

QUANTUM PANPSYCHISM AND THE LIGHT BULB METAPHOR

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This paper outlines an approach which casts new light on some unsolved issues surrounding mind and matter, like: What tells them apart? How do they communicate?... It argues, with a little help from quantum physics, that plain matter may be richer than what we are wont to believe. It assumes that consciousness is a nonmaterial content of the world and infers that the mind expands beyond the biological brain. It also suggests a new way to figure out what role the brain plays in conscious awareness, and it puts forward a fresh insight as regards the mind-body dialogue.

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Why panpsychism?

Conscious awareness is a big mystery. It is hardly accounted for by materialism or physicalism, which holds that science can in principle give a full account of every fact, event, and object in our universe. Is this claim true; and, more pointedly, can science, as it is today, handle the issue of sentience?¹ I do doubt it, all the more so that, as emphasized by David Chalmers, “It is widely agreed that experience arises from a physical basis, but we have no good explanation of how and why it so arises.” Besides, wrote Steve Taylor, “For about 30 years now, neuroscientists have been attempting to explain consciousness in terms of brain functioning but have made no progress whatsoever. Even amongst mainstream scientists, there is a growing acceptance now that consciousness can’t be explained in terms of neural mechanisms.”²

¹ The British philosopher Philip Goff notes that “The irony is that physicalism has done so well and explained so much precisely because it was designated to exclude consciousness.” However, the physicalist or materialist thinking typically rests on outdated concepts of classical physics such as the localization and spatial separation of objects. Given the richness and subtlety of quantum matter, this is certainly wanting. Yet, some will object that quantum effects in the brain are very unlikely, if not outright impossible, because the “wetware” of the brain is warm, macroscopic, and messy. Such an environment is widely thought to nip quantum effects in the bud. However, quantum biology shows convincingly that quantum effects—e.g., tunnelling, superpositions, entanglement—crop up in living organisms... which are often warm, macroscopic, and messy (these effects are thought to play out in olfaction, in photosynthesis, in enzymes, etc.). Notice that chemical reactions, too, rest on quantum features, regardless of where they take place.

² From Steve Taylor’s article, ‘Is Scientism a Fundamentalist Religion?’, in *Paradigm Explorer* 2022/2.

Brain consciousness remains to this day a “hard problem”, as hard as ever. In an interview to the press, Chalmers commented: “*There’s certainly correlations between brain processes and consciousness, and we’re making a lot of progress at narrowing down which processes in the brain are more correlated with consciousness, but (...) there’s really nothing here that would explain why consciousness exists wholly in terms of the brain.*”³ In the same vein, Peter Ellis notes that “*No one knows what characteristics a physical state must have in order to have an associated mental state.*”⁴

I believe that materialism is bound to fail because consciousness cannot be reduced to matter and hails from an extra dimension of our world. More precisely, I cast my vote for the so-called *limited panpsychism*, which endows subatomic or elementary particles with rudimentary sentient properties by stating that nascent conscious properties exist in all matter.⁵ Don’t get me wrong however: I am not “psychologizing” elementary particles. I merely assume them to be proto- or infra-conscious, this meaning that they possess exceedingly faint “psychical” properties, almost to the point of nonexistence.

I use the word **psychism** as an umbrella word referring to the whole gamut of awareness. Limited panpsychism, then, rests on the assumption that every particle is also a “seed of sentience” or a “speck of awareness.” As Thomas Nagel puts it in his book *Mortal Questions*, “*the basic physical constituents of the universe have mental properties, whether or not they are part of living organisms.*”

Thomas Nagel, in *Mortal Questions* again, argues cogently in favour of the panpsychic idea. He writes: “*If the mental properties of an organism are not implied by any physical properties of the organism’s constituents, then those constituents must have non-physical properties from which the appearance of mental properties follow when the combination is of the right kind. Since any matter can compose an organism, all matter must have these properties.*” I fully agree with Nagel, and a similar view prompted me to think of matter as something richer— something blessed with an extra content or dimension—that I call **holomatter**. Here, I’ll assume it to be the true face of matter. I then dub *holoparticles* the elementary particles of holomatter that, for simplicity’s sake, I’ll often call particles too.

