

A Rebel Physicist's Commentary on "Consciousness in the Universe is Tuned by a Musical Master Code"

Wolfgang Baer*

The trilogy 'Consciousness in the Universe is Tuned by a Musical Master Code' by Meijer et al, published in Quantum Biosystems, vol 11, no. 1, 2020 is reviewed.

Key Words: Consciousness, superfluid quantum space, ZPE information field, hydronium ions, soliton, astroglial/neuronal syncytium, toroids, 1st-person Observer, Model of Reality, Near-Death Experiences (NDE), Out-of-Body Experiences (OBE), 3rd-person dreams, memory recall, sensation qualia.

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* Associate Professor of Information Sciences (Ret), Naval Postgraduate School, Monterey, CA, USA. Research Director Nascent Systems Inc. Carmel Valley, CA, USA Yale University, USA. e-mail: support@nascentinc.com

Initial impression

I have had the great pleasure of reading, "*Consciousness in the Universe is Tuned by a Musical Master Code*" a Herculean effort describing the state of the bio-quantum discipline. The paper references the mystery of consciousness and correctly asks, (p. 2)

"How can current science neglect the phenomenon of consciousness, being the very basis for performing science and write about it?"

I gratefully endorse the recognition that the mystery of consciousness is the grand challenge of science because the consciousness experience obviously exists but has been systematically eliminated from the field (Stapp 1993).

This three-part paper is a "must have" document because its in-depth reporting of some 750 pertinent articles is vastly more than a bibliography.

In each case the authors include headline descriptions of what is in these articles that provide useful summary information every practitioner and student in the field should learn.

They carefully provide caveats that report what is available in the literature without insisting on the accuracy on what is reported.

For example, there are 21 phrases with "may" in the first 10 pages. They utilized a vast number of pertinent terms from multiple disciplines that list the vocabulary every worker in the field must have at the tip of his/her tongue. This paper is truly a tour de force through a vast body of literature represented by the 46 authors of the "Current Models of Human Consciousness" listed in Table 2 (p. 90).

Furthermore, they attempt to organize this knowledge into a logical framework, which may solve several outstanding problems in the bio-quantum field.

The main theme seems to be to exploit the analogies between vibrations, whether happening in music, structured water or folding proteins.

They exploit the fact that our bodies and brains are largely made of water and postulate that, "Consciousness is generally considered to arise from the brain thalamo-cortical recurrent neuronal activity.

Yet, we hold that consciousness is at least partly received from a qualia space (superfluid quantum space/ZPE information field) linked to a sub-Planckian spaceless and time-less dimension, bearing geometric patterns with mathematical relations" (p. 94).

This hypothesis is backed by detailed descriptions of the property of hydronium ions in structured water (summarized on p. 79): *“The hydronium ion can obtain a soliton character, since when moving along some surface it scrolls a mass of matter composed of a substrate along with it during this moving. In other words, the soliton can obtain a torque mode. If its core carries a charge, for example, the positive charge of the hydrogen ion, then due to the torque it is covered by a coat of negative charges. In particular, due to this coat, the soliton lives longer than with a naked charge. Surprisingly, excess protons can create their own pathways, ‘water wires’, before protons can migrate along.”*

Thus “hydrated protons are converted to and serve as antennas for electrons covered with phonons (phonon dressed electrons or solitons) that exercise shaping effects on proteins and organelles (p. 95). *“One may almost guess, therefore, that human thought flows due to water and through water. More mechanistically, we may say that water represents an interface between the human brain and the Universe”* (p. 84).

This structured water hypothesis, if verified, would solve a fundamental problem encountered in all classic physics based models of brain function, namely, that “axonal transfer of nerve impulses are too slow to organize coordinated activity in large areas of the central nervous system” (p. 90). On an everyday level a professional tennis player cannot observe, calculate and send causal based neuronal signals in time to handle the speed of a served tennis ball. More closely tied to my own work (Baer 2020, Chap. 7.7), is the “Astroglial/Neuronal Syncytium” cited in Figure 30. “The fractal organization of Ca²⁺ mediated cellular mechanisms [are] related to conscious perception” (p. 87).

