

Essay

Are We Really “such stuff as dreams are made on”?

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Abstract

A type of panprotopsychist theory is briefly described that views energy eigenstate manifestations as accompanied by protopsychist elements termed SoSs (*scintillae of subjectivity*). These are pictured as threads of ‘real time’, a concept distinct from the metric ‘clock time’ of relativity theory and everyday usage. Such threads are *woven* in the brain into patterns that constitute the flow of our conscious experience (only some of which gets into neural memories and is reportable). There is surprisingly strong evidence that these patterns can persist, from a clock time perspective, independently of their originating brains. The theory makes a strong, in principle testable, prediction that conscious mind related violations of energy conservation should prove discoverable.

Introduction

Shakespeare’s enchanter, Prospero, asserted that: “We are such stuff as dreams are made on”, and followed this with: “our little life is rounded with a sleep” (*The Tempest* 4.1.146-148). I shall hope to show in this brief paper why the answer to Prospero’s first claim can be a qualified ‘yes, that is indeed what we are’, provided ‘we’ is taken as referring to our objective selves, while there is a good chance that his second claim was entirely misleading because ‘our little life’ may *be* a form of sleep – with all its attendant dreams and nightmares.

My starting point is with *panprotopsychism* (e.g., Chalmers, 2015). Developments in consciousness studies over the past thirty years have shown that no satisfactory alternative to this exists when it comes to envisaging a basis for human consciousness. Idealism, as Galen Strawson (2008) has pointed out, is unsatisfactory in being merely the flipside of materialism. Neural emergentism can account for much of the *content* of consciousness but fails to explain its basis because of incompatibility with a whole range of well-attested phenomena, most notably NDEs. The many ‘quantum consciousness’ theories proposed towards the end of the 20th century all harbour inconsistencies, implausibilities and large explanatory gaps. In any case the currently popular notions of *property dualism* or *dual aspect theory* both imply concepts equivalent to varieties of panprotopsychism, while there is overwhelming evidence from *two-slit experiments* and those based on the ‘Elitzur-Vaidman bomb test’ (e.g., Penrose, 1994) that primitive matter is able to *know*, in some sense or other, about

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spatial and temporal characteristics of its environment. If theorists who advocate neuro-emergentism have to invoke property dualism or dual aspect theory to account for consciousness, while the 'wave functions' of physicists are inherently affected by holistic aspects of the environments that they explore, there's little point in beating about the bush and trying to avoid an idea of some sort of widespread or universal psychism – though what particular sort of psychism is inherent in nature remains a wide open question.

Panprotopsyism is indeed the only viable game in town nowadays, despite the reluctance often shown to acknowledge its status. But it does face particularly acute forms of the temporal and spatial *binding problems* that also afflict neuro-emergentist theories and which quantum consciousness ones hoped to solve with appeals to coherent, superpositional states. How could little panprotopsyist elements possibly link up or *condense* to produce our form of integrated conscious experience? There is one variety of the idea, however (Nunn, 2016), that by-passes binding problems altogether for it shows our conscious experience to be like a tapestry woven, not in, but *of* time. The next step is to unpack this claim.

Objectivity and subjectivity

Our worlds are of course comprised of two realms, the objective and the subjective. Even the most fervent monists acknowledge this and have to introduce a dualism of some sort into their thinking, either implicitly or via *property dualism* and the like. The objective world is made up of quantum observables – namely position, momentum, energy, spin and charge. Our subjective worlds, too, encompass these entities, though only indirectly in the cases of spin and charge. In addition, subjectivity encompasses time, which is *not* a quantum observable. What we ordinarily refer to as 'time' in relation to objective aspects of our lives is in fact part of the spatio-temporal metric provided by general relativity; it's a notional time, in other words, that contributes to describing the geometry of classical causation. I'll refer to it henceforth as *clock time*; a concept distinct from that of subjective *real time*. While position and momentum, both observables, share the same non-commutative relationship as do time and energy, the fact that time isn't an observable demonstrates a broken symmetry and carries the implication that *real time* belongs with subjectivity, not with the objective realm.

