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## *The Mind–Body Problem and Whitehead’s Non-reductive Monism*

**Abstract:** *There have been many attempts to retire dualism from active philosophic life, replacing it with something less removed from science, but we are no closer to that goal now than fifty years ago. I propose breaking the stalemate by considering marginal perspectives that may help identify unrecognized assumptions that limit the mainstream debate. Comparison with Whitehead highlights ways that opponents of dualism continue to uphold the Cartesian ‘real distinction’ between mind and body. Whitehead, by contrast, insists on a conceptual distinction: there can no more be body without mind than mind without body (at least at the level of ultimate constituents). Key to this integration is Whitehead’s understanding that mind, at its most rudimentary, is simply the intrinsic temporality of a physical event. Thus, the resulting form of ‘panpsychism’ is more naturalistic than commonly supposed, and it solves both the composition problem (traditionally fatal to panpsychism) and the ‘hard problem’.*

### **I. Introduction**

In this paper I look at the ideas of the mathematician and philosopher Alfred North Whitehead (1861–1947) in light of the contemporary debate on the ‘hard problem’ of physically explaining consciousness.

Consciousness studies is a burgeoning business, but one still marked by partisan controversy. If we look closely, however, we can find consensus behind the controversy. There is, for example, well attested agreement on *the structure of the problem space*. One also

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finds consensus in a growing plaint of what I will call ‘paradigm fatigue’: a sense that alternatives allowed by the acknowledged problem space have been exhausted, that no option really satisfies, and that debate has reached a stalemate (Nagel, 1986; Güzeldere, 1997; Seager, 1999; Weber and Weekes, 2009).

I propose that the shared principle organizing the problem space is the old Cartesian idea that there is a *distinctio realis* between the mind and the body.<sup>1</sup> A ‘real distinction’ means that neither relatum is the sort of thing that intrinsically needs the other in order to exist. It’s easy to spot this assumption in the original identity theory. For Place and Smart, it was an entirely contingent fact that certain events described in a mental language were identical to certain events described in a physical language. The whole point of the early identity theory was to find a way to identify mind and brain without denying the reality of their distinction.

I shall leave it as an open question here whether the successor version of the identity theory, *a posteriori* physicalism, breaks with the Cartesian paradigm. In so far as it seeks to preserve the *a priori* and logical independence of the mental (specifically, the phenomenal) and the physical, it preserves Descartes’ fundamental intuition that mind and body are wholly (and only) intelligible in separation from each other. And while *a posteriori* physicalism does affirm their identity, it seems to be committed to the necessary inscrutability of their identity, just as for Descartes their union and interaction was necessarily unintelligible.

But what about eliminativism? How can I say it is constrained by Cartesian assumptions when it prides itself expressly on overcoming Descartes’ dualism? Those influenced by Whitehead see it differently (Griffin, 1998; Weekes, 2003; Katzko, 2009). They stress that by rejecting one half of Descartes’ dichotomous ontology, eliminativists have not rejected the dichotomy. Indeed, it is only because they have preserved the idea of a real distinction between the mental and the physical that they have the option of rejecting the one while preserving the other. Such mutual independence is a classic test of a ‘real’ as opposed to a ‘conceptual’ distinction.

Aside from those inspired by Whitehead, Galen Strawson has recently acknowledged the real distinction between mind and body as the tacit, underlying constraint that limits the contemporary debate to an unpromising array of well-worn alternatives (Strawson, 2006a, pp.

[1] A systematic defence of this claim must be reserved for a separate treatment. Here I shall do no more than buttress my contention with a suggestive reading of some salient examples.

5–6; 2006b, pp. 225–6). If this assessment is correct, what we need in order to make progress on the mind–body problem is precisely a way to understand mind and body as not really distinct. Whitehead cuts an interesting figure because he offers something quite rare: an elaborately thought-out example of how this might be achieved.

Now it might be countered at this point that functionalism defines itself by this same desideratum. With the relation realizer-realized, modelled on the hardware-software distinction in computing, it seeks a way to understand the distinction between body and mind as ‘conceptual’ rather than ‘real’.<sup>2</sup> And what could be more mainstream than functionalism? So what becomes of this objection to the research programme of cognitive psychology? How is that programme still constrained by Cartesian assumptions?

The postulate Whitehead embraces is that neither mind *nor* matter can be understood apart from the other term in this traditional dyad (which is why, in the end, his solution cannot fail to imply some kind of panpsychism). However, from the computer model functionalism appeals to, it’s clear that the unity it seeks to impose on the traditional dyad is a form of one-sided (not reciprocal) dependency. The realizer can exist independently of realizing the software program. It is precisely this asymmetry that gives functionalism its strong appeal as a theory of mind with good materialistic credentials. So while functionalism rejects the real separability of mind from matter, it accepts the real separability of matter from mind.<sup>3</sup> Whitehead dares us to question even this one-way Cartesianism.

Unfortunately, the way Whitehead presented his ideas in his magnum opus, *Process and Reality*, is notoriously challenging. Even the most well-intentioned reader is put off by idiosyncratic jargon and a lack of clear argument. One has the impression of wild speculation cloaked in gratuitously difficult language. The primary purpose of this paper is to remedy these obstacles to evaluating the merits of Whitehead’s ideas and putting them to further (possibly un-Whiteheadian) use. I will summarize Whitehead’s metaphysics in a language that is accessible to the educated layman, and I will place his ideas in the context of their motivation — the problems they are intended to avoid and the positive explanatory work they are meant to do.

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[2] I am very grateful to William Seager, whose clear-headed comments on an earlier version of this paper made me think more carefully about the similarities and differences between Whitehead and functionalism.