Recognition that *“The gap junctions are observed predominantly in relation to glial cells, which number, in the brain, is considered by some authors to be larger than the number of neurons. The gap junctions, therefore, are a ubiquitous, yet underappreciated, feature of neural circuits of the mammalian brain”* (Pereira and Furlan, 2007).

That the identification of Astroglial / Neuronal Syncytium along with chemical

imbalances in the tripartite synapses can explain and therefore lead to psychiatric treatments of consciousness disorders is a direct consequence of my Conscious Action Theory (Baer 2020) published in Mitterauer (2012, 2020).

The problem with the Ca wave hypothesis in the glial network as a basis for mental processing is the aforementioned speed problem, and if structured water can support faster communication within the brain tissue this problem may have a solution. This example is one of many where I found remarkable personal agreement with Meijer et al’s paper, which also leads me to deficiencies I will discuss in the next section.

General Critique

As already stated, I consider this paper to be one of the best descriptions of the state-of-the-art approaches found in the quantum bio field.

Therefore, the following critique will be addressed more to the community it describes rather than the paper or its authors. Speaking as a physicist, the authors got a lot of things right in my opinion. The snapshot of reality as a universe with a horizon boundary interacting with a three-dimensional brain moving along its change directory is brilliant, but not main stream. I fully believe our consensus reality will discover such signals in the event horizon, which will usher in a belief in the multiverse Model of Reality. I also believe that *“it is obvious that a ‘final theory’ in physics in the future, should describe both the material and mental aspects of reality and consequently must integrate a testable model of consciousness and self-consciousness”* (p. 98). However their definition of testability: *“The present GM-EMF frequency scale concept is experimentally based, since it evolved from meta-analyses of more than 750, mostly peer-reviewed, articles ...”* (p. 95), is grossly inadequate in my opinion.

It raises red flags and rankles my sense of logic. Is the fact that thousands if not millions of articles have been written about Christianity constitute a proof of God’s existence? That, *“the Universe can thus be seen as an intelligent living organism”* (p. 97), is true enough but

why the “thus”. Noting logically follows from a mountain of speculation but more speculation.

The paper states, “*Consciousness, in a cosmological context, can be defined as a state of a semi-stable system that has developed in a cooperative and cyclic operating mode, so that it became ‘causally self-observant’*” (p. 31).

Is consciousness a physical state or a dynamic event and are we talking ‘emergent property’ from dead material using physical laws that have eschewed the subjective in the first place? “*Consciousness is offered, in which our individual mind is seen as a part of a larger universal consciousness, itself being instrumental in the entire fabric of reality* (p. 32) ... *we are in consciousness, implying the position of idealist ontology*”.

Are we being idealists here? And “*field-sensitive toroidal workspaces have been postulated as a key element for the creation of scale invariant consciousness in the universe*” (p. 6). And, “*In this concept the protein molecule is influenced by various long and short distance force fields of nature such as gravity, dark energy anti-gravity and electromagnetic pilot waves from zero-point energy field*” (p. 7). How many buzz words can be thrown into one sentence before one is saying, “*Everything depends on everything and systems evolved to be conscious*”.

Who can argue with that statement? Except perhaps we are not systems as contemporary physics defines them, i.e. robots who develop consciousness?

All the mysterious terms found in a physicist’s bag of tools, dark matter, dark energy, toroid operators, the value of Einstein’s Cosmological constant zero-point vacuum energy (which by the way suggests space, if flat), do not fall into the category of operational facts but rather theory development.

It is best to avoid treating them as gospel foundations upon which to build an intrinsically constructed superstructure.

The concept of toroids comes from a standard two-coordinate space-time diagram when circular boundary conditions are imposed.