Why quantum?

The strand of limited panpsychism that is based on holomatter deserves to be named a *quantum* panpsychism. We’ll soon gather why. It assumes that two types of causality, that I call out-causation and in-causation, coexist in nature. My hunch is that they bring about some odd quantum features by their very presence and by their interplay. **Out-causation** means causation from the outside. **In-causation** means causation from the inside. They can be thus defined:



Out-causation, or causation from without, is a form of causality forced from the outside. It is out of reach and cannot be tampered with, which makes it changeless and deterministic. *In short: **out-causation comes across as deterministic.***



In-causation, or causation from within, stems from the inside, as if driven by some inner agency. Therefore, it is within reach as it were. It can be modified by sudden and unpredictable “self-willed” changes and so, it smacks of randomness. *In short: **in-causation displays randomness.***

³ Excerpt from an interview of David Chalmers in *Gadfly Web magazine*, June 13, 2021. The *hard problem* refers to the puzzle of why some biological processes in the brain should be accompanied by conscious experience at all. This remains a mystery—today no less than ever before.

⁴ Peter Ellis, *Panpsychism*, O-Books, 2011.

⁵ It appears that this limited panpsychism was endorsed by thinkers like Baruch Spinoza, Gottfried Leibniz, William James, Pierre Teilhard de Chardin, Alfred North Whitehead and David Bohm.

For example, an apple falling to the ground under the pull of gravity, and ice thawing under the sun, are two instances of out-causal events. Note that the effects of out-causation are necessary and unavoidable. On the other hand, when someone decides to act this way or that one, freely and on whim, and does so, this drives an in-causal event.⁶ Indeed, “*If no cause for an event can be determined with the discipline of physics, this does not imply that there is no cause at all. (...) there is nothing inconsistent in saying that an event that is random in the context of physics is in fact an authentic free choice based on sentience.*”⁷

Holoparticles have two parts, or components. One is deterministic and out-causal, the other is random-looking and in-causal. This strongly hints (a) that the randomness of some quantum events is a smoking gun evidence of in-causation, and (b) that the laws and properties of quantum physics govern the interplay between the (holo)particles’ parts. This is explained at some length in two articles posted on the Galileo Commission website.⁸ Obviously, when we miss holomatter, assumed here to be true, for plain matter, the features and events that involve in-causation are bound to mess with our intuition and to remain unexplained. Acknowledging holomatter ought, on the other hand, to cut down on quantum weirdness, or to remove it altogether. If so, *quantum weirdness, like beauty, is in the eye of the beholder!*

More to the point, holomatter suggests that the randomness of some quantum events is a smoking gun evidence of in-causation. Quantum entanglement would arise from in-causation too. This is my proposed insight; and this is why I call *quantum* panpsychism the type of panpsychism that rests on the holomatter idea. Indeed, as we’ll see, it turns out that holomatter provides straight answers to such questions as:

- What is the meaning of the wave-particle duality of quantum mechanics?
- How is it that an electron, say, evolves most of the time in a well-behaved way, but occasionally goes through unruly events known as jumps or collapses?⁹
- Why is it that quantum entanglement brings about *instantaneous* correlations between remote events, when nothing ever travels faster than light?

The poached egg and the lamp metaphors

In what follows, it will be helpful, I believe, to think of the (holo)particle as a... poached egg, since both this egg and the (holo)particle have two very different parts—one obvious, the other hidden. I could add, with an eye on quantum entanglement, that the obvious and solid part is clear-cut and disconnected from one particle (and egg) to another, while the hidden, soft and “sticky” part is prone to be “glued” from one particle to another. In this culinary metaphor, the poached egg’s solid white stands for the particle’s out-causal part and the soft and “sticky” yolk stands for its in-causal part.¹⁰

To keep it simple, I’ll say that a particle shows its “white” when its evolution is out-causal. This “white-driven” evolution is smooth, deterministic, wavelike, and relativistic—this meaning that it follows the rules

⁶ Let me stress, here, that (a) as a rule, many factors influence someone’s “free” choice to act: some of them are known, many of them are unknown—freedom is hardly ever an all-or-nothing affair; and (b) out-causal events, as a rule again, can be described by physical laws as *correlated* occurrences—correlated and also *necessary*, given the physical context. Indeed, physical laws can fully account for them without having to refer to causality.

