

# Paradise regained? - maybe not quite yet

Chris Nunn\*

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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.

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\* Psychiatry (Retired), Associate Editor of the Journal of Consciousness Studies E-mail: cmhunn@btinternet.com

## Introduction

I am somewhat in awe of these target papers because they remind me of nothing so much as that greatest of narrative poems in the English language, John Milton's 'Paradise Lost' (1667).

Just as Milton assembled some of the most imaginative ideas from theology, the bible and political pamphleteering to provide an account of the human condition and its origins, so Meijer and colleagues have tied together powerful notions taken from philosophy, physics and neuroscience to build a wonderful picture of the universe and human nature.

Where Milton had God, these papers have an universal consciousness formed as a musicality pervading all scales of existence; where Milton saw hierarchies of angels – "thrones, dominations, virtues, principdoms, powers" – these papers invoke a wide range of organisational principles, many applying universally and some in more limited contexts.

The vision offered is so general, highly integrated and often beautiful that it is hard to come up with anything constructive to say in a brief commentary such as this. I can't offer a detailed critique because providing one would require several volumes, plus a wide range of expertise that I don't possess. Something like a book review may be more appropriate; an outline of the principal ideas and themes on offer, plus an attempt to say something about their integration and whether anything seems to be missing from the overall picture.

Please read what follows in that light.

## Part 1

Sets the scene by describing the universe as a vast structure of harmonic electromagnetic frequencies – the harmonies occurring on scales ranging from microscopic to galactic or more. Vortices and toroidal topologies abound along with 'solitons'. The harmonies create physical structure, while resonances induced in water are especially important when it comes to organic structure, life and brain function. Vibrations in 'Zero Point Energy' fields are principal mediators of these important resonances. The existence of toroidal wormholes may allow coherence of resonant patterns over arbitrary distances.

John Milton would gladly have endorsed this general picture since it is a remarkable elaboration and generalisation of the concept of 'the music of the spheres' so beloved of medieval philosophy; an elaboration, moreover, that is grounded in very sophisticated physical theory and mathematics.

The devil, perhaps, is in the detail. I was often confused as to whether the paper referred, in any particular context, to Maxwellian e-m waves, Schrodinger wave frequencies or sometimes even to de Broglie frequencies. Similarly, references to solitons appeared sometimes to involve classical wave forms, sometimes Davydov solitons and sometimes generic topological solitons (i.e. boundary regions between two or more patternings with mathematically inconsistent structures).

The ready acceptance of the existence of 'wormholes' everywhere struck me as very much a hostage to fortune, though perhaps they should be viewed as place-holders for entanglement, universally present as in Penrose's 'quanglement'. But quibbles like these rather miss the point of the authors' proposal that the entire universe can arguably be regarded as a dynamic structure of harmonic vibrations existing as both classical waves and in all-pervasive quantum fields. Who can argue with that?

## Part 2

This is mainly about aspects of the relationship between organisms, especially brains, and the dynamics of the universal quantum field, which is pictured as having a lot in common with the idea of an 'akashic field' (Laszlo, 2007), albeit perhaps more immanent and a lot less ethereal than most concepts of 'akash'. The basic idea seems to be that information represented in the patternings of an universal, energetic 'zero point energy field' can resonate with and inform the manifest world, especially the organic world.

The complex, topological geometries that may be involved are beautifully illustrated, with toroidal, 'holofractal' and knotted forms given pride of place. Solitons, too, figure in what seem to me somewhat mysterious roles; ones equivalent perhaps, in their provision of a bridge between the universal and the particular, to the role of the archangel Gabriel in Paradise Lost as God's chief messenger. Strange attractors, which almost certainly do provide valid representations of what goes in the world, especially the organic world in all its manifestations ranging from ecology to conscious mind, are given rather less prominence and are occasionally misapplied. For example neural long term memories are said to correspond to point attractors (p. 37) which, strictly speaking, can exist only in dead systems. Most long term memories are likely to correspond to strange attractors, along with a few periodic examples (Nunn, 2007).

A very wide range of ideas and observations relevant to the overall picture are invoked and briefly discussed. Some of the detail offered in this connection is incorrect. For instance there

is a claim (p. 40) that [general] anaesthetic agents always involve NMDA subtype glutamate receptors. Since the inert gas xenon is an especially good general anaesthetic any glutamate receptor involvement has to be secondary at best in relation to its actions, and there is a lot of other evidence that any glutamate involvement is sometimes a correlate rather than a cause of anaesthesia. This issue is very peripheral to the main argument, however, and I mention it here mainly because of an implication in the text that it relates somehow to the rather mysterious role of solitons as hypothetical carriers of information.