[3] The kind of distinction implied by one-sided dependency cannot be classed as conceptual any more than real: it is conceptual for one term and real for the other. In *Principles I* §61 Descartes (1985, vol. 1, pp. 213–4) followed Suarez in calling it a modal distinction.

I have no intention of defending the *truth* of Whitehead's metaphysics. It was Whitehead himself who said that it is far more important for a proposition to be interesting than for it to be true (1929/1978, p. 259). Whitehead's metaphysics merits attention because, while being provocatively unorthodox, it is sufficiently rigorous to be able to give us new traction on the larger problem of restructuring the ossified problem space of the mind–body problem.

Sections II and III will outline the unconventional ideas Whitehead developed to carry out his metaphysical programme. By emphasizing the continuity of these ideas with Whitehead's earlier natural scientific work and their logical independence from his emerging commitment to panpsychist monism, I show why Whitehead thought his novel account of the nature of physical process could be argued for not merely on the ulterior, metaphysical grounds that it resolves the mind–body problem, but also on the more naturalistic grounds that it solves problems having to do with time and causality that fall within the purview of an unreconstructed science of the physical. Section IV will assess results. First, it will indicate the very specific sense in which Whitehead's solution to the problems with time and causality results in a monism that can be called panpsychist, then it will show how Whitehead is well-positioned to answer the two strongest objections to panpsychism, and finally, in discussing Whitehead's treatment of qualia, it will show how he avoids the famous 'hard problem' of consciousness.

## **II. The basis and motivation for Whitehead's critique of physicalism**

A main reason for Whitehead's poor reception by his philosophical contemporaries stemmed from a perception that the only motivation for his critique of physicalism<sup>4</sup> was metaphysical and that his arguments were *ad hoc* or circular. For example, Whitehead accuses physicalism of committing what he calls 'the fallacy of misplaced concreteness'—of mistaking abstractions for concrete realities. I will explain below what I think Whitehead means by 'concrete' and 'abstract'. First let me address the fear that many critics harbour. If Whitehead is dogmatically committed to some form of panpsychism from the outset, then obviously he will think any concept of the

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[4] The term Whitehead uses in this context is materialism. The term now preferred for an ontology dictated by the current state and current ambitions of the science of physics is physicalism. Wherever updating Whitehead's language does not affect the meaning or force of his arguments, I have not hesitated to do so.

physical that leaves out its putative mental aspect is an abstraction from what it really is in its concrete actuality. But if all Whitehead means by 'concrete' is 'individuated by both physical *and* mental predicates', then accusing physicalism of being too abstract to explain the 'concreteness' of physical events is not an argument for panpsychism. It's just a question-begging admission that he is already committed to it. Many sceptics fear this to be all that Whitehead was up to. However, I do not think their fears are justified. In this section and the next, I will try to make the case that there is substantially more to Whitehead's metaphysics than a dogmatic and question-begging commitment to panpsychism.

A good part of Whitehead's philosophical writing is critical. His arguments take the form of a critique of the methodological and ontological assumptions of the sciences of nature and the sciences of mind. Here I will deal only with his critique of natural science. He tries to show that in its traditional modern form natural science is committed to an ontology of its subject matter that is not rich enough to explain phenomena it should recognize as falling within its purview (I say 'should' because one powerful way to meet the sort of objections Whitehead advances is to simply deny that it is incumbent on physics to explain the phenomena in question, as I will discuss below). Assuming, for example, that the formal and quantitative descriptions of physics exhaust what physical events are makes it impossible, according to Whitehead, to understand such things as the irreversibility of time, the reality of the present, or the cumulative character of events (Whitehead, 1929/1978, pp. 136–7, 237–8). While this claim may open a Pandora's Box of controversy, the important point is two-fold: Whitehead is addressing concerns whose legitimacy is widely acknowledged — how physics can explain these phenomena is a well-recognized problem — and the legitimacy of these concerns in no way *presupposes* panpsychism. On the contrary, panpsychism is a consequence of Whitehead's independently motivated *solution* to the problem. From this I will conclude that Whitehead has at least one argument for panpsychism that does not presuppose his metaphysical ambitions to solve the mind–body problem monistically. Whether or not it is persuasive is another matter, but it is not simply question-begging.

For convenience, in this paper I will refer to this group of related phenomena (the irreversibility of time, the reality of the present, or the cumulative character of events) as 'the concrete temporality' of physical events. We can now clearly distinguish what I believe to be two separable lines of argument for panpsychism in Whitehead. One line

of argument is indeed metaphysical: physics as conventionally understood fails to integrate smoothly with psychology. This leaves an unbridged explanatory gap that manifests as the mind–body problem. In response, Whitehead offers a metaphysical thought experiment that is to be judged pragmatically by its success in closing gaps and resolving antinomies. Although an exercise in metaphysics, this thought experiment has esteemed *scientific* precedents. It seeks to integrate the mental and the physical the way recent physics had integrated electricity and magnetism or the discrete and continuous forms of radiation (for a defence of this line of argument in Whitehead, see Weekes, 2003). I think it's clear that Whitehead was trying to do this in *Process and Reality*. But there is the other line of argument that does not presuppose this metaphysical desideratum. According to this other line of argument, physics fails on its own terms to explain its proper subject matter, for it cannot explain the concrete temporality of physical events (for a defence of this line of argument in Whitehead, see Shields, 2009).