If the space and timelines go on forever, we can’t fit the diagram on any paper or in our brains. If there is a beginning and end, what’s beyond them. Oh! The big bang is the beginning

of time. It started from nothing? Feynman had a nice lecture stating that any equation defining the universe ($U = A$) can be written in a nilpotent form ($0 = A - U$) and Peter Rolands’ (2007) impressive book derives the entire standard model of physics from a similar nilpotent nothing. Are the authors asking us impose circular boundary conditions on space and time, and forget about the nasty chicken and egg problem. Sure we have Heisenberg’s matrices and Schrödinger’s equations that allow us to build equipment that works but no one knows why.

“First of all,” the authors say (p. 5), “*it should be clear that these concepts are based on the notion that nature is quantized according to the principles of quantum mechanics*”.

Fine but quantum theory is incomplete as Einstein believed and irrational because of the measurement problem (Wheeler, 1983).

Therefore, physicists know that vibrations and oscillations are a great tool but not the ontological reality of which there are some 20 interpretations (Blood, 2009).

For me, therefore, this paper is a wonderful proof of the mess of possibilities we have gotten into when misunderstanding of a limited technology is pushed from its proper domain into new areas.

Reading this paper is like watching a team of drivers racing a truck through the desert throwing up clouds of dust. The cloud is then called the implicate order from which an coherent picture is said to emerge by evoking a second whirlwind of possible maybe postulates that ultimately give us (p. 31) “*Consciousness ... defined as a state of a semi-stable system that became “causally self-observant”... While individual human consciousness can be envisioned as the processing of information in which* (p. 32) *our individual mind is seen as a part of a larger universal consciousness, itself being instrumental in the entire fabric of reality, so that* (p. 38) *based on quite solid evidence, the brain has been described as an electromagnetic workspace which furthermore* (p. 54) *came from elements in the universe that have seemingly assembled themselves in such a way that the organization of matter resulted in the ability to acquire sufficient life-sustaining information from the environment*”.

In short, Consciousness is the experience of a material organized to experience consciousness.

When the circular logic gets expressed in long enough sentences resembling eastern philosophers we all forget that its circularity. I think we can do better with the valuable information presented.

Personal Information Extraction

In my own attempt to extract something out of this whirlwind cloud of terms and possibilities, let me get back down from the beautiful abstraction of pictures to our mundane Here and Now by first representing on paper what we actually mean by having a

conscious experience as a human. This definition, shown in Figure 1, was first provided by Ernest Mach (1867), redrawn by J. J. Gibson (1950), depicting a modern apartment context, and was finally completed by W. Baer (1972) by including a notepad, which is here seen containing a Model of Reality (MoR) that contains within itself the symbols of any explanation of the Here and Now the observer believes to be useful. This notebook symbolically contains the entire three-part Paper being critiqued, plus all the references and countless unmentioned works, including those of the author of this commentary.

