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# *Is Panpsychism at Odds with Science?*

**Abstract:** *Galileo's Error* is a superlative work of public philosophy, particularly as a way of introducing modern academic panpsychism to a broader audience. In this commentary, I reflect on an issue that is prominent, though often with different background concerns, in both academic and popular discourse: what it means to be 'scientific' or 'unscientific'. Panpsychism is not itself a scientific hypothesis, but neither is it (as critics sometimes claim) in conflict with science. Indeed, Goff argues, and I agree, that panpsychism is an eminently scientific worldview, in the sense of a way of viewing reality that accords with and embraces what science reveals. But what exactly it means to 'accord with and embrace' science is disputed; this paper tries to untangle some of the threads.

## 1. Introduction

Stop me if you've heard this one before. Science is great, but it has limits. We should accept its contributions but recognize those limits, the things it can't tell us, the mysteries it can't address, the questions it will never answer. For those things, we should look beyond science, to... and usually at this point, whoever is speaking will insert their favoured idea, product, or organization. Often the idea, product, or organization in question is somewhere on the spectrum from harmless nonsense to harmful nonsense. So it could be understandable for someone seeing Philip Goff give a similar-sounding spiel ('Galileo

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was great, but let me tell you about his Error...’) to be immediately suspicious. Combining this with a self-confessedly weird pitch — electrons are conscious! — seems to warrant even more suspicion, and so does the vague affinity sometimes claimed (either by critics or defenders) between panpsychism and various other -isms often viewed with suspicion, like ‘animism’ or ‘pantheism’. It could be enough to make one feel that the whole idea has ‘the faintly sickening odour of something cooked up in the metaphysical laboratory’ (Nagel, 1986, p. 49).<sup>2</sup>

And recently there’s been no shortage of people ostentatiously holding their noses: panpsychism is ‘a philosophically motivated pseudoscience’, according to Barry Smith,<sup>3</sup> ‘the consequence of knowing next to no science’, according to Patricia Churchland,<sup>4</sup> a ‘crazy hypothesis [with] not a shred of evidence supporting it’, according to Jerry Coyne,<sup>5</sup> and ‘one of several major steps backwards taken by philosophers over recent years’, according to Dan Kaufman.<sup>6</sup> Anecdotaly, I’ve been disappointed by people I know throwing panpsychism in with belief in literal deities, reliance on healing crystals, and opposition to vaccines: the low point was someone challenging me to explain what differentiates panpsychism from the reactionary conspiracy theory Q-anon. While Goff’s excellent book is a remarkable achievement in bringing complex philosophical ideas to a wider audience, more exposure for panpsychism is likely to mean more of this kind of suspicion.

I think this suspicion is misplaced, but I do have a little sympathy: in a world where the internet seems to connect us with a million charlatans every day, we have to reject most things out of hand, and one could do worse than treating ‘Science is great, but...’ as a red flag. It’s not too much of an exaggeration to say that unscientific beliefs nearly overthrew US democracy, hamstrung responses to a global pandemic, and are in the process of rendering the Earth uninhabitable for humans. A cultural shift towards refusing to give

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<sup>2</sup> That this is said by someone in the course of offering an argument for panpsychism is, of course, somewhat ironic.

<sup>3</sup> <https://twitter.com/smithbarryc/status/1320509697611497472>.

<sup>4</sup> <https://twitter.com/patchurchland/status/1320463304012173312>.

<sup>5</sup> [https://www.realclearscience.com/2020/01/06/panpsychism\\_makes\\_a\\_sneaky\\_return\\_288956.html](https://www.realclearscience.com/2020/01/06/panpsychism_makes_a_sneaky_return_288956.html).

<sup>6</sup> <https://twitter.com/ElectricAgora/status/1320507706185306113>.

unscientific-sounding ideas the benefit of the doubt would probably be a net good right about now.