Support for the claim that the latter forms a separate line of argument that may lead to, but does not presuppose, Whitehead's panpsychist metaphysics can be found in chronology. If we confined our attention to *Process and Reality*, we might suspect that Whitehead arrived at his critique of physicalism by working entirely backward from a 'psychologized' ontology of nature, accusing physicalism of lacking an account of precisely those alleged properties of natural things that he will need for a panpsychist solution to the mind–body problem. Parenthetically, I would like to say that there is no reason such a procedure could not make valuable contributions to philosophy. But we know from the chronology of his works that this was not how he proceeded. In the period from 1919–1922, Whitehead published three books on the foundations of physical science (Whitehead, 1919/1982; 1920/1964; 1922/2005). These three works betray the influence of Bergson's philosophy and make much of his notion of 'duration'. More than anything else, they stress the fundamental importance of time in the ontology of nature. The crucial point is the following: while we can already see his critique of the abstract ontology of nature taking shape, in these three books Whitehead completely brackets any questions about the physical basis of mind in nature.

Moreover, thanks to the painstaking work of Lewis Ford (1984), we also know a great deal about the development of Whitehead's philosophy between this period and the publication of *Process and Reality* in 1929. In their initial form, Whitehead's Lowell lectures of 1925 were

the culmination of the three books that had gone before. Later, while revising the Lowell lectures for publication as *Science and the Modern World* (1925/1967), it seems Whitehead came to think that he had, without realizing it, already provided the basis of mind in nature by explaining concrete temporality as something ontologically essential to an event. In this way he was led, I believe quite inadvertently, to endorse a version of panpsychism according to which mind at its most rudimentary is simply the intrinsic temporality of an event. It is only as this insight further germinates that he begins thinking of his project metaphysically as the revolutionary integration of the mental and the physical.

This brings me to what I hold to be the most important — and provocative — contention implicit in Whitehead's metaphysics, which I shall call the Equivalence Thesis:

**The Equivalence Thesis:** A minimally adequate ontology of nature must be able to account for the concrete temporality of physical events, but an ontology of nature adequate to account for the concrete temporality of physical events is already adequate to account for mentality.

There are two sceptical questions that the Equivalence Thesis raises, corresponding to its two parts. One is whether an adequate account of physical nature really needs to explain what I have called 'concrete temporality'. For example, proponents of the block-universe view would probably agree that what I have called concrete temporality already fully embodies mind; in fact, they would say that it has only to do with mind, denying that it has anything to do with physical facts. The second question is whether 'concrete temporality' is really going to be enough to ground (derive) all the properties we think of as mental or even some subset that we decide is basic. I do not propose to deal with the first question here (but see Shields, 2009). I only note that it is an open question, and whether or not one finds Whitehead's answer compelling, it points us to novel ways of getting traction on the mind-body problem that deserve exploration.

Focusing on the second question, I would like to provide enough of a sketch of Whitehead's system to let the reader glimpse how Whitehead thought that making concrete temporality internal to the ultimate constituents of nature breaks down the real distinction between mind and matter and solves what is known as the 'generation problem' or the 'hard problem' of explaining consciousness.

Accordingly, in the following synopsis, I shall present Whitehead's claims entirely as claims about the conditions of intelligibility for an

ontology of physical events. If the Equivalence Thesis is correct, then we should find at the end of the exposition that we needn't add anything to get a philosophy of mind out of it. Readers will have to decide for themselves if we have done more than is needed to understand the physical and still less than is needed to understand the mental.

### III. Whitehead's system sketched in outline

#### 1. *Type-monism vs. token-monism: Asymmetrical relations*

We can begin to flesh out Whitehead's metaphysical scheme by examining the ways it does and does not qualify as 'monism'.<sup>5</sup> Already in his works on natural science in the years 1919–1922, Whitehead insisted that an ontology of nature had to be monistic, but what this meant for Whitehead was *not* that it had to fuse mind into the physical. Remember that at the time he was simply bracketing any consideration of mind. A monistic ontology of nature was one that had, rather, to completely exclude any recourse to mind! The reason was evidently that Whitehead was still thinking of mind as something 'outside of' nature — so that monism at this point just means uncompromising naturalism in the ontology of nature. Whitehead cites the doctrine of secondary qualities as an example of the ontology of nature falling into dualism by making an illicit appeal to mind as a separately existing principle in order to construct the physical object (Whitehead, 1920/1964, pp. 26–48). The lesson I want to take from this is that it is possible to talk about monism *without presupposing panpsychism*. Methodologically, this possibility remains relevant even for the doctrines of *Process and Reality*. For we can always begin by limiting ourselves to a monism of physical nature, and if the Equivalence Thesis is correct, then a monism of physical nature will turn out not to have excluded mind after all. All it will have excluded is mind conceived as a type of thing *really distinct* from the physical, and Whitehead would be the first to agree that such a thing does not exist.

Now the first crucial distinction we need to make is between a 'type' and a 'token' monism. In *Process and Reality* (1929/1978), Whitehead is postulating a monism of type — there is only one *type* of thing actually and concretely existing in the world. But there is a plurality of tokens instantiating the type. This distinguishes his monism from that of idealists such as Bradley, who postulated the existence of a single individual, the Absolute. This is important because of its

[5] Again I allow myself a vocabulary that is not Whitehead's. Although Whitehead is committed to monism in various ways, the reader should know that he does not use the word 'monism' to denominate these commitments.



connection with the theory of relations. Unless there is a genuine plurality of individuals to serve as distinct relata, there can be no relations. Since Whitehead traces a great many traditional problems in the history of philosophy to its lack of an adequate theory of relations (not least the problems in the understanding of time and causality already alluded to), it is paramount for his ontology to allow ontic diversity and be able to explain how diverse individuals are *really and truly* related. The one type of thing postulated in Whitehead's monism must therefore be of a sort that mandates a plurality of instances and *real* relations among them.