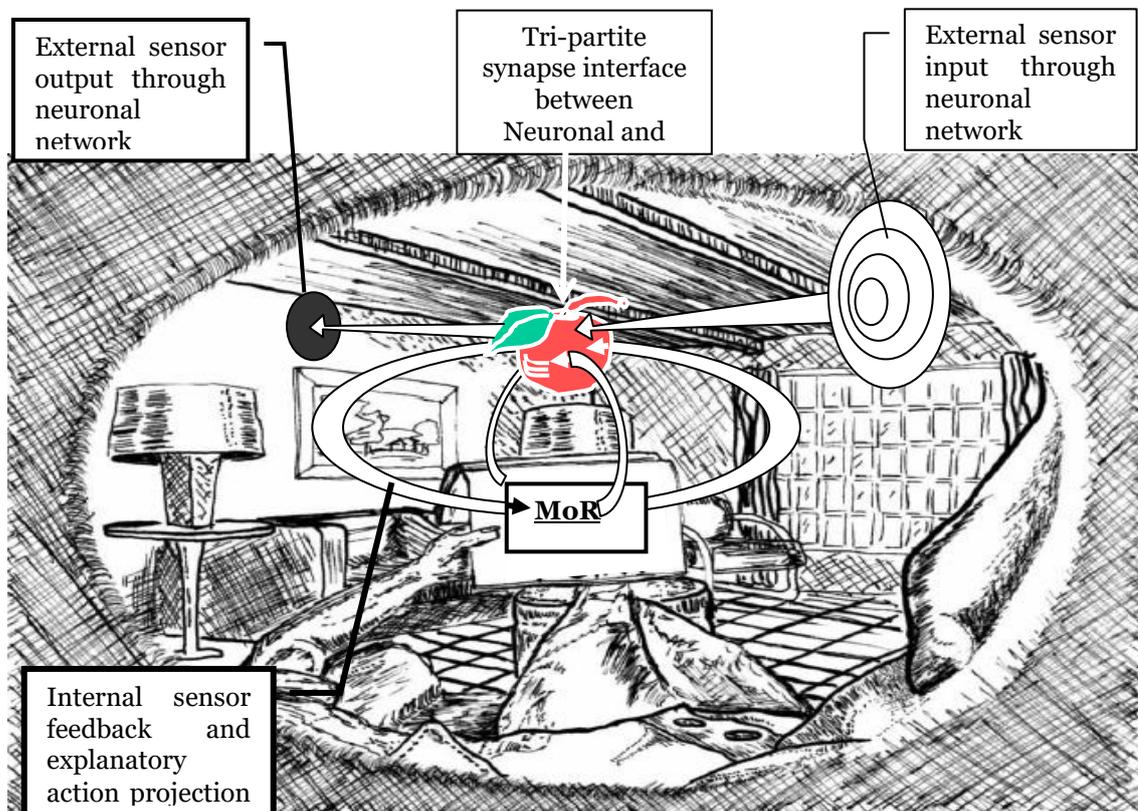


Fig. 1 The complete action flow model through the active-observer indicating the input and output flow of action directly through the observer's Here and Now along with the symbolic connection paths to and from a symbolic Model of

None of these works can in themselves explain the experience of the room and thus solve Chalmers' hard problem without including an active 1st-person Observer in the first place who reads the theories or follows the instructions that create the experience of the Here and Now represented by the room in

which those theories are written. Neither physics nor any system of beliefs can solve Chalmers' hard problem because nothing that You, dear reader, can see in front of your nose can in itself explain how the room, your nose and its explanatory content got there without getting out of Yourself. If you are that bigger

System of *material organized* to generate your conscious 1st-person display, getting out of Yourself is a logical impossibility. There is no little man inside the machine who can get out because You are the machine and your conscious experience is part and parcel of Yourself.

What can be done is to build the best model based upon the best theory evolution and personal experience has given You. Here “best” is described in terms of effectiveness at achieving your goals. As Don Hoffman (2014) contends, it is not the truth of our theories but success that defines our evolution. That success is often associated with survival but H. Everett (1957) of the multi-world theory and I have recognized that all systems are observers, whether living or not, and they all attempt to *1) grow* and *2) in equilibrium forms* (Baer 2020 p.129). The latter is enshrined in the second law of thermodynamics, while the first is a positive expression of survival and drives interactions between equilibrium forms whether atoms or human lifetimes.