One of the striking things about many of the attacks on panpsychism is how endlessly they recycle objections that Goff has already patiently dismantled, both in this book and, often, in direct conversations with people like Churchland. I don't think I would add much value by just repeating Goff's points, but perhaps there's value in spending a bit of time identifying and criticizing the things that *are* unacceptably unscientific, rather than just explaining why panpsychism isn't. So in this paper I want to focus on that — on analysing what sort of views a scientific outlook should rule out, and how panpsychism does and doesn't relate to them.

## 2. 'Being Scientific' as Accepting Current Science

We can distinguish a few ways for a view to try to be 'scientific'. The first and simplest is compatibility with science, specifically regarding the world's causal structure. Panpsychists of Goff's variety are very interested in certain things science can't tell us, but what it certainly *can* tell us is what causes what, and when, where, and how. A basic requirement for a worldview to be scientific is that it treat science as the final authority on this: if the best available science says that A can only cause B under X conditions, then A can only cause B under X conditions. That means, in particular, ruling out phenomena like telepathy, psychokinesis, ESP, spoonbending, precognition, past life regression, and communication with the dead, since all of these would require causal mechanisms sharply different from any of the gravitational, nuclear, and electromagnetic ones recognized by current science. Of course, there may turn out to be technological ways to produce phenomena like this — radiotransmitting neural implants that effect a sort of telepathy, for instance — but we'll have to devise them first, and in the meantime we should confidently reject parapsychology.

It should go without saying that panpsychists agree with all this (Goff certainly does). But I have sometimes encountered the idea, both from friends of panpsychism and from its enemies, that it might somehow make space for parapsychology in a way that materialism doesn't. After all, if the spoon in my hand is just consciousness — if, as on some versions of the view, it and I are just two permutations of the same cosmic consciousness — then shouldn't it make sense for *this* consciousness to be able to speak directly to *that* consciousness?

No. Unromantic as it may seem, the cosmic consciousness seems to be rigidly and inflexibly committed to certain laws of action, which dictate that we can bend the spoon only by applying the familiar sorts of forces, for instance by means of those permutations of the cosmic mind that we customarily call our ‘hands’. After all, it’s not as if we need panpsychism in order to unsettle our everyday view of spoons: we already know a spoon is just a complex of ripples in the universal quantum wave function, like us. But alas, grasping that truth will not help us bend it, except by means of those complex ripples in the universal quantum wave function that we customarily call our ‘hands’.

### **3. ‘Being Scientific’ as Accepting Likely Future Science**

Here is a second, slightly more aggressive, way in which a worldview might try to be ‘scientific’. It might aim for compatibility, not just with presently established science, but with where science looks like it’s going. That is, it might try to pre-emptively incorporate the most ambitious, complete way for present science to advance — as opposed to exploiting whatever ‘gaps’ and uncertainties may exist at present. There is obviously more room for controversy about what this demands: different philosophical assumptions will predict different future advances. Indeed, the central dispute between Goff and critics like Churchland is whether a particular gap — the explanatory gap between objective and subjective descriptions — should be expected to close with more scientific work. But it is crucial that panpsychists have well-understood arguments for the special status of this gap: they’re not just observing that we don’t have an answer yet, not just exploiting whatever gaps happen to exist.

As Goff notes (2019, p. 162), I defend a version of panpsychism committed to micro-reductionism: a complete account of the facts about the smallest components of nature, and their relations to one another, will determine all the facts about the larger components — the ‘bottom level’ fully determines all the higher levels.<sup>7</sup> This is

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<sup>7</sup> This goes in reverse too: a full account of the largest thing, the cosmos itself, would determine every fact about its smaller portions. Micro-reductionism, thus understood, isn’t opposed to holistic views of the universe as ultimately just one big thing, including the mysticism-influenced form of holism that Goff discusses over pp. 205–11. It just says that it’s the same universe whether we think of it as one big thing or as trillions of little things: the forms of our description will change, but the reality described doesn’t.