This requirement rules out two possibilities:

- A system where *all* relations are internal. This is precisely what Bradley envisioned. Bradley persuasively argued that relations in such a system would be *unreal* because the thoroughgoing internality of relations would effectively prohibit there being any real diversity of individuals to be related.
- A system where *all* relations are external. This would have a genuine diversity of individuals, but (*ex hypothesi*) the relations would not make any difference to the individuals they relate. This leaves us back where we started. If relations do not make any difference to their relata, then we are compelled to try to explain the nature of individuals — e.g. their existence in time, their causal efficacy, their perception, memory, etc. — without any recourse to relations.

So what option is left? Whitehead builds his temporal ontology around the asymmetrical relation he calls 'prehension', which is internal to one relatum and external to the other. Perception offers a clear-cut example of such an asymmetrical relation. If I see a cat, then there is a relation between my seeing the cat and the cat itself. But there is an asymmetrical dependency relation between the relata. While the existence of one relatum (seeing) is affected by and depends on the existence of the other (the cat), the converse is not the case. The cat exists whether I see it or not, but my seeing it depends on the cat being there. So the cat is externally related to my seeing, even though my seeing it is internally related to the cat.

Whitehead proposes to understand causality as an asymmetrical relation of this sort: effects depend on their causes, but causes do not depend on their effects. Not everyone will agree with this claim (which in any event admits of numerous interpretations), but the important thing in this context is to see what use Whitehead puts it to. Taking a cue from the Theory of Special Relativity, Whitehead understands

time in terms of causality: to say that B is later than A is to say that B falls in the forward light cone originating at A in Minkowski's hyper-space. B, in other words, is (however weakly) causally affected by A. Putting this all together, we get the basic thesis of Whitehead's metaphysics: later eventsprehend earlier ones so that the present is always internally related to the past while the past remains externally related to the present.

This yields several of the features Whitehead was looking for. Because an earlier event is externally related to a later event, they are distinct relata. Because the later event is internally related to the earlier event, the earlier event makes a difference to the later event. And because of the asymmetry of the relation, the temporal flow will be irreversible.

### *2. Type-monism vs. stuff-monism: Individuation*

A second crucial distinction is between a type- and a stuff-monism. Traditionally, the monism/dualism debate is a debate about the *stuff* of which things are made. 'Materialism' is the doctrine that matter is the only kind of stuff — that all things are made of matter and *only* of matter. By parity, dualism would be the doctrine that minds are different from bodies because they are not made of matter, but of mind-stuff. Now if we approach panpsychism in this way — as addressing the question 'what is the stuff of which things are made?' — then we will find it has two versions. There will be a dualist or dual-aspect version, where the 'pan' in panpsychism refers to the universal distribution of mind-stuff in the material world: material-stuff is always associated with mind-stuff so that all things are made of both material-stuff and mind-stuff.<sup>6</sup> And there will be a monistic version, where the 'pan' in panpsychism refers to the whole stuff of which things are made so that all things are made of mind-stuff and *only* of mind-stuff.<sup>7</sup> This is often how the debate was framed in the nineteenth century, when the term 'mind-stuff' was coined by William Clifford.

In a sense, all four of the positions just described qualify as 'materialism' because they all try to answer the ontological 'What is it?' question *solely* in terms of Aristotle's material cause: what is it made out of? Call this stuff-metaphysics. Stuff-metaphysics has certain

[6] 'All matter... is the seat of a Spiritual quality' (Duncan, 1907, p. 77). 'There is no physical process which is not indissolubly bound up with the psychical modes apprehending it' (Lewes, 1877, p. 351).

[7] Panpsychist stuff-metaphysical monism was the original doctrine for which the term mind-stuff was coined: 'The universe... consists entirely of mind-stuff' (Clifford, 1878/1901, p. 72).

consequences for the theory of individuation. It implies that an individual is simply a limited region, a piece, of the underlying stuff and arises by an arbitrary division of it. It doesn't even matter whether the division is real or not. For if the individuality-conferring divisions are arbitrary, imagined or potential divisions will be as good as real ones. It follows that individuality is purely 'accidental' and can have no explanatory role to play in this kind of scheme. This is the hallmark of consistent stuff-metaphysics: there is essentially nothing more to *being something* than *being made of something* — everything else is incidental.

But as soon as we insist that the division must be real and satisfy non-arbitrary constraints for the result to qualify as an individual, we leave stuff-metaphysics behind because we are tacitly acknowledging something like a formal cause (in the Aristotelian sense) that is responsible for circumscribing the individual, giving it internal unity by separating it or distinguishing it non-arbitrarily from what surrounds it. One could still be a materialist in the sense that one claimed all things were *made of matter*, but if *being made of something* is not all there is to *being something*, then we also have to specify the *formal identity conditions* that make things what they are by constituting them as real individuals. Our ontology becomes an ontology of type; individuals are now formally-circumscribed instances of the type rather than accidental division of a stuff into parts. Any functionalist understands this point: functionalism holds that all things are made of matter, but it is something else (function) that individuates matter into recognizable types of things.

The upshot of this discussion is that there is more than one kind of materialism. But (if I may jump ahead for a bit) we can see that there will also be more than one kind of panpsychism. Just as there is a stuff-metaphysics materialism that says all things are made of matter and nothing else matters, there will be a stuff-metaphysics panpsychism that says all things are made of mind and nothing else matters (and there will be a panpsychist dualism that compounds both of these stuff-metaphysical positions).

