

# Leibnizian Redux: A Monadology Through Quantum Brain Theory

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Central features of Leibniz's windowless monadology are consistent with recent developments of quantum brain theory, in particular quantum thermofield brain dynamics. The philosophical framework adopted here is existential rather than that of the usually presumed consciousness. The quantum mechanism through which each brain creates its own world thrownness in parallel is described, while there is actually no world "out there," but only quantum objects at all scales. The triple tuning of each Dasein's brain (as quantum macroscopic object) continually throws Dasein amidst a real appearing world as a function of processes in its vacuum state thermofield dynamical "between".

**Key Words:** Leibniz's windowless monadology, quantum thermofield brain dynamic.

*Quantum Biosystems. 12 (1) 1-8*

*I shut my eyes and all the world drops dead  
I lift my eyes and all is born again  
I think I made you up inside my head.*

*The stars go waltzing out in blue and red  
And arbitrary darkness gallups in  
I shut my eyes and all the world drops dead.*

*Sylvia Plath (from Mad Girl's Lovesong)*

## Introduction

Wilhelm Leibniz (1646-1716) proposed a highly counterintuitive "monadology" in which God creates the best and most harmonious world possible but we individual monads are "windowless" and do not directly perceive it. This world is dynamically sustained by means of God's *fulgarations continuelles*.

God's mind produces *things* in much the same way as our minds produce thoughts. If he were to fall asleep—which cannot happen—the world would cease to exist. (Rescher, 1991, 165).

Remarkably for Leibniz, there is no causal interaction among monads "but only an elaborate *co-ordination* among them in virtue of their co-existence in the best of possible worlds" (Rescher 1991, 172). The world actually does exist—chosen by a loving God as the best of all possible worlds—though we monads are "windowless" and cannot perceive it directly.

The present discussion affirms Leibniz's monadology but without resorting to God's powers. There is, I claim, no world "out there". Physical reality is fully described in quantum terms at all scales: microscopic, mesoscopic (world scale) and cosmological ("Microscopic" here is unrelated to the microscope but signifies the very small

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scale to which quantum physics was originally applied).

World is a product of each brain in parallel, according to the present version of quantum thermofield brain dynamics.

The actual mechanism through which each brain continually creates its own world, even though there is actually none out there, will be described below.

## 1. Consciousness vs. *Existenz*

There is one seemingly unrelated but crucial issue which must be dealt with before presenting a new version of monadology.

Current philosophical discourse is overwhelmingly focused on “consciousness,” whereas Heidegger’s (1927, 1929) *Existenz* has become rather marginal. A return to “thrown” *Existenz* is crucial to the present discussion.

What I am indeed proposing is an *existential monadology*.

The plain fact, which Heidegger emphasized ninety years ago, is that I, as an eyes-open “Dasein”, *always* find myself *already* amidst a world. *Immer schon! Always already!* Dasein can never get free of this world thrownness unless stepping back, detached, and cognitively *reflecting*.

The world is “there” (*Da*) in the sense of presencing (when we shake someone awake from a deep sleep and ask: “Are you there?”, we don’t mean “are you there in the location of your bed” but rather are you open to the presencing of the world?).

The “to be” (*Sein*) of the entity Dasein is one of always already being “there” (*Da*) engaged with world.

We are so used to thinking that we are conscious *of* the world, thereby separating consciousness from world, and also separating self from not-self, that we fail to appreciate that the world is seamlessly *there* with us always already amidst it.

Thus as I reread this text, I note no consciousness. I simply read the text.

The textual world *is there* and I am engaged with it. There is no reason to bring in any mediating construct called “consciousness”. I am thrown amidst the world of my writing.

“Thrownness” (*Geworfenheit*) functionally replaces consciousness in Heideggerian phenomenology.

There is no thrower involved, no “I” (without reflection), no subjective consciousness. *We always find ourselves already thrown amidst the world.*

“Amidst” in the sense that the world presences around us and we encounter it. Bringing in consciousness is just a philosophical habit. There is no consciousness “of” world. The “of” brings separation, whereas the world and I are seamlessly engaged. The “of” is dependent upon the subject/object distinction promoted by the attitude of reflection, something completely different from thrown *Existenz*.

To repeat, this is a thrownness, but without a thrower. *Thrownness is a dynamical happening*, a continual event in waking and in dreaming too. It just is the case that we find ourselves amidst the world at hand. To say that we are “conscious of” the world introduces a separation, a distinction, which is not a phenomenological fact. The tiny “of” has poisoned philosophical discourse. With freedom from the “of”, each moment is fully integrated.

## 2. Velmans and The World

As counterpoint to the radical Leibnizian conception to be presented here, I outline a contemporary mainstream account by Velmans (2000).

Something along these reasonable-seeming lines is widely believed and

Velmans presents it with great lucidity. On the very first page Velmans asks:

“Does the world have an observer-independent existence (realism) or does its existence depend in some way on the operations of our own minds (idealism)?” (Velmans, 2000, p. 3).

Velmans is no idealist.