largely because, while I accept that micro-reductionism hasn't been (and perhaps can't be) decisively established (as Goff discusses over pp. 162–4), it seems to me the direction science is going, and to that extent a micro-reductionist philosophy seems to me more attractive than an emergentist one which posits a 'patchwork world' (*cf.* Cartwright, 1983; cited by Goff, 2019, p. 163; see also Moran, this issue).<sup>8</sup> On this score I think I aim for a more aggressive stance than Goff does: while he is agnostic about micro-reductionism, I strongly suspect that whatever gaps currently exist in our scientific reductions — of neuroscience to biochemistry, of biochemistry to particle physics, etc. — reflect our own current limitations, not facts about reality. Hence where I see a way of being more vigorously and preemptively scientific, he sees 'dogmas which are simply accepted as part of the zeitgeist' (p. 163). (As a matter of intellectual psychology, I suspect it's not a coincidence that I'm a compatibilist about free will and determinism, and Goff is more sympathetic to incompatibilism.)

Another part of embracing not just the undeniable data of science but the world-picture they seem to be suggesting is embracing the absence of any really sharp boundaries between different kinds of objects: between a brain and a rock lies an indefinitely gradual continuum of intermediate forms, with no place on that continuum where anything fundamental appears or disappears. For panpsychists, this means there is a pressure towards the sort of 'universalist' panpsychism that Goff holds off from endorsing; as he says, 'Most panpsychists will deny that your socks are conscious, while asserting that they are ultimately composed of things that are conscious' (2019, p. 113). It's true that most panpsychists try to restrict which composite things are conscious, but I think this is ultimately a mistake, and I think Goff agrees; at least, he has argued for universalism forcefully in print (Goff, 2013; *cf.* Buchanan and Roelofs, 2019, pp. 3007–10).<sup>9</sup>

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- <sup>8</sup> It is worth noting here that quantum entanglement, far from being an inexplicable anomaly for the micro-reductionist perspective, is deducible from the laws operating the micro-level: from a full account of two particles and the way they interact, one can *predict* that they will become entangled, and how this entanglement will affect the behaviour of each.
- <sup>9</sup> Partly because I think universalism is ultimately more defensible, and partly just for ease of exposition, I will sometimes put panpsychism as the idea that 'everything is conscious'. In strictness this should be 'everything is conscious or made out of conscious parts', but relative to the usual assumption that most things are utterly devoid of consciousness, 'conscious or made of conscious parts' is still a pretty striking claim.

#### 4. An Interlude on Observational Equivalence

One upshot of (at least some forms of) panpsychism being an aggressively scientific view, in the two senses just discussed, is that panpsychism and materialism are robustly observationally equivalent: no current observations discriminate between them, nor will any foreseeable future observations. This claim of observational equivalence has provoked incredulity from some critics (Churchland calls it ‘probably the stupidest thing I have ever read’),<sup>10</sup> while others regard it as correct, but fatally undermining panpsychism by rendering it unfalsifiable and therefore nonsensical (I’ve not yet seen a good response to the natural rejoinder that this standard implies the exact same verdict for materialism). I think the claim of observational equivalence is basically correct, and indeed central to properly understanding the dispute between panpsychism and its rivals, but in full strictness it requires two important qualifications.

First, it is not quite true that panpsychism and materialism predict all the same observations; they differ on one crucial observational prediction, though which one it is depends on the observer. From my perspective, they differ in their predictions about whether or not I am subjectively conscious: panpsychism predicts that I should be, while materialism gives no basis for predicting this. I say this because of the much-discussed explanatory gap: we cannot see any explanation of consciousness on a purely material basis, any reason why some amount of movements-and-forces-in-space should *feel* some way. And so if we did not know already, from the first person, that we are conscious, then nothing in the world-picture provided by materialism would give us reason to expect that we should be. At least, that is my take on what the respective theories predict: obviously there is no shortage of debate about this. But if panpsychists are right in their arguments — in particular, right that their theory explains human consciousness and materialism does not — then the upshot is that, so to speak, if I lived in a panpsychist world, I should expect to be conscious, and if I lived in a physicalist world, I should have no definite expectation on that score (or even expect not to be). Since I am conscious, that’s a data-point in favour of panpsychism.