However, a broadly hylomorphic metaphysics that acknowledges (something at least analogous to) both a material and a formal cause will open up other possibilities. So, for example, just as one can then say that things are made of matter but individuated by something else (a form, a function, or perhaps even a mind), one can also say that mind individuates stuff into discrete things without claiming that things are *made of* mind-stuff. This is a crucial point, for despite the fact that all things for Whitehead are in a sense 'made of' experience,

Whitehead is not a stuff-metaphysics panpsychist. As we shall see, the mental is the *causa formalis*, not the *causa materialis* in Whitehead's metaphysics.

I think a good part of the hostile reaction to contemporary proposals of panpsychism stems from an unconscious association the word still has with stuff-metaphysics. It seems to connote the idea that things (or some parts of things) are *made of* mind-stuff or consciousness *instead* of matter, and perhaps even that my consciousness is a partition of a great continuum of world soul.

Although Whitehead finds many problems with stuff-metaphysics, the one that is relevant here is its consequence for the theory of relations (Whitehead, 1925/1967, pp. 48–58, 107). For stuff-metaphysics, because individuals are not real individuals but are only potential or accidental divisions of a continuum, all relations will be symmetrically internal (relations of the continuum's geometry) or symmetrically external (because all divisions of the continuum are accidental to what it is ontologically, all relations among the regions so divided will be external). So even bracketing mind and limiting ourselves to a consideration of purely physical nature, we find that stuff-metaphysics materialism is going to be inadequate, for it makes a diversity of real individuals and real relations among them impossible.

Just as type-monism allows for a real diversity of instances, it also allows for a multiplicity of principles (unlike stuff-metaphysics monism). The one type of which all things are instances can be as complex as you like. As long as there are no other types of things it will still be the template of a monism. Accordingly, Whitehead's monism exploits many dualities, much the way Aristotle did in his own hylo-morphic metaphysics: dualities between formal and material aspects of individuals, as well as polarities and stratifications within the formal aspects. As we shall see, this enables Whitehead to create a dynamic monism that aims to inter-animate and overcome many of the traditional antitheses of western philosophy.

### 3. 'Taking time seriously' and continual creation

For Whitehead, 'not taking time seriously' means taking duration for granted (Whitehead, 1984, pp. 303–8; 1961, pp. 240–7). Whitehead's textbook example is classical materialism, which postulates an indestructible substance (matter or material particles). Time is here demoted to a kind of side effect of permanence (Whitehead, 1925/1967, p. 50). Things endure because they are made of something permanent.

Much of the eccentricity of Whitehead's metaphysics owes itself to his extremely rigorous commitment to taking time seriously. Whenever physical theory assumes that it must explain change, but not persistence, or when it assumes that it can explain change by means of some more fundamental facts of persistence, Whitehead sees the spectre of classical materialism with its postulate of inert persistence. But if persistence can never be assumed, then its appearance must be explained as a kind of continual re-enactment, which implies some element of spontaneity (otherwise we will find that persistence is still being tacitly presupposed). It is this element of spontaneity in bringing about the projection of the past into the present that Whitehead calls Creativity, and it should be clear why it has to have the status of a first principle, comparable to the indestructibility of matter in a classical materialist framework.

This is the context in which to understand Whitehead's proposed ontology of events. Rather than events being the interactions of enduring things, things are patterns of evanescent events.

We can capture some of the trenchant features of this theory if we begin by thinking of an event as a locus at which causal influences from the ambient world are converging. Suppose a locus that appears to be occupied by a particle persisting unchanged at rest. We could say naïvely that no event was taking place precisely because the particle was not being subjected to any external forces (or that such forces were in equilibrium). But notice how we are thus picturing the environment as the three-dimensional spatial surround, while taking the body's persistence through time for granted. Whitehead wants us to picture this situation without taking persistence through time for granted. One way to do this is to think of the four-dimensional continuum of space-time,<sup>8</sup> in which the antecedent existence of the 'same' particle is simply one more factor among the ambient influences converging on the new event-locus. When the new event conforms overwhelmingly more to *this* influence from its immediate past than to any others, then we say it is something that has persisted unchanged. But in reality there has been a novel event, albeit characterized by overwhelming similarity to the most proximate event in its causal history: a kind of recreation or re-enactment of the immediate past. But with this, we see that the model we started out with has been inverted. Effects are not converging on the locus. Rather, there is a creative

[8] It is not possible to go into Whitehead's theory of time in any depth here. Let it suffice to say that, technically, every event has its 'own' four-dimensional space-time continuum and that each such continuum is radically incomplete: it contains past time, but not the future.

spontaneity that occupies the locus, and from there the world is being gathered up and selectively re-enacted.

#### 4. *The epochal theory of time and concrecence*

Whitehead recognized that his denial of automatic persistence made continuity problematic. If continuing something means discretely recreating it, then continuity leads to infinite regresses of the sort made famous by Zeno. Appealing for empirical support to contemporary quantum theory, Whitehead therefore adopts what he calls an epochal theory of time: time advances in finite quanta (Whitehead, 1984, p. 308; 1961, p. 246; 1925/1967, pp. 122–7, 135–7). But this opens up a new set of questions — and new possibilities.

Whitehead’s crucial insight is the following: ‘The epochal duration is not realized *via* its *successive* divisible parts, but is given *with* its parts’ (1925/1967, p. 125). If there is a process through which an atom of duration comes into being, this process of coming-to-be cannot itself be an accretion of the duration’s successive parts — that is precisely what the postulate of temporal atomicity prohibits. In other words, if time is atomic, the coming to be of a minimal duration cannot be the duration’s incremental growth in time. Assuming there is such a process of coming to be, we come to the paradoxical-sounding conclusion that it cannot manifest temporally at all. The coming to be of a duration is something that results *in* — not from — an incremental succession.