To understand consciousness one needs to discover how its phenomenology relates to processes in the brain, the external world, and so on (Velmans, 2000, p. 16).

He harbors no doubts about there being a world.

Conscious experiences are in the observer (in his mind or brain) as opposed to being in the world (where the perceived objects are) (Velmans, 2000, 104).

Since experiences are located somewhere in the brain, this “places experiences in a given spatial relationship to the external physical world” (Velmans, 2000, 106). Our experiences “represent” (Velmans, 2000, p. 120) what is going on in the world. The phenomenal world that we experience is species-specific and “is a *representation* of entities, events and processes but it is not the *thing itself*” (Velmans, 2000, p. 278). Velmans’ view of the world indeed remains conventional. Here is the key claim for present purposes.

If we removed human beings, **the world would still be there**, but the *phenomenal reality* experienced by humans, with its unique sense of being a human self in the world, would no longer exist. (Velmans, 2000, p. 278-9, bold added).

He repeatedly distinguishes this real world from the phenomenal world.

The events we experience result from an interaction of input energies and events with modelling process in the mind/brain—and the consequent experiences *represent* what is going on in the world, body, or mind/brain itself (in ways appropriate, no doubt to biological evolution) (Velmans, 2000, p. 120).

There is a translation going on, in which “*the world described by physics is translated, by our biology, into a world as experienced*” (Velmans, 2000, p. 141). Velmans expresses no doubt that there is a world out there. The external world we perceive is constructed from “experiential materials” and models which are “only a selection of the events and energies described by physics” (Velmans, 2000, p. 152). Still there is also an actual world in addition to the world we perceive, “*a ‘reality’ which is like something*” (Velmans, 2000, p. 163).

The critical realism I adopt assumes ... that there really is something there *to experience or to think about...* (Velmans, 2000, p. 164).

And what is the “*something*” that is there?

Causal sequences in normal perception are initiated by *real things* in the external world, body or brain (Velmans, 2000, p. 166).

Thus Velmans subscribes to real worldly things in a thoroughly traditional manner which will be deconstructed here.

We Already Know That Our Brains Can Spontaneously Create Authentic Worlds *De Novo*.

There should be nothing surprising in the idea that our brains can create authentic worlds when there is actually no such world out there. We know this already from dreaming. Freud (1899) had a rather superficial view of world formation during dreaming. The dream world is a “composition” of memory traces (though he did not provide an account of a compositional process in which disparate memories might be forged into a unified worldly whole). Llewellyn’s (2013) pretentious statement over a century later adds little substantive to Freud.

[h]yperassociations wrought between episodic memories through elaborative encoding engender a fabricated visual image (Llewellyn, 2013).

But with the renewed recognition of lucid dreaming stimulated by LaBerge (1985), the brain’s remarkable world forming capabilities sans sensory support come into bold view. I shall illustrate with two dreams reported by Waggoner (2008).

The lucidly dreaming young Waggoner (2008) is attending a college class and feels that there are not enough attractive women in the room. He boldly announces in his dream that he wants to see more attractive women, steps briefly out of the classroom and then returns. *Voila!*

I open the door into the school room and find a U-shaped line of perhaps fifteen attractive young women, completely naked. ... I walk along and briefly touch each one, awestruck by the ability to create all this. (Waggoner, 2008, p. 48)

“...the ability to create all this” ... Waggoner has literally created a world while lucidly dreaming that fulfills his conscious dream wish! Still, this world

might conceivably have been somehow adroitly fashioned by the dream work from memory traces of seeing naked young women or their photographs.

The following example of Waggoner’s, however, is more convincing in its demonstration of *de novo* world creation in lucid dreaming. Here the world is not plausibly derivative of memory traces.

A *cognition*—a “tinge of doubt”—is expressed as a world creation.

... I was flying back through a wall that I had previously flown through. Suddenly, I had just a tinge of doubt about flying through it—just a speck. The result? I became stuck halfway through the wall! Just that little bit of doubt tinged my expectation, and my situation symbolically reflected my mental state. Hanging there in the wall, half in and half out, I realized the absurdity of the situation, and proceeded to “expect” my successful passage through it. ...Changing your mind, even slightly, changes the lucid dream experience to correspond to the minor gradations of your expectation (Waggoner 2008, p. 116-117).

This is no compositing of memory traces in this case but the translation of a cognitive state of doubt into a phenomenal world situation. *Waggoner’s contradictory expectations—cognitive states—created an authentic world de novo ... like Athena from Zeus’s brow.* This observation with respect to the ability for authentic world creation by lucid dreamers begins the incision to a deconstruction of the taken-for-granted quotidian world.

### 3. World Scale Objects Under Quantum Description

We are conditioned to think of quantum theory in physics as dealing with

the extremely small. Yet Vitiello and others have formulated quantum theory in ways in which all sizes are encompassed, in that the macroscopic scale is dynamically generated out of the microscopic scale (Vitiello 1995, 2001, 2004, 2018; Blasone, 2011; Capolupo, 2015; Pessa, 2003; Sabbadino, 2019).