Of course, *you* can’t observe whether a prediction that I should be conscious is borne out; from your perspective, the key observation is

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<sup>10</sup> <https://twitter.com/patchurchland/status/1320459305888280576>.

whether *you* are subjectively conscious, and in general each of us can observe that we ourselves are conscious, as panpsychism predicts. This is an odd sort of prediction — there is no single observation that can be predicted and evaluated by the scientific establishment collectively, but only a mass of individual observations that each individual scientist has already made before they even look at a textbook. I don't think this observational difference between panpsychism and materialism is therefore unimportant, but it cannot be denied that it is atypical. If we confine ourselves to more standard, shareable, 'public' observations, panpsychism and materialism are observationally equivalent: they differ observationally only when we recognize this important but atypical set of observations.<sup>11</sup>

There is a second difference between panpsychism and materialism that relates to observation, but is not well captured in any summary of 'observable evidence'. Just now I said that 'each of us' can observe that we're conscious. Who does that cover? Who, that is, counts as an observer? This is a big question, that risks dropping out of view if we just ask 'what is observable?', and skim past the question 'to who?'. Theories which disagree about who is an 'observer' are not really 'observationally equivalent', even if they agree about what a given observer should expect to observe. In the words of MC Hammer, 'when you measure, include the measurer'.<sup>12</sup> Admittedly, neither panpsychism nor materialism directly provide a complete answer to this question. But panpsychism does suggest that, in so far as consciousness is one key requirement for being an observer, everything in the universe fulfils that requirement, and so is perhaps one step of the way towards observerhood.

### **5. 'Being Scientific' as Adding No New Elements to the Scientific Picture**

A third sense in which we might want our philosophy to be scientific is that, as well as treating science as the authority on the world's

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<sup>11</sup> Isn't it part of the scientific method to distrust private observations, to only trust what can be publicly shared? Perhaps in the sense that *I* should be wary of trusting *your* private observations (more precisely, your reports of them to me), but it makes no sense for *me* to distrust *my own* private observations until they have been publicly validated — after all, how would I learn that they had been publicly validated, except *via* some perception of my own?

<sup>12</sup> <https://twitter.com/mchammer/status/1363908982289559553?lang=en>.

causal structure, we shouldn't add any *new* structure, even if we stipulate that it has no direct causal impact. Of course, panpsychists like Goff are in some sense 'adding' something to the physical picture, namely consciousness (and lots of it!). But this isn't posited as something additional: it's posited as *what — without realizing it — we were talking about all along*. There are electrons, they move in space, they have negative charge and a little bit of mass: the panpsychist doesn't add anything to this picture, they just propose that the things already in this picture — objects like electrons, relational structures like space, properties like charge and mass — are in fact forms of consciousness. This isn't adding, it's interpreting. And it rests on recognizing that the physical picture itself is just under-specified: it tells us how this thing called an 'electron' behaves, and how these properties called 'charge' affect that behaviour, but never says (never could say) what any of this is in and of itself.

Goff talks about this idea at length, under the heading of 'simplicity' or 'Ockham's razor', and I think he does an excellent job of explaining why simplicity-based reasoning is an important, indispensable part of any scientific worldview, and why it tells in favour of panpsychism or materialism and against dualism. I think it's useful to belabour the point a little, because this concern not to add anything unnecessary tells not only against dualism, but also against virtually any sort of individual afterlife, and, I think, against belief in any number of gods — at least if they are understood as intelligent agents who knowingly pursue goals.<sup>13</sup> That is, part of the scientific spirit that drives panpsychism is a thorough-going opposition to anthropomorphism in our understanding of the universe and its non-human parts.