⁷ Peter Ellis, *Panpsychism*, already quoted.

⁸ See at <https://galileocommission.org/can-we-crack-the-mind-body-problem-i-emmanuel-ransford>, and at <https://galileocommission.org/can-we-crack-the-mind-body-problem-ii-emmanuel-ransford/?swcfpc=1>. The overall link is: <https://galileocommission.org/category/authors/emmanuel-ransford/?swcfpc=1>.

⁹ Well-behaved evolutions are smooth, deterministic, wavelike, unitary, and relativistic. They also obey a wave equation. Unruly events do not. They are, contrariwise, sudden, random, waveless, nonunitary and nonrelativistic.

¹⁰ The particle’s “yolk” or in-causal part would hardly ever show its presence because it would be overwhelmingly latent, or dormant. It would pull out of its latency and becomes active under very specific circumstances only. This, incidentally, would be the reason why it is overlooked or forgotten about. More at <https://galileocommission.org/can-we-crack-the-mind-body-problem-part-i-emmanuel-ransford>.

of Einstein's relativity. A particle shows its "yolk", on the other hand, when its evolution is in-causal. This "yolk-driven" evolution occurs as the in-causal part is active, whereas it is dormant or latent most of the time. It elicits a random event that has none of the usual trappings of matter and can be thought of as nonphysical.¹¹ Besides, when the "yolks" of two particles are glued or welded together, these particles are said to be entangled.¹²

The upshot is that a particle of holomatter comes under two alternative guises, much like water that can be liquid and also solid ice. One guise is the white-driven state, where the "white" calls the shots whilst the "yolk" remains dormant, or latent. I call it the *matter* state. The other is the yolk-driven state, where the "yolk" holds its sway and triggers a random and waveless micro-event. I call it the *paral* state. The particles of holomatter are thus characterised by a *matter-paral duality* which, incidentally, could be the root cause of the wave-particle duality of quantum mechanics.¹³

Additionally, and most importantly, the holomatter hypothesis gives a possible handle on the vexed question of the conscious brain, *provided* we go one step further and assume that:

- The particle's out-causal "white"—deterministic and law-abiding as it is—is purely material.
- The particle's in-causal "yolk"—prone to low-level initiatives, and hence seemingly random—is psychical.¹⁴

The view that the "white" is physical and that the "yolk" is psychical strongly suggests that brain consciousness and the mind-body dialogue both involve the particles' yolks and their interactions with the whites. Expect these interactions, if they exist, to be markedly different from the deterministic, wave-like, and relativistic matter-matter or white-white interactions. Also expect these interactions, be they yolk-yolk or yolk-white, to be weird and baffling for physicalism, as it flatly ignores the yolks and makes no room for the in-causation that pull their strings.

Has science unwittingly spotted them? I believe it to be the case, with quantum physics; even though this theory cannot yet make sense of them, given that it disowns in-causation. Now, to go further, I put forward the im-im hypothesis, where "im-im" stands for *immaterial* and *immanent*, as I explain now:

¹¹ Recall that the "yolk" doesn't comply with the out-causal rules and constraints of the "white," which are those of ordinary matter. These random-looking, sudden and discontinuous, waveless and particle-like, non-relativistic and non-unitary events are often called wave collapses or quantum jumps and leaps.

¹² In the holomatter understanding, entanglement results from the binding of particles through their yolks, whereby these entangled yolks forgo their individuality and form a broader psychical whole. I call *supralness* this yolk-binding (or 'in-binding') property, which still leaves the particles' whites separate. More at: <https://galileocommission.org/can-we-crack-the-mind-body-problem-part-ii-emmanuel-ransford/?swcfpc=1>. Also see these books (in French): *Huit Leçons Essentielles sur la Science Quantique* and *L'Origine Quantique de la conscience*.