And subjective *real time* must indeed *be* real because of the Heisenberg energy/time uncertainty relationship; it must be as real as energy itself, the entity from which the entire objective world derives. There has been much confusion about the meaning of Heisenberg temporal uncertainty. It's often regarded as no more than a limitation on the accuracy of *clock time* measurements, but that can't be right for it connects with the existence of the *virtual particles* that play such essential roles in quantum field theory and have been proven actually to exist (via the Casimir effect). *Real time* has real physical consequences, in other words, and is thus much more than a notional metric despite its inherently non-observable, *subjective* character. Every energy eigenstate manifestation can be regarded as accompanied by a small chunk of *real time* (Nunn, 2016). The name that I proposed for these entities, 'SoS – *Scintilla of Subjectivity*' – though probably not ideal, is a less misleading term than others that might be suggested

(such as *qualion* or *psychon*) since they are not at all like any material particle and couldn't possibly be carriers of any 'quality' or psychic capacity that we would recognize. Those originating in the brain can each be envisaged as having much the same relationship to the content of our consciousness as does some individual ion in the brain to the function of our minds.

Because of Heisenberg energy/time uncertainty, a clock-time duration can, in principle, be assigned to each SoS. This will often be almost infinitesimal and most SoSs will be analogous to virtual particles in that they will have no direct, observable or experiential consequences for either subjective or objective worlds. There's no need, therefore, to worry about having to attribute conscious subjectivity to rocks or raindrops, just as there is no need to worry about the swarms of virtual particles that are constantly manifesting within us. But the situation is rather different within brains, and perhaps to some extent within bodies too, for highly ordered patterns of precisely 'measured' (by their environments) energetic events are constantly occurring. According to the theory each such energetic event will be accompanied by an SoS of relatively long clock-time duration, perhaps as much as 0.1 seconds. Patterns of 'objective' energy manifestation in the brain will therefore get mapped into patterns of *real time*, thus providing a ground for our sort of subjective experience; though only those aspects of such patterns that get into neural memories will figure in the sorts of conscious experience that we are able to recall and discuss.

Although from its own point of view – and it is not misleading to regard it as *having* a point of view – each SoS exists in a durationless *now*, the fact that a clock-time duration can be attributed to it means that sequences of overlapping SoSs will occur to allow the sort of flow of temporality that we experience. There's an obvious question to be asked here about how such patterned, overlapping sequences of SoSs could produce the sorts of differentiated qualia that we experience, rather than giving just an undifferentiated 'subjectivity'. It's conceivable that knot theory might offer a basis for answering this question (Nunn, 2016), but the issues are too complex – and uncertain! – to be tackled in this short paper. I'd like to explore instead some implications of the idea that SoSs exist in, indeed *are*, 'nows' without future or past, but 'nows' that overlap in clock time.

The picture we've arrived at so far is that little threads (from an objective point of view) of subjective *nowness* arise in brains (and everywhere else) coincidentally with energy eigenstate manifestations. In brains these threads are woven into patterns and stretched out over clock-time sequences. What might this picture imply?

Some implications of *nowness*

There's strong evidence (to be touched on in the next section) that 'subjectivity' can and does affect 'objectivity', despite current ignorance about *how* it may do so. This is not altogether surprising in the context of SoS theory because of the non-commutative relationship envisaged to exist between energy eigenstates and SoSs. In effect, mutual interaction is simply an example of Newton's principle that actions are generally accompanied by reactions, but it's an example complicated by the fact that the interacting agents are pictured as operating within very different types of temporality.

From an objective point of view, the 'nowness' of *real time* can provide the sort of external reference frame that general relativity requires according to a range of authors (e.g., Unger & Smolin, 2015). Objective 'future' is when relativistic, clock time is unaccompanied by any SoS; 'present' is when a clock time event duration overlaps with the objective duration of an SoS (more usually the durations of a large number of individual SoSs); 'past' is when such overlap no longer exists from an objective perspective (Nunn, in review). SoSs, however, exist as 'nows' only and can be regarded as providers of an ever-accumulating *memory* for the objective universe. From their own points of view they are the abiding reality while the objective universe is an ephemeral, ever vanishing flow of events that adds to its enduring number and complexity of organisation.