Theories and models of reality are always expressed in tangible material. That material has physical properties and interacts with other material to execute the processing Rovelli (1997) and Vitiello (2001) describe. Therefore, our Model of Reality (MoR), symbolically represented by a distillation of all that is written in the notepad, shown in Figure 1, is a calculating element that is imbedded in a processing action flow symbolized by the arrows. These are explained as follows:

- 1) Incoming stimulation from unobservable but not unnamable sensors that always exist an instant before the observable Here and Now.
- 2) Expectation of incoming stimulation plus intentions generated by the MoR. These are compared with the incoming stimulation. If equal, the MoR is accurate enough and only intention commands survive the comparison. If not, an error signal is generated to the MoR and added to the output command.
- 3) Output commands to the unobservable but not unnamable sensors that exist an instant after the observable Here and Now
- 4) Update signal from the conscious object comparison to the MoR. The MoR contains symbols consisting of material and meaning. The material performs physical calculations while the meaning is a 3rd-person view of the

calculating elements that is projected into the sensation qualia to form our normal comfortable object experience.

5) Learning or intention change signal flows back to the MoR calculating element, controlling its processing to include the next expected location of the qualia (here an apple) as well as the observer’s intention.

Unfortunately I now have to pull the same trick as the authors of the reviewed paper, i. e. to refer the reader to several of the references that explain the aspects and mathematics of Conscious Action Theory (Baer 2009, 2010, 2020), Bernroider (2010), Periera (2013), which few of you will have the time to actually read. Therefore let me explain that the fundamental paradigm shift I am proposing is to move from Aristotle’s concept of Natural Philosophy that “we look at reality through the windows of our sensors”, upon which current science is built, back to Plato’s concept that what we see and live in are the measurement qualia from an external reality fused with theoretical explanatory projections for whatever MoR we have installed in our bigger System’s Brain. The best we can do is to develop models of the reality outside in idealized mathematical terms as Tegmark (2014) has proposed. The arrows in Figure 1 are therefore to be interpreted as the action flow context of processing activity within which all models, such as those suggested in Meijer’s paper, must find their place. Personally, I am not a fan of mathematic idealism since the transition from mathematics to physics involves the introduction of units, which are examples of reality that are counted by mathematical numbers, and I prefer to work with the raw things themselves. Many theoreticians eliminate reality by defining coordinate systems in which real things, such as the speed of light, are “1” and then perform unfettered miraculous proofs. Even “ π ” should be written as a ratio of circumference to radius distant units of Krypton wavelength, which do not cancel in physics to give a pure number of infinite digits.

The result of the action flow processing architecture presented in Figure 1 emphasizes the role of any model, or belief system, within the context of a standard architecture. When mapped onto the observable human brain the interface between the neuronal and Glial network’s identifies the location of human consciousness - when an observer is using the

standard behind ones eyes operating mode - as the field of Astroglial/Neuronal Syncytium.

This, in my opinion is the most pertinent postulate to be extracted from the survey of references found in Meijer's paper and the direction future explorations should be directed toward seeing if it is true.

Finally, I would like to add a personal note to the Near-Death Experiences (NDE) and Out-of-Body Experiences (OBE) mentioned in 5.7 of Meijer's paper. For better or worse, I have had several of these events, which I discuss in Baer (2020 Chapter 8).

My first out-of-body experience is accurately described by Mahler (1975) in which I transitioned from "*I the existence being cold*" to seeing my body, which was cold, on a kitchen table getting a bath in cold water from the upper left corner of the room. Suddenly I knew what I had to do. The next instance I was inside that body shaking, which caused my mother and aunt to run with towels and blankets.

The reference to my friend James Lake (2015) in Part II of Meijer's paper actually proposes a survival advantage to the NDE or out-of-body experiences, which I found to be true. From this and similar experiences, I am personally convinced that a conscious being is capable of seeing one's observable self from positions other than the standard behind the eye position, and what I am actually seeing in such circumstances is my own internal actionable display generated from alternative points of view from my own Model of Reality.

There is no connection to the Cosmic void in these experiences. After all, the same system generates 3rd-person dreams and memory recall and sensation qualia on our mental display.

Achieving different points of view is more practically explained by controlling chemical balances in the above-mentioned Astroglial/Neuronal Syncytium (Mitterauer 2012) than the truly unknowable Cosmic out there.

Confusion between a reality model experience and reality itself is called magic and should be avoided in science.

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