¹³ The paral, or "yolk-driven" state of holomatter, triggers quantum jumps and collapses. Once it is over and unless the particle is destroyed in the process, a point-particle seems to pop out right away. This, however, is an illusion due to the fact that the jump shrinks the (holo)particle from a superposed (or fuzzy) initial state to a final so-called "eigen" (or narrow, or sharp) quantum state. (Both these states, before and after the jump itself, are "white-driven". Only the jump is "yolk-driven".) The point-particle illusion is created by the sharp final state. It is worth mentioning, here, that the wave-particle duality is well illustrated by the two-slit experiment. My analysis and interpretation of this landmark experiment can be found in the book *L'Origine Quantique de la conscience*, which highlights the key role of the *quantumhood principle*. This principle—which is *le principe de quantition* in French—bears on the integrity or wholeness of elementary particles. (A detector prompts a particle to undergo a quantum jump or a wave collapse *because* it threatens to breach this principle. Again, more on this at <https://galileocommission.org/can-we-crack-the-mind-body-problem-part-i-emmanuel-ransford/>.)

¹⁴ By *psychical*, I mean something having some kind of agency and pertaining to the realm of subjective experience, however faint it be—no need for it to be fully aware.

¹⁵ This excerpt and the two that follow are from my paper 'Expanding Matter: A New Postmaterialist take on Quantum Consciousness', in *Expanding Science. Visions of a Postmaterialist Paradigm*, Vol.2, Postmaterialist Sciences Series, AAPS Press, 2020. (As we know, our immanent world is that of trees, stars, fires and whatever belongs to the world out there. Entities like angels, the soul, and God are not immanent but transcendent. Immanence and its opposite, transcendence, are two metaphysical notions.)

Schematically speaking, (...) materialism takes it for granted that consciousness is both material and immanent, while dualism [or] “spiritualism” takes it for granted that consciousness is both immaterial and transcendent. But these aren't the sole options. Indeed, the [im-im] hypothesis stands somewhere in between, in the following sense:

→ with materialism (or [physicalism]) it shares the idea of an *immanent* consciousness

→ with dualism (or spiritualism) it shares the idea of a nonmaterial, or an *immaterial*, consciousness

Accordingly, the conscious brain can be understood through the lightbulb metaphor, along these lines:

If a lightbulb emits only a few photons at a time, it hardly generates any light at all since this light is much too dim to be seen. When on the contrary it yields huge myriads of photons (as it normally does), it produces a visible light. This is obvious enough. Now think ‘brain’ instead of ‘lightbulb’ and ‘consciousness’ instead of ‘light’.

And then, if we call a quantum jump (or a ‘wave collapse’) a “spark of consciousness” since it pulls the “yolk” out of its state of slumber or latency,

A lightbulb that gives off few photons at a time becomes a brain where not so many jumps occur at a time. Too few [jumps, or] sparks of consciousness won't add up to a full-blown conscious state. Expect this state to be dim (...). It would take vast and consistent streams of entangled jumps to achieve true consciousness, much like a visible light arises from huge flows of photons.

My proposed insight, in a nutshell, is that **the brain is a catalyst of the mind**. It is a biological “lamp” of sorts that pours out untold sparks of consciousness instead of untold sparks of light—or photons—in the case of ordinary lamps and lightbulbs.¹⁶ If so, it is little wonder that our experience and perceptions are *correlated* with what goes on in our brain. Indeed, some of the brain's neural activity could be about spawning large flows of active and entangled yolks that, within the im-im framework, would underpin ordinary consciousness. They are dynamical, and this would be the reason why our minds are never at rest.