Panpsychism's opposition to anthropomorphism is, I suspect, sometimes a bit confusing. If we hear 'X is conscious', we naturally assume that a certain basic sort of intelligence goes along with this — desiring things, representing one's surroundings, choosing to do things that satisfy those desires in light of those representations, etc. If we hold onto that link between consciousness and intelligence, then attributing

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<sup>13</sup> This sort of scientific spirit may still be compatible with a sort of impersonal pantheism, something like what Einstein expresses by saying 'I believe in Spinoza's God, who reveals himself in the harmony of all that exists, not in a God who concerns himself with the fate and the doings of mankind' (Isaacson, 2008, pp. 388–9, *cf.* *New York Times*, 1929). See also Leidenhag (this issue) for an attempt to argue that theist panpsychism does better than atheist panpsychism at accommodating the principle of simplicity.



consciousness more widely will imply attributing intelligence more widely, including to things whose behaviour and internal structure don't fit such a structure. And that would violate Ockham's razor: attributing intelligence to, say, a rock, or an electron, would mean positing a sort of complexity — the specific content of its representations, the specific things it desires, the mechanisms by which the one influences the other, and so on — that had no correspondence to anything scientifically determinable about its structure or behaviour.

Fortunately, attributing intelligence to rocks is not what panpsychism is about: it's about holding onto the link between intelligence and observable behaviour, while revising the link between consciousness and intelligence. Scientific observation and study are still the best and only ways to determine what sort of intelligence any natural system (a rock, a river, a plant, an insect, a frog) has, what sort of information it can absorb and process, what its cognitive capacities are. But at present, any account of a system's degree and forms of intelligence tends to provoke the further, awkward, question: is it intelligent *enough* to be conscious? Are its cognitive capacities 'advanced enough', do they cross the magic threshold for there to be some subjective experience accompanying them? Panpsychism's impact is here: it dismisses this question by throwing out the whole idea of a magic threshold, a boundary between the conscious and the non-conscious. It replaces it with the very different question: 'what *sorts* of consciousness accompany these cognitive or informational processes, whatever they are?' This is the same question we already have to ask about every system which we decide *is* conscious, and it's often a profoundly difficult question, especially as we get further and further from human-like minds. Panpsychism doesn't by itself answer this question: it just tells us that we can ask this question about every system we study, and thereby dissolves the binary question 'conscious or not?'

## 6. An Interlude on 'Animism'

Some readers might take the last two paragraphs to constitute a rejection of something called 'animism', thought of as ascribing human-like minds to all sorts of natural things. If that's what you associate with the term 'animism', then panpsychism is opposed to animism. But I prefer not to use that term to express this point, because it is so entangled with a long history of contentious meanings: originally a term in the anthropology of religion, often used to

caricature non-European beliefs, and given multiple contradictory definitions by different authors with different aims (Bird-David, 1999). To the extent that the term has currency now, it is often in the context of what is sometimes called ‘the new animism’ (see, for example, Rose, 1996; 2003; Harvey, 2006), and in this context it seems to express an orientation, a stance taken towards natural things, more than it expresses any truth-claim about their nature. That is, ‘animism’ in this context is about approaching forests, rivers, mountains, animal populations, and so on in a spirit of respect, with the goal of learning from them, finding out what they need, and providing it while taking what we need in turn. On this reading, being an animist is a matter of practice, not belief: the practice of caring about non-human things for their own sake. As a way of approaching things, this is not the sort of thing that can be true or false, nor conflict or agree with any given scientific theory or discovery. It contrasts not with doctrines, like panpsychism or materialism, but with rival approaches, like the exploitative instrumental approach that treats anything non-human as a resource to be owned and used.

But a practical approach can still benefit from theoretical underpinnings. As Freya Mathews, a panpsychist environmental philosopher, writes: ‘...animism does leave certain philosophical questions unaddressed: which things count as alive, in the animist sense?... In any case, what is it about animate things that entitles them to be treated with respect[?]’ (2020, p. 133). To put it another way: the stance of approaching something with respect presupposes that it has some sort of needs, and that we have some way of determining what they are. Maybe these needs belong to it as a whole, or derive from interests of its parts or members, or inhere in its relationships to other things; maybe on some fundamental level these different options aren’t as distinct as we tend to think. But what sort of needs a system is capable of having, and what its actual needs are, and how we can find out about them are all questions that demand philosophical attention.