The patterns of *real time* that are woven in our brains must be regarded as sharing this subjective property of individual SoSs. The patterns *are* our subjective *reality* (not all of which, presumably, gets mapped into neural memories); a reality that endures while our objective worlds flow past in a distinctly dream-like manner. It's not surprising, to put it crudely, that most or all of us oldies feel as if we are much younger selves trapped within ageing bodies! But what might happen to our individual SoS fields, the tapestries of *real time* that *are* our subjective selves, when these bodies finally expire? There would seem to be two possibilities. They might fall apart into their component SoSs, each of which presumably drifting off separately into the universe of *real time*; or, alternatively, they might retain their *weave* but, no longer stretched out on the *loom* of a living brain, might alter their topology in some way. There's no *a priori* way of deciding which of these alternatives is the more likely, but maybe the evidence can tell us.

Evidence

The evidence that entities closely resembling the concept offered here of 'subjective tapestries of real time' can persist from a clock time perspective after the death of their originating brains would probably be regarded as conclusive if it related to any mainstream enquiry. Evidence from reports of 'a previous life' by children is very strong; it is open to other interpretations, but by far the most straightforward is to suppose that personality characteristics and memories from a previous life have persisted somehow and been accessed by, or even incorporated into, a subsequent child. Some types of near death and end of life experience are almost equally robust in implying persistence of conscious minds in apparent independence of malfunctioning brains. Reports by a range of talented and honest mediums add to the evidence that people persist and can provide allegedly 'first hand' descriptions of what that persistence is like. It certainly looks as though the *weave* of which we are made is robust.

There are many excellent and detailed accounts of this very extensive evidence (see, e.g., Carter, 2012; Fontana, 2005) that are easily available and ought to convince anyone taking the trouble to read them that personalities and their memories are able to persist in some form or other from a clock time perspective and are able to affect aspects of the objective world. But of course the evidence doesn't tell us whether SoS theory provides a correct basis for apparent personality persistence. The altered topology of 'tapestries

of real time' that is a likely consequence of *release* from their brains might be used to account for some strange features of reported NDEs, such as 'life reviews', but that would be weak evidence at best for the value of SoS theory. Luckily, though, the theory does make a strong and surprising prediction, which should prove amenable to objective testing.

The prediction is that conscious mind related violations of energy conservation should sometimes occur. Such violations are of course impossible according to our present understanding of thermodynamics, relativity theory and quantum theory. Finding a violation would therefore provide strong evidence that SoS or some closely related theory is correct. The prediction depends on the fact that energy conservation follows from the indifference of basic physics to *smooth* transitions in clock time (as shown by Noether's theorem). Any event involving 'back action' of SoS fields on the objective world would *not* be temporally smooth because *real time* is inherently different from *clock time*. Therefore energy conservation might sometimes be violated in such circumstances.

There's actually a vast amount of anecdotal evidence that might be taken to indicate that violations of energy conservation can and do occur. Many of the stories about the miracles of saints or some of the capacities of sadhus – if the events reported were not all attributable to fraud, fakery, mass hallucination or the like – have to raise questions about the source(s) of the energy needed for their feats. The same applies to reports of physical phenomena manifesting during séances and perhaps of poltergeists. All such purported happenings required energy – if one can believe stories about *levitations* quite a lot of energy – which generally had no obvious source. So far as I know, rigorous investigations of energy balances relating to such events have never been carried out partly because of the frequently 'one-off', non-replicable nature of such events, but mainly because *everyone knows* that energy conservation is an unbreakable law, so why trouble to look for it? Nevertheless some of the capacities claimed by sadhus and yogis in particular might reward investigation from this point of view.

Conclusions

If the theory offered here, or some closely related theory, should eventually pan out, I think it would be fair to conclude that, from a *real time* point of view, our objective lives do have all the ephemerality and even insubstantiality of dreams. If 'we' refers to our objective selves, we are indeed 'the stuff that dreams are made on'. But can the analogy be carried further? Might our objective life have functions in relation to *real time* like those of sleep in relation to our objective lives? Perhaps the answer is 'yes'. Sleep seems to have two principal functions; it restores cognitive and behavioural flexibility to those deprived of it and it aids memory consolidation. It's tempting to conclude that this is our function in relation to the *real time* world, which otherwise might readily *crystallise* into rigid, fixed patterns without input from a variable and creative 'objectivity'. All the beauty, variety, even the horrors, of this world may add to the *vitality* of the *real time* world in a dynamic, reciprocal relationship between the two realms.

We may have the beginnings of an understanding of how *our* side of any such dynamic might work. Discovering how the other side works will be a major challenge for the future.

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