According to Whitehead, there is such a ‘non-temporal’ process of a duration’s coming to be: it is precisely the selective re-enactment of the past in the present. Consequently, there is an inside and an outside to every fundamental event, a part of its happening — its coming to be — that is indivisible (atomic) and remains private as it re-enacts the past, and a part that deposits publicly as a minimal event occupying a mathematically divisible, but actually undivided region of a continuous space-time.

Because it is by prehending the settled past that a novel event becomes concrete, Whitehead calls this internal process ‘concrecence’. With his principle of Creativity, Whitehead postulates that this is simply what events do. The austere, almost set-theoretic elegance of Whitehead’s natural ontology becomes evident in the fact that the function of the metaphysically rather mysterious Creativity can be captured with two simple axioms. Those familiar with Russell’s Paradox and the way the Theory of Types resolved it will recognize the same lineaments here: totalization, i.e. defining a set as including

'everything', is allowed as long as the totalizing set itself functions at a higher level than the extension it totalizes (Whitehead, 1929/1978, p. 211; see also p. 85). In other words, 'everything' is always relative to a level of discourse, and our talk is never part of the 'everything' we are talking about.

The two axioms I propose not only capture something of the abstract rigour of Whitehead's metaphysics, but they also let us glimpse what is often lost sight of — that it is the co-author of *Principia Mathematica* who is writing *Process and Reality*. Rehabilitating an old word in logic, comprehension, let us say that a set 'comprehends' its extension. If we understand this first in the uncontroversial sense that a set 'covers' or 'includes' its extension, we can see that Whitehead's controversial twist is to explain time as the cosmological working out of essentially logical relationships. Time is the way the universe attains unity without forsaking consistency. The two axioms I propose are:

- I. Every totality of events is comprehended.
- II. No totality comprehends itself.

If 'comprehending' the totality of events is itself an event (and for Whitehead it certainly is), then it's clear how the first axiom opens the door to paradoxes of the sort Russell made famous.<sup>9</sup> The second axiom continues to license totalization, but forestalls paradox by forbidding self-reference. Just as totalization without self-reference in logic requires a progression to ever higher levels of discourse, so in nature it requires a progression to ever later epochs *in time* (Whitehead, 1929/1978, pp. 21, 167, 211, 228, 286; 1938/1968, p. 54). A basic event, which Whitehead calls an 'actual occasion', is the concrescence of the past world from its space-time standpoint. Although most of the past world is prehended only vaguely, Whitehead holds that it is nevertheless the whole past world that is prehended. While the novel event does not belong to the world it 'comprehends', no sooner is its process of concrescence complete than it topples into the past as something to be prehended by still later occasions of concrescence, totalizing *their* past worlds.<sup>10</sup>

This generates one of the fundamental distinctions in Whitehead's scheme: between subjects and objects. The occasion that is still

[9] For those not familiar with Russell's Paradox, consider the following conundrum: does the set of all events that do not comprehend themselves comprehend itself or not? If it does not, then it does, and if it does, then it does not.

[10] I do not, in the context of this paper, make any important, systematic distinction between the terms occasion and event.

becoming concrete ('concreting') Whitehead calls a subject. It is fully concrete when it has integrated the influences from the antecedent world *coherently* (in the special Whiteheadian sense that implies a kind of Gestalt-coherence). At that point its internal becoming is complete; it is no longer a subject. Whitehead now calls it a 'superject' (something 'carried beyond' its own becoming). As superject it becomes the object of still later subjects' prehensions. Subjects become objects for subjects that become objects in an unending series that is the metaphysical basis for time.

##### 5. *Organisms and environment*

Within every event is now a constitutive process that consists in com-prehending, integrating, 'abstracting' the antecedent world from a specific standpoint in space-time. While this process is highly constrained by the antecedent world, taking time seriously means that it must nevertheless be understood in terms of spontaneity and self-organization. Here we see why Whitehead calls this system 'the philosophy of organism'. Organisms preserve themselves by regulating their relations to an environment. In Whitehead's ontology, all events are organisms in the sense that they constitute themselves in relation to their environment (Hampe, 1990).

This brings us to a very important topic in Whitehead: the concept of the nexus or society. Actual occasions belong to societies or groups of occasions, which Whitehead calls *nexūs* (pl. of *nexus*). Because theyprehend one another's immediate antecedents, individual occasions can develop coherent patterns of group organization involving uniformity or structured contrasts of properties. This notion of the *nexus* enables Whitehead to navigate smoothly between debates about holism and mereological reductionism. According to holism, the properties of the constituents of a thing depend at least in part on their context, on the nature of the whole of which they are parts. According to mereological reductionism, the properties of the constituents are context independent, while the properties of the whole derive entirely from the properties of the parts. Now we can see that for Whitehead both positions are true.

According to Whitehead's relativistic scheme, strictly contemporary events must happen in causal isolation from one another — from which it follows that, considered synchronically, the whole supervenes on parts that exist in causal isolation from their environments. Therefore, the properties of any composite thing (a *nexus*), taken as a synchronic totality, are determined unilaterally by the properties of its



ultimate constituents. This is a necessary consequence of the fact that, synchronically, these constituents possess their properties absolutely (in a context-independent way). But the same properties of those same constituents are nevertheless diachronically dependent on the whole context of the immediately past environment. So we must also say that the properties of the parts are relative to a context on which they depend holistically.

