature that's not a form of life is minded.

To summarize so far: the essential embodiment theory says (i) that physically irreducible minds like ours are necessarily and completely embodied, (ii) that physically irreducible minds like ours are complex dynamic global structures of our living organismic bodies, i.e., forms of life, (iii) that physically irreducible minds like ours are therefore inherently alive, (iv) that physically irreducible minds like ours are therefore inherently causally efficacious, just like all forms of organismic life, and (v) that physically irreducible minds like ours emerge over time and in space in all and only certain kinds of living organisms, i.e., minded animals.

Furthermore, if by *autonomy* we mean *a capacity for self-determination in the broadest possible sense*, then we can also distinguish between (v1) *the autonomy of proto-consciousness*, a minimal and relatively self-less endogenous sensibility possessed by all living organisms, all the way down to unicellular organisms, (v2) *the autonomy of pre-reflective consciousness*, an egocentric and immanently self-aware, self-locating sensibility possessed by all minded animals, and (v3) *the autonomy of self-consciousness*, a further and

specifically rational conscious capacity to represent oneself by means of concepts and judgments, which requires and indeed presupposes that we're also able to think propositionally, speak richly-structured natural languages, and engage in logical reasoning (Hanna, 2006b: ch. 4).

Now in addition to self-consciousness, rational human minded animals are not only inherently capable of (i) consciousness, that is, subjective experience (as defined above), but also of (ii) *intentionality*, or "consciousness-of," that is, directedness to all kinds of things as their cognitive, desiderative, emotional, etc., targets. More generally, consciousness and intentionality are complementary: they're distinct capacities, but also necessarily mutually connected capacities. More specifically, necessarily, all conscious acts, states, or processes are also intentional acts, states, or processes (this thesis is also sometimes called "the intentionality of phenomenology") and all intentional acts, states, and processes are also conscious acts, states, or processes (this thesis is also sometimes called "the phenomenology of intentionality"). Our complementary capacities for consciousness and intentionality are also shared with minded animals in many other species, but are self-evidently phenomenologically manifest real in minds like ours, via our further capacity for specifically rational consciousness, intentionality, and self-consciousness, not only as per Descartes's *Cogito*, "I think, therefore I am," but also, and even more fundamentally, via our capacity for essentially embodied affective, felt, and emotional consciousness, intentionality, and self-consciousness, as per what Maiese and I call *The Essentially Embodied Cogito*, "I desire, therefore I am" (Hanna and Maiese, 2009: p. 21).

In view of all that, here are eight reasons why the essential embodiment theory not only *dissolves* the mind-body problem and the problem of mental causation, but also finally *solves* them.

First, the essential embodiment theory fully avoids reducing the mental to the physical, i.e., it fully avoids reductive materialism or physicalism. Reductive materialism or physicalism, as we've seen, ends up in eliminativism. But, as per the first paragraph of this essay, what could be more phenomenologically or epistemically primitive than our subjective experience of ourselves *as* conscious, intentional minds, and correspondingly, what then could be more metaphysically and ontologically primitive than the fact of the mental *quâ* mental?

Second, the essential embodiment theory also fully avoids non-reductive materialism or physicalism and solves the problem of mental causation. Non-reductive materialism or physicalism entails the causal inertness of the mental or epiphenomenalism, hence it robs the mental of all its efficacious causal power. By a

diametric contrast, the essential embodiment theory identifies the causal efficacy of physically irreducible minds with the causally efficacious powers of appropriately complex dynamic organismic systems. It is no theoretical virtue of epiphenomenalism that the mental still has "causal relevance" even though it has no causal efficacy. On the contrary, for mental causation to be really possible, the mental has got to have efficacious causal powers of its own, not merely an important informational bearing on causally efficacious fundamentally physical processes. According to the essential embodiment theory, physically irreducible minds like ours have efficacious causal powers of their own precisely insofar as they're forms of life, and therefore synchronous structuring guidance-causes of appropriately complex dynamic organismic systems, i.e., our "human, all-too-human" minded animal bodies.

Third, by means of its solution to the problem of mental causation, the essential embodiment theory provides adequate metaphysical foundations for a robust metaphysics of free agency (Hanna, 2018, 2020, 2024a).

Fourth, the essential embodiment theory also fully avoids reducing the physical to the mental, i.e., it fully avoids metaphysical idealism, whether panpsychism or subjective idealism.

Fifth, the essential embodiment theory also fully avoids making the mental and the physical either essentially or even logically independent of one another, as per either Cartesian interactionist substance dualism or 20th and 21st century property dualism. Any form of dualism makes it impossible to explain how the mental and the physical causally interact without appealing to some sort of metaphysical mystery: for example, Descartes's God, Leibniz's divine pre-established harmony, an ectoplasmic medium, etc., etc. And any form of dualism also entails the synthetic a priori metaphysical impossibilities (i) that subjective experiences could ever exist without embodiment in living animal bodies like ours, (ii) that living animal bodies like ours could ever exist without subjective experiences. According to the essential embodiment theory, spirits and zombies alike are synthetic a priori or strongly metaphysically impossible, even though they're also analytically or logically possible.