This, in a few words, gives an outline of the proposed im-im insight on the conscious brain, which makes it plain why consciousness, albeit immaterial, needs a physical structure to ‘catalyse’ it into being—just as, say, urban nightlights need lamps, and what have you, to catalyse light into being. In this lightbulb metaphor, consciousness can reach various possible levels of awareness, much like light given off by a lamp can vary in intensity. As Susan Greenfield puts it, “*Consciousness is like a “dimmer switch” that can be turned on gradually.*”¹⁷

Cracking the mind-body problem

Can the im-im proposal shed new light on the mind-body problem, which has bedevilled countless generations of thinkers and scientists alike? I believe the answer to be positive. Here is why. To start with, the im-im proposal reframes this problem as one about the interplay between out-causation and in-causation, assumed to be physical and psychological respectively. At its simplest and barest, this interplay is an interaction, within a (holo)particle, between its out-causal ‘white’ and its in-causal ‘yolk’. I call it the **deed**: “*To pin down the deed, look no further than inside any elementary particle and find out whether and how*

¹⁶ The brain would pull off its amazing feat of being conscious owing to what I dub its *paralgens*, as explained in some of my books and in these two articles: (1) ‘Peeking at the Conscious Brain: New Clues, New Challenges’, in the *ANPA WEST Journal*, Vol. 5, No 2, Winter 1995; and (2) ‘Panpsychism, the Conscious Brain, and Beyond,’ in *Science and the Primacy of Consciousness*, R. Amoroso et al. (ed.s), The Noetic Press, 2001. Incidentally, these brain paralgens afford a means to put the im-im proposal to the test.

¹⁷ Susan Greenfield is a British research scientist who wrote several books, including *Journey to the Centers of the Mind: toward a science of consciousness*.

*its [in-causal and random ‘yolk’] and its [out-causal and deterministic ‘white’] twitch and jolt each other.”*¹⁸
I reckon that

The deed is no mystery. [If] holomatter holds any water, it is etched in the makeup of elementary particles—and it was hiding in plain sight all along! We failed to spot it because we mistook holomatter for plain matter, or so do I suspect.

If it exists, what is this deed made of? The quantum features of elementary particles kindly provide the answer. It goes as follows for, say, an electron: (a) the psychical yolk of the electron thwacks and shifts its material white by means of the jump or collapse that it brings about. Conversely, (b) the material white—along with its broader physical environment—meddles with the psychical yolk by threatening to split its waves into separate bits.¹⁹ Such a **quantum threat** will elicit a jump, that will lift the yolk out of its latency.

However, quantum threats and jumps are not the whole story yet. To account for the amazing richness and diversity of the mind-body dialogue as we experience it, something else is clearly needed. This ‘something’ is likely to be quantum entanglement—seen, here, as arising from the binding of the yolks, or in-causal parts, of particles of holomatter (*in short*: to arise from the ‘in-binding’ of holoparticles).

All this spells out the im-im take on the mind-body problem. It peels away at the mystery surrounding the deed and dispels, I believe, the “*lingering suspicion that if psychism and the mind were truly nonmaterial, the mind-body interaction would go smack against the laws of physics.*”²⁰ Indeed, “*The deed and its two components, quantum threats and jumps, are clearly not incompatible with the laws of physics—instead, they are written into them.*” They hide behind the humdrum mask of quantum randomness.

I hope that the im-im claim may one day be put to the test...

Qualia, the non-local mind, and beyond

Quantum panpsychism has also something to say, tentatively of course, about the underpinnings of qualia. It implies that these contents of our subjective experience—e.g., the *felt* redness of red—stem from patterns and structures that combine, say, beads and threads. I call **suprels** these structures, which belong to the in-causal level of holomatter and, accordingly, are altogether invisible, nonlocal, and psychical or mental in nature. The notion of suprel is easy to grasp through the beads-and-threads metaphor, where the “beads” are the out-causal parts (or ‘whites’) of holoparticles and the “threads” are the links of entanglement that bind their in-causal parts (or ‘yolks’) across space; or rather, across space-time:

Take a handful of beads, and threads to bind them. With these, (...) make objects shaped into stars, pears, flowers, butterflies—whatever you wish. These shapes or patterns bring structure, *and hence information*, to your beads-and-threads treasure trove. They encode and store data: one shape encodes the information “star,” another the information “pear,” the next one the information “flower,” and so on. (...) If we take particles instead of beads and [links of entanglement] instead of threads, we likewise conclude that the in-causal dimension can encode and store [or *memorize*] information.²¹

¹⁸ Excerpt from article ‘Psychism, the Deed, and Beyond’, third part of my four-part text ‘Can we Crack the Mind-Body Problem?’. See at <https://galileocommission.org/category/authors/emmanuel-ransford/?swcfpc=1>. (There, I call the holoparticle’s out-causal part, or “white”, its **outdown**; and **inup** its in-causal part, or “yolk”.)