#### IV. Experience

Now we can judge if the Equivalence Thesis is at all plausible. Whitehead's fundamental contention is that the process of concrescence is essentially experiential. Let's go back over some of its distinctive properties:

- It is a gathering up or taking account of the ambient world.
- The ambient world is gathered up into an essentially private happening that gives the event an 'inside'.
- This private happening is a partial re-enactment of the immediate past in the present.
- In re-enacting the immediate past, this private happening is *internally* related to something that nevertheless remains transcendent. Hence, the converse relation remains external.

There are many important details that I am skimming over in this simplified presentation. But we have enough to see how concrescence might plausibly be understood as a kind of rudimentary experience and to see that it already possesses many of the cardinal properties that are the recognized stumbling blocks to physicalist theories of mind: unity, subjectivity, perspectivity, privacy, self-reference, first-personness, spontaneity, intentionality, and possibly even value.

I would now like to revisit two topics in my outline — individuals and *nexūs* — to harvest them for Whitehead's solution to the mind–body problem and the problem of qualia in particular.

##### *1. How Whitehead's theory of individuation qualifies as panpsychism*

In my discussion of the difference between a type-monism and a stuff-monism, I stressed that Whitehead will need a principle of real individuation, and I hinted that his 'panpsychism' concerns the formal, not the material, cause of his real individuals. This is the key to his solution to the mind–body problem. He thinks the centredness of

subjective experience, its being-for-self, provides the only model on which a theory of real individuation can be based.<sup>11</sup>

Why is subjective experience the only possible model for individuation? I propose to approach this question in a way that has no explicit precedent in Whitehead's writings, but by adopting a more intuitive approach than Whitehead does, I can simplify the exposition of his theory and lead more directly into the problem of qualia.

In one sense there is, in any 'occupied' region of the world, nothing more than a manifold of qualities, distributed in some extensive (spatio-temporal) pattern. Intuitively this makes sense. If I wanted to tell you exhaustively what something is 'in itself' (apart from predicates that depend in one way or another on human society), I would catalogue for you all of its qualities (I set aside here the question of dispositional properties, but notice that these are captured in a catalogue of counterfactual qualities). Although Whitehead never expresses himself in this way, his theory of 'sensa' as lowest-order predicates does imply that at the logically lowest possible level of description things are just collections of qualities (Whitehead, 1929/1978, p. 114).

Now for the question that I believe cuts to the heart of the matter. Whatever their extensive patterns, what (if anything) actually groups some of these qualities together, constituting them as properties of one individual? One answer — the one that would be given by what I've called *stuff-metaphysics* — is: nothing. The segmentation of the world into discrete individuals is purely conventional. No complex of qualities has a 'metaphysical' unity. It is, however, the positive answer that I want to consider.

The positive answer to this question traditionally has two parts. If the individual is a *mind*, then being felt together subjectively is what makes certain groups of qualities a unity. If the individual is a *body*, belonging to the same unit of matter (or physical stuff, whatever it be) is what makes them a unity. In a world such as Whitehead envisions, where there are no units of matter, subjective unity will have to do all the work. Now if we go this route, the fact that there appear to be two kinds of things in the world (minds, where qualities are actively felt, and bodies, where they passively inhere) presents a problem that will have to be accounted for. But considered abstractly, there is a certain elegance to Whitehead's proposal. Introspection seems to give us the strongest possible evidence for the existence of experientially cohering individuals, making the extreme position of *stuff-metaphysics*

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[11] Galen Strawson (2010) has recently suggested something similar.

harder to sustain. But on the other side, how there can be a unit of matter (apart from the limiting case of the atom, as conceived before Rutherford, as an absolute unity) is one of the enduring vexations of metaphysics. Granting the reality of subjective unity is therefore motivated on independent evidential grounds, and if we can make it do the work of objective unity as well, then we have spared ourselves a vexation and adduced a further reason to affirm the reality of subjective experiential unity. (The difficulty of making the converse reduction is nothing other than the 'hard problem of explaining consciousness', which I discuss below.) Accordingly, Whitehead argues that what looks like an ontological difference between two kinds of entities (minds and things) and two ways that qualities inhere (feeling and being) is really an illusion.

This illusion is caused in part by epistemic asymmetry and in part by what Whitehead calls 'transmutation'. First, epistemic asymmetry comes into play whenever I perceive the qualities of another entity. They do not at first have the vivid immediacy of qualities felt as belonging to myself. When you are angry, I feel the anger, but not as I would if I were angry myself. Until I appropriate it by clothing it with my own feelings about it, your anger has a foreign, second-hand feel for me. Whitehead thinks this generalizes to the perception of all qualities (1929/1978, pp. 155, 212, 233).

Second, although in truth the only way qualities belong to other centres is by being felt (or by having been felt) by those centres, this is often concealed by the process through which an experience achieves non-negligible intensity. To see this, we must explain why and how the appearance of passively displayed qualities comes about in Whitehead's metaphysics.

Whitehead explains the appearance of passively displayed qualities (the expanse of a red surface, for example) on the model of Leibniz's confused perception. For Leibniz, a perception is confused when it consists in a multitude of component perceptions that cannot, because of their great number, minuteness, or faintness when taken separately, be individually discriminated (Leibniz, 1981, pp. 53–5). All the so-called secondary qualities fall into this category. They result from our *not* discriminating the components of which they are aggregated. Similarly for Whitehead, a quality such as an apparently continuous expanse of colour is a 'transmutation' of the qualities (the energy states) that the individual constituents of the region *were actually feeling* (Whitehead, 1929/1978, pp. 27, 77–8, 250–4).

Now for Leibniz, confused perception is a cognitive failure — an inability to achieve sufficient resolution to see what things really are.