Sixth, the essential embodiment theory also fully avoids over-restricting mentality to the brain, i.e., it fully avoids the error of "the brain-bounded mind" (Hanna, 2011).

Seventh, the essential embodiment theory also fully avoids *over*-extending the mental beyond living animal bodies like ours, i.e., it avoids the error of "the extended mind" (Clark and Chalmers, 1998; Clark, 2008; Gallagher, 2011).

Eighth, and perhaps most importantly, building on the sixth and seventh points, the essential embodiment theory is an approach to the mind-body relation and mental causation that's perfectly scaled to the nature, scope, and limits of our "human, all too human" existence in a thoroughly nonideal natural and social world. Brain-boundedness falls short of the human condition: it makes us much less than we manifestly are. The extended mind exceeds the human condition: it makes us more than we manifestly are. Only the essential embodiment theory adequately captures and reflects what I call *the rational human condition*: it tells us exactly what we manifestly really are. For I just *am* my rational minded animal body and its "human, all-too-human" life, for better or worse. In short, of all the mind-body theories out there (in all the gin joints in all the towns in all the world), *only* the essential embodiment theory conforms to Socrates's Delphic-Oracle-inspired thesis that the ultimate aim of philosophy is to "know thyself."

In section 16.2 of *Science for Humans* (Hanna, 2024a: pp. 190-198) I pointed out the profoundly significant fact that any and every attempt to explain or justify human rationality—and also, equally significantly, any and every attempt to criticize or debunk human rationality—must already presuppose and use our manifestly real innate capacity for human rationality. For all explanation and justification—and also all critical arguments and debunking arguments—are, by their very nature, human rational activities. So human rationality is inherently circular. I called this *the ratiocentric predicament*.[2] In that section, I also argued that the ratiocentric predicament expresses a logico-philosophically good or virtuous circularity, not a logico-philosophically bad or vicious circularity. Now, an extremely important implication of the ratiocentric predicament is that what holds for our innate capacity for human rationality as such, also holds for each and every innate sub-capacity of human rationality—for example, consciousness. That such a sub-capacity actually exists, follows directly and self-evidently from the fact that you, the reader of this very sentence, are now consciously reading this very sentence (Hanna, 2024b). Therefore, any and every attempt to explain consciousness or justify a theory of consciousness, must already presuppose and use our manifestly real innate capacity for consciousness. Let's call this *the psychocentric predicament*.

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[2] The ratiocentric predicament is a generalization of the classical hard problem in philosophical logic known as *the logocentric predicament*, formulated in 1926 by Harry Sheffer:

> [i]n order to give an account of logic, we must presuppose and employ logic. (Sheffer, 1926: p. 228)

See also (Hanna, 2006b: ch. 3).

Let's now apply the psychocentric predicament to the mind-body problem. Any attempt to explain the nature of consciousness or justify a theory of consciousness must presuppose and use our manifestly real non-materialistic or non-physicalistic, non-mechanical, and more specifically uncomputable innate capacity for human rationality (Hanna, 2024b: pp. 190-198), which in turn necessarily includes our manifestly real non-materialistic or non-physicalistic, non-mechanical, and more specifically uncomputable innate sub-capacity for consciousness-of not only (i) all irreducibly necessary facts known only a priori about truth, falsity, logical connectives, logical operations, logical consistency and inconsistency, logical validity, logical soundness, numbers, other mathematical objects, mathematical operations, mathematical laws, mathematical proofs, the causal powers and operations of living organisms, and the laws of nature that govern those causal powers and operations (Hanna, 2015, 2024a: ch. 3), but also (ii) many irreducibly uncomputable functions applying to truth, falsity, logical connectives, logical operations, logical consistency and inconsistency, logical validity, logical soundness, logical proofs, numbers, other mathematical objects, mathematical operations, mathematical laws, mathematical proofs, the causal powers and operations of living organisms, and the laws of nature that govern those causal powers and operations (Torday, Miller Jr, and Hanna, 2020; Hanna, 2024a: ch. 8). For example, insofar as you read and understand logic texts, mathematics texts, physics texts, biology texts, chemistry texts, and so-on through all the formal and natural sciences, or philosophy texts—including this very one—then you consciously read and understand them. Above all, in order to be able to write any legible text in cognitive neuroscience, we must already presuppose and use our manifestly real non-materialistic or non-physicalistic, non-mechanical, and more specifically uncomputable innate capacity to read and understand that text consciously (Hanna, 2024b). The psychocentric predicament is therefore a critical weapon against any and every *hard science of consciousness*—by which I mean any and every science of consciousness that's either materialist or physicalist, or naturally mechanistic, or in any other way reductive: for example, any computational or informational theory of consciousness. Correspondingly, it's important to recognize that my critical argument, if sound, also fully leaves open the real possibility of a *soft* science of consciousness—by which I mean any science of consciousness that's *neither* materialist nor physicalist, *nor* naturally mechanistic, *nor* in any other way reductive, for example, computational or informational. Indeed, the present essay presents the rudiments of a soft science of consciousness.