That is, the macroscopic collective modes of quantum theory “are dynamically generated as long range correlation among the system components” (Vitiello, 2001, 69). Thus macroscopic order is a correlatively scaled function of the underlying quantum dynamics.

Even the large-scale structures in the Universe, as well as the ordering in biological systems, appear to be the manifestation of the microscopic dynamics ruling the elementary components of these systems (Blasone, 2011, p. ix).

Ordered dynamical phenomena ... appear even on a macroscopic scale ... macroscopic quantum phenomena can be described by macroscopic wave functions. (Jibu and Yasue, 1995, p. 151; 2004).

If the role of scale is invariant with respect to the application of quantum theory, then *at all scales world must come under quantum description*. The putative manifest world is no longer worldly. We cease having to conceive of classical worldly objects scaling down to quantum microscopic objects. Microscopic ... mesoscopic ... macroscopic ... cosmological ... all physical scales come under quantum description. *There is no classical world out there.*

Then where does the classical world perceived in daily life come from, if everything comes under quantum description? Rather than world being the solid support that we can hang our hats

on, it is quantum-thermodynamically created by Dasein’s brain at every moment. We have been suckered by our own brains! Forget any substantial world out there. We are tantamount to the windowless monads that Leibniz embraced. Of course Leibniz (2011) still believed there is also an external world, though not one which windowless monads could perceive. For Leibniz (whose theological commitments are not part of the present argument) a loving God *thinks* an external world into existence, so that his windowless subjects are spared the role of complete dupes.

#### 4. How Could World Thrownness Be Created If There Is Actually No World Out There?

To sketch a possible answer to this key question, I explore in more detail Vitiello’s (1995, 2001, 2004, 2018) far-from-equilibrium quantum thermofield model of brain dynamics, which is based in the physics of Umezawa (Umezawa, 1993; Takahashi and Umezawa, 1975).

Its dissipative openness is consistent with the thrownness of Dasein. Umezawa and Vitiello focus on the quantum brain’s least energy vacuum state which has dual modes. The vacuum or ground state is functionally a *between-two* interrelating the dual modes. World thrownness is the state of the between-two in this thermofield formulation.

As Vitiello (2003) details, sensory orders dissipate their energy and fall into the ground state where they leave a dual mode memory trace of particles /antiparticles (Nambu-Goldstone bosons).

On repetition of the sensory order its memory trace is converted to a trace of recognition, now having the dual mode form antiparticles/particles.

On re-repetition of the sensory order there is a match in the ground state with

the trace of recognition, a match of complex conjugates that is *real* (represented by real numbers).

This real match is tantamount to world thrownness, that is, the real number values of the conjugate match are consistent with the illusory perception of a “real” world. World thrownness is continuously created by Dasein’s brain when our quantum thermofield brains sustain a match of complex conjugates in the ground state between-two. It is notable that in this model, counterintuitively, *recognition is a prerequisite for perception* (which is actually a Platonic conception).

In addition to the sensory contribution, brain subsystems generate many signals which fall into the vacuum state and leave memory traces, and with repetition, memory traces of recognitions.

Philosophers call this process “intentionality”. To bring out its functionality I shall call it “self-tuning”.

The brain’s manifold dynamics with quantum degrees of freedom are continually generating signals that fall into and tune the ground state, just as do sensory generated signals. The dual mode vacuum state accordingly ends up *triple-tuned*: other-tuned by sensory input, past-tuned by memory traces of recognitions, and self-tuned by signals the brain itself initiates in virtue of intentionality. The ever-changing real match of complex conjugates in the dual mode ground state of the triply-tuned thermofield brain is world-thrown *Existenz*.

So there is no classical world “out there.” What seems to be “out there” are projections which are actually under quantum description at all scales and into which Daseins’ brains are thrown in monadological parallel in accordance with open dissipative thermofield processes.

Reality is under quantum description at all scales. World thrownness is a continual creation by the matchings in the triply-tuned ground state of the dual mode thermofield brain. There is no world out there which a loving Leibnizean God thinks into being. The triple tuning of each Dasein’s brain continually creates a real world in its vacuum state between. To the extent that each Dasein’s brain is similarly other-tuned, self-tuned and past-tuned, their parallel worlds will be easily mistaken for a world in common.

The model here is nothing like information processing computation. Instead there is a state that is fluidly tuned from three sources: the relatively static attunement of memories, the flux of sensory attunement as receptors are bombarded by input orders, and most crucially, the self-attunement of Daseins’ continually fluctuating intentions, wishes, expectations, and thoughts, all of which tune the between-two and influence the match that is world-thrown *Existenz*. There is no world out there, only quantum macroscopic objects. The world is disclosed within quantum thermofield brains in parallel.

The poet is right: We shut our eyes and all the world drops dead. We open our eyes and worlds appear in parallel. This leaves Daseins with the lonely sovereignty of parallel monadological *Existenzen*.

## Acknowledgments

I thank Donald Mender for many discussions and comments on the manuscript.

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## Appendix

### Some References on Quantum Thermofield Brain Dynamics

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