¹⁹ The snag about such a quantum threat is that the mutually interfering quantum waves tied to the electron are in danger of being split into non-interfering bits, which is strictly forbidden by the quantumhood principle already mentioned. This splitting being strictly ruled out, what happens instead is a jump or collapse.

²⁰ This passage and the next ones are from my article ‘Expanding Matter: A New Postmaterialist take on Quantum Consciousness’, in *Expanding Science. Visions of a Postmaterialist Paradigm* (AAPS Press, 2020).

²¹ New excerpt from my ‘Expanding Matter’ article. When the “yolks” become active, the particles (or “beads”) in a suprel become “sparks of consciousness” that shine—i.e., become active—together. Then they are consciously felt, often as components of broader qualia. Intriguingly, when we handle qubits in quantum computation, we also manipulate suprels.

Where are we now? We saw that the im-im or holomatter version of quantum panpsychism implies that the human mind needs some “lamp of consciousness” to appear. Because threads of entanglement—seen as psychical threads, or 'psi'-threads for short—would be part of the make-up of the mind, it also implies that the latter is non-local. Overall, these threads form a huge cosmic network of interconnections, of sharing and solidarity:

All lifeforms are part and parcel of a big whole, of a cosmic community held together by a universe-wide patchwork of unseen 'psi' or [psychical] threads, tangles and webs. (...) Owing to it, we live in a truly participatory world. (...) We bask in an all-encompassing pool of shared 'psi' resources (...). This pool can be likened to a world-soul, to an indwelling energy which permeates, unseen, everything and everyone. Being the wellspring of our egoless nature, it makes us vastly larger than life.²²

To quote William James, “*We are all like islands, separate at the surface but connected in the deep.*” We truly belong to something larger than ourselves, since everything is potentially connected through entanglement. As the poet Francis Thompson famously wrote, “*All things ... near and far, / Hiddenly to each other linked are, / That thou canst not stir a flower / Without troubling a star.*”

Let me add a few extra words about in-causation. So far, all the talk was about *partial* in-causation. Partial it was, because it was wedded to *partial* out-causation in such a way that the two, in holomatter, couldn't be wrung apart. But what if in-causation were *total*, that is, free from any hint of out-causation? My answer is that such a pristine form of in-causation comes with novel features that partial in-causation lacks. To tell it apart, I dub it **ur-causation**.²³ An ur-causal entity enjoys an unrestrained and unlimited creativity. This entails that it can change itself—and, *most extraordinarily yet on sound logical grounds, it can even create itself!* Accordingly, it has no set attributes whatsoever; aside, of course, from its (meta)attribute of pure in-causation. Not does it unfurl in any fixed space, time, and space-time fabric.

Ur-causation takes us far beyond our immanent world. It points to a transcendent level of reality, where the rational mind loses its grip.²⁴ But where the mind loses its grip, the heart can still feel and see...

²² Passage adapted from my article ‘Making Sense of our Mind-Body-Soul Nature, the Panpsychic Way’, published in the 1980s by the International Association of Spiritual Psychiatry (alas, I couldn't find its exact reference).

²³ The prefix ‘ur’ conveys the idea of being primordial. Interestingly, we may recall that Ur of Chaldea, in southern Mesopotamia, was one of the first towns or cities of humankind. It was also the birthplace of the religious patriarch Abraham. Since our language and our logic cannot handle the rather preternatural and hard-to-fathom concept of ur-causation properly, if we are to grasp anything meaningful about it, we are faced with the daunting challenge of having to develop a suitable “ur-logic” and “ur-concepts”.

²⁴ Let me add that ur-causation might be, in a way that we can't really fathom, hyper-psychical; much as partial in-causation was allegedly psychical in holomatter. If so, an ur-causal entity would be a “hyper-mind” of sorts or, say, a transcendent “Spirit”. This is an unexpected musing, since I started with an im-im proposal that rests on the assumption that ordinary consciousness is immanent!