I think Mathews and Goff are right that panpsychism has a lot to offer as a theoretical underpinning for the relational orientation that the new animists speak of: the belief that everything in nature is some form of consciousness pairs very nicely with the attempt to approach

everything in nature with some form of respect.<sup>14</sup> But I also think the relationship between theory and practice here is a fairly loose relationship: a materialist cosmology could potentially pair just as neatly with animism, in so far as it tells us that human and non-human parts of nature are fundamentally the same kind of thing, just intricate arrangements of matter that, for a fleeting moment, becomes aware of itself (*cf.* Goff, 2019, pp. 189–90).<sup>15</sup> So too, perhaps, could a form of naturalistic dualism that saw the glimmer of an immaterial mind in bears and birds and beetles, or even in trees and rivers. The only view which is really deeply unsuited to this task is the sort of anthropocentric dualism which radically distinguishes human beings from all non-human life. Ironically, this sort of dualism has little following in academic philosophy but enormous reach in major world religions.

### 7. Towards a Monist United Front

The fact that panpsychism and materialism are both well-suited to provide a metaphysical backing to a respectful, ‘animistic’ orientation towards natural things, in a way that anthropocentric dualism is not, points towards an important difference between the context of academic philosophy and that of wider society. In academic philosophy of mind, materialism is the hegemonic view; everything else is defined by its departures from materialist orthodoxy. In this context, it’s natural to group panpsychists, dualists, and other non-materialists together, united by their status as rebels against the system.

But that doesn’t reflect the wider culture. It’s hard to know what *is* the most widely accepted metaphysics of conscious, or even if most people have a coherent position on the question, but dualism — or at least, ideas about past lives, the afterlife, and so on, that seem to require dualism — is plausibly the most widespread actual belief. And, as Goff (2019, pp. 188–90) and Papineau (2020) suggest, many

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<sup>14</sup> Mathews makes this claim in much of her work, see especially Mathews (2003; 2020), Goff (2019, pp. 188–95); *cf.* Skrbina (2005); Vetlesen (2019).

<sup>15</sup> For this reason, I am a little wary of Mathews’ claim that ‘the environmental crisis... is *the result of* an anthropocentric outlook that permeates the Western tradition’ (2020, p. 131, italics added; *cf.* Goff’s quotation of Naomi Klein on pp. 188–9, about the ‘corrosive separation between mind and body... *from which* both the Scientific Revolution and the Industrial Revolution sprang’, italics also added). I suspect that anthropocentric theories are more a result than a cause of environmentally destructive practices, whose ultimate origin lies more with the practical advantages that various individuals and societies were able to get from them.

people's lip service to materialism covers up an unconscious dualism. More generally, respect for empirical science, not just as a social institution over there in the universities but as a disciplining factor for one's own most heartfelt beliefs, is less widespread than we might hope. In this context, grouping panpsychism together with dualism, against materialism, seems to me a mistake. Much better would be, so to speak, a 'Monist United Front': despite their differences in the seminar room, panpsychists and materialists should be largely in agreement on most worldly matters. They can agree on the importance of following scientific consensus on empirical questions. And they can agree that, metaphysically, there's just us, and other things made of the same stuff as us. Nothing outside the world, and no deep divides or sharp boundaries within it.

One of the great virtues of *Galileo's Error* is to bring contemporary panpsychist ideas to a wider audience. And one part of that value is that, for some people, panpsychism may offer a more satisfying and appealing environmental philosophy than materialism does. My hope would be that this needn't be a point of conflict between panpsychists and materialists; the broader culture is so full of both outright science denialism and explicit or implicit dualism that the points of agreement between panpsychists and materialists are more important than their points of disagreement. This is especially so in environmental matters, where respect for scientific consensus and recognition of fundamental kinship between humans and nature are so desperately needed.

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