Let's now suppose that EET is true. In a recent book, I've argued (i) that there's a real and not merely metaphorical sense in which *consciousness is a fifth fundamental force in the natural universe*, along with the strong nuclear force, the weak nuclear force, electromagnetism, and gravitation, and also (ii) that even though the range of the fundamental force of consciousness is limited, in its initial exertions, to what we can

efficaciously cause by means of our essentially embodied free agency—for example, freely moving a coffee mug from one place to another—nevertheless,

> all experimental detection devices and experimental measuring devices, insofar as they're intentionally designed, constructed, and operated by *physicists*, must *already presuppose and use unreduced consciousness*. In turn, the operations of those experimental detection devices and experimental measuring devices directly affect, constrain, and shape the operations of the other four fundamental forces: that's what general relativity theory and quantum mechanics are all about. Furthermore, as I've worked it out in Chap. 7 above, there's a strong argument for what I call *The Moderate Anthropic Principle*, or MAP, which says that
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> > the natural universe, from The Big Bang forward, structurally contains our real possibility as rational "human, all-too-human" minded animals.
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> And all physicists are rational "human, all-too-human" minded animals. Therefore, *by virtue of physicists doing experimental physics, when taken together with MAP*, it follows that the operational range of consciousness is also as wide and as deep as the scientifically known and knowable natural universe according to the Standard models of cosmology and particle physics. As such, consciousness literally *pulls* the known and knowable natural universe from its determinate cosmological origins into the actual present and onwards forever into the infinite cosmological future. (Hanna, 2024a: p. 210)

Let's call thesis (i) *the consciousness-is-the-fifth-fundamental-force thesis*, or the CFFF thesis for short. And let's call thesis (ii) *the consciousness-in-experimental-physics thesis*, or the CEP thesis for short.

Now, here is what the contemporary cosmologist, Thomas Hertog, building on the work of the later Stephen Hawking, calls *top-down cosmology*:

> In this book I have argued that a genuine quantum outlook on the universe counters the relentless alienating forces of modern science and lets one build cosmology anew from an interior viewpoint—the essence of Hawking's final theory. In a quantum universe, a tangible past and future emerge out of a haze of possibilties by means of a continual process of questioning and observing. This observership, the interactive process at the heart of quantum theory that transforms what might be into what does happen, constantly draws the universe more firmly into existence. Observers—in this quantum sense—acquire a sort of creative role in cosmic affairs that imbues cosmology with a delicate subjective touch. Observership also introduces a subtle backward-in-time element into cosmological theory, for it is as if the act of observation today retroactively fixes the outcome of the big bang "back then." This is why Stephen referred to his final theory as top-down cosmology; we read the fundamentals of the history of the universe

> backward—from the top down…. Top-down cosmology turns the riddle of the universe's apparent design in a sense upside down. It embodies the view that down at the quantum level, the universe bioengineers its own biofriendliness. Life and the universe are in some way a mutual fit, according to the theory, because, in a deeper sense, they come into existence together. In effect, I venture to claim that this view captures the true spirit of the Copernican Revolution. When Copernicus put the sun at the center, he realized all too well that from then on one would need to take the motion of the Earth around the sun into account in order to interpret astronomical observations correctly. The Copernican Revolution did not pretend that our position in the universe is irrelevant, only that it isn't privileged. Five centuries on, top-down cosmology returns to these roots. (Hertog, 2023: pp. 254-255)

In my opinion, when the FoL thesis, the essential embodiment theory, MAP, the CFFF thesis and the CEP thesis are conjoined, *they collectively explain and rationally justify Hawking's and Hertog's top-down cosmology*.

In turn, this five-part conjunction also provides a rich metaphysical framework for Hawking's profound remark, as recalled by Hertog:

> *With [a] top-down [approach] we put humankind back in the center [of cosmological theory]*, he said. *Interestingly, this is what gives us control*. (Hawking, as quoted in Hertog, 2023: p. 207, italics in the original)

This remark captures Nicolaus Copernicus's original Copernican Revolution in 16th century cosmology, as refracted through Immanuel Kant's 18th century Copernican Revolution in metaphysics in the *Critique of Pure Reason*, as refracted yet again through Hawking's and Hertog's 21st century top-down cosmology, finally coming home to where it always truly belonged (Hanna, 2024a: ch. 7).

I conclude that the FoL thesis is true: consciousness is a form of life. Consciousness is no more mysterious than our essentially embodied, "human, all-too-human" animal lives are mysterious. As is so often the case, the definitive solution to an apparently impossibly hard philosophical problem—the mind-body probem—was sitting there right in front of us all along, staring us in the face.

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