Next comes an argument to the effect that 'collective fields', operating with an extra spatial dimension (i.e. in 4 + 1 spacetime), may allow 'psi' phenomena, along with the possible existence of extra-corporeal doubles of ourselves. At least we are spared the 11 or 12 dimensions of brane theory in this connection, but the suggestion nonetheless does come across as a cloak for ignorance that could well have been omitted. There is indeed a very wide range of evidence, compelling if often brushed aside and some of which is listed in the paper, that cognitive and other anomalies occur which can't be explained in terms of contemporary science. But the old 'propose an extra dimension to sort the problems' manoeuvre is perhaps too hackneyed to be convincing or even useful. It is also incompatible with the earlier proposal that knot theory could be relevant to the grand picture since knots can exist only in three spatial dimensions.

Further speculations about the ideas already introduced and their possible connections with a range of 'quantum consciousness' theories are offered at some length, along with a suggestion as to how resonance fields might organise the development of life itself with the help of clay materials – so filling in details missing from the biblical Genesis account of how Adam was created from the dust of the earth!

## Part 3

Begins by offering an account of how brains might relate to universal resonance fields, especially when it comes to receiving information from them. I was very happy to see endorsement of the 'hydronium ion' picture of

relevant brain activity (Pereira, 2018), along with the special role attributed to  $\text{Ca}^{2+}$  ions.

This arguably provides a particularly convincing picture of the importance of, and likely physical basis for, brain rhythms and resonances in relation to 'mental' functioning. Then comes discussion of the problem of accounting for how to relate universal field resonances to brain resonances.

The story that is offered about this is complex involving a range of 'quantum consciousness' theories, especially the microtubular, OrchOR theory of Hameroff and Penrose, along with consideration of characteristics of ordered water, proton tunnelling, solitons and gap junctions. It's a well-argued story, well referenced and nicely illustrated, but evidence that it might be correct is scant. Some of the phenomena referred to are equally open to explanation on other bases; for example the rapidity with which coherence between separate brain areas can be established – which is understandable in terms of classical state space attractor dynamics since it may be a phenomenon analogous to that producing other beautiful patterns in nature, such as those seen in flocks (murmurations) of starlings. The weird fact that a few people found to have gross hydrocephalus have been able to live entirely normal lives is also discussed, though it has probably never been adequately explained and it's not clear that the model offered in the paper is of much help in this connection.

Following some general remarks about the composition of the universe, the 'crucial role' of  $\text{Ca}^{2+}$  ions and waves is revisited at length, with a proposal that they participate in quantum informational processes and may be subject to solitonic influences in addition to the very wide range of intra-brain functions that neuroscientists have already identified for them.

A lengthy final section is mainly about congruencies between the model offered and other theories of, and speculations about, consciousness, ending with a conclusion that the universe as a whole may be a living intelligence; one that we are able in small measure to mirror.

## Conclusions

Despite the weaknesses, especially of Part 2, the overall picture offered has great aesthetic appeal and very likely expresses centrally important aspects of the truth about the universe and ourselves.

My personal guess is that around 50% of the conceptual 'glue' holding the overall picture together will be validated at some time in the future.

Since the model appears to be over-determined in some respects, failure of some parts would not necessarily prove fatal to the whole. However, as has often been remarked, prediction is difficult - especially when it comes to the future!

What I'd like to focus on finally is to try to see whether any central ingredient may be missing from the overall picture described in these papers, and John Milton helps here.

There is a concept of God in the author's model (i.e. the fundamental, 'conscious' musicality of the universe) and there are entities serving roles equivalent to those of the angels and of Adam and Eve in Paradise Lost.

What's lacking is surely any Satan equivalent; that arch anti-hero who declaimed "*The mind is its own place/And of itself can make/ a hell of heaven, of hell a heaven*".

He was driver of the whole of Milton's saga. The only possible equivalent that I can imagine myself, able to fill the same role in these papers, is time itself.

Not the milk-and-water, basically Newtonian, 't' variable of quantum physics or even general relativity, but something far more real and robust of the sort that Canales (2016), Tallis (2017) or Smolin and Unger (2014), for example, have identified and which was intrinsic to Whitehead's (1922) thinking.

Add that to the author's model, and the universal harmonies that it pictures in somewhat sepia tones could be painted in glorious Technicolor.

A cognitive and conceptual paradise, at least, might then be fully regained.

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