But for Whitehead it is a means to heighten experience and achieve what he calls greater ‘intensity’ (*ibid.*, pp. 83, 101). For example, a uniform quality may appear to passively inhere in a whole region of space, creating a sharply focused contrast with another such region. Since the regions are really populated with a multitude of discrete individuals, perceiving them as homogeneous expanses represents a kind of simplification, but it is a simplification without which the starkness of a global contrast would be impossible. The experiencing subject thus heightens its experience by transmuting a barrage of discrete but similar data into a stark two-termed contrast. By the same token, however, it loses any sense that discrete, subjective experiential unities underlie the manifestation of the qualities. For Whitehead, then, transmutation obscures, but does not change, the fact that all perception is really a form of sympathy between individuals whose unity is experiential, that is, whose qualities belong to them by being felt by each of them subjectively.

By explaining the apparently obvious counter-examples as illusions, Whitehead means to license the conclusion that subjectivity is the only form of unity capable of turning groups of qualities into real cohesive individuals.

Here is perhaps the place to address a persistent misconception about Whitehead’s metaphysics. Whitehead does *not* believe that just any seemingly cohesive aggregate of qualities is an experiencing individual. Rocks and toasters do not have experience. But they are aggregates of microscopic individuals that do. On the other hand, I do not mean to imply that for Whitehead there are *no* macroscopic individuals. On the contrary, living organisms offer excellent examples of ‘compound individuals’ — individuals composed of other individuals (Whitehead, 1929/1978, pp. 102–3). A discussion of the compound individual would, however, take us into the details of Whitehead’s theory of *nexūs* and far beyond our topic, although I will come back to it briefly below.

If we keep in mind the steps of the argument so far (concrete temporality, asymmetrical relations, individuals, subjectivity) I can summarize how Whitehead thinks he gets from physics to panpsychism: without subjectivity to atomize the extensive continuum there could be no real individuals and hence no asymmetrical relations of the sort Whitehead thinks even physics needs to account for the concrete temporality of physical events.<sup>12</sup>

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[12] My treatment of panpsychism in Whitehead ignores many systematic themes for the sake of brevity and accessibility. Gregg Rosenberg’s powerful analytic arguments for a

*2. How Whitehead's way of combining reductionism and holism answers the two strongest objections to panpsychism*

Whitehead's theory of the nexus, with its very different synchronic and diachronic organization (whole depends on the parts/parts depend on the whole) enables Whitehead to head off the two strongest objections to panpsychism.

The most commonly cited problem in connection with panpsychism is the composition problem: if the ultimate constituents of the physical world have mental or proto-mental properties, how do the many 'small' experiences in the brain sum up to create a new unified experience? There doesn't seem to be any intelligible way to understand this (James, 1890/1950, pp. 158–64; Nagel, 1979, pp. 181–95; 1986, pp. 49–53; Goff, 2006).

Whitehead agrees with the objection: subjective experiences indeed do not sum up. For Whitehead the subject of an experience is always a single momentary occasion. But then Whitehead faces another problem. His position seems to suggest that a Planck-scale unit of nature is capable of something as complex and highly processed as human experience!

It seems that panpsychism faces a dilemma: it must either solve the composition problem or be willing to attribute complex experience to the simplest constituents of nature.

There is a second major objection (Seager, 1999, p. 221) to any theory that wants to make mentality a fundamental property of the world's ultimate constituents: if experience is a fundamental property, why does it seem to manifest only in highly complex systems? Perhaps the mentality that is possessed as a fundamental property is highly attenuated, but then we must explain how in special cases it adds up to a highly complex experience, so we are back to the same dilemma: either we admit that ultimate constituents have complex experience, or we must solve the composition problem.

Here is where Whitehead's reconciliation of holism and mereological reductionism proves its worth. Synchronically, experience is a non-contextual fundamental property of the ultimate constituents, but diachronically it is a holistic property that depends for its richness and complexity on the structure of an occasion's immediately past environment, which is, in effect, what it experiences. Unpacking this requires several steps.

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Whiteheadian type of ontology (2004; 2009) should be consulted as the most rigorous and illuminating treatment of process panpsychism to date.

The immediately past occasions are ‘superjects’ of their own becoming. As such they are no longer subjects. They have become objects for a newly concreting subject. They offer the qualities they *were* feeling subjectively to the newly concreting occasion to feel anew. As experienced together in the new subject’s field of experiential togetherness these qualities can ‘sum up’ in all the familiar ways that *objectively* perceived qualities sum up, both intensively and extensively, without involving any mysterious process of composition: two lights are brighter than one, two blades of grass wider than one, etc.<sup>13</sup>

The possibility of this objective display having a more complex structure and more global relevance than the datum from a single occasion is the crux of Whitehead’s theory of the ‘intensity’ of experience. Whitehead uses the word intensity in such an unusual way that I propose for the most part to replace it with a word closer in meaning to what he has in mind. I will speak of the richness of an experience.<sup>14</sup>

The critical point is that richness of experience depends on the informational complexity of the environment experienced — think of the difference between hearing a symphony and white noise. But this also applies to an experiencing occasion’s proximal environment: within the organism, richness of experience requires coordinated mechanisms for inhibition (to block interference), reinforcement (to overcome noise), and massive simplification (to stabilize heightened contrasts of the sort described earlier) that organize over innumerable levels to create what Whitehead calls ‘balanced complexity’ (1929/1978, pp. 277–80). From this, we can see why experience becomes manifest only in highly complex organisms. It is only in environments such as nervous systems and brains that there is enough proximal stability and organization for an occasion to have *rich* experience — experience that differs significantly from noise (Whitehead, 1933/1967, p. 207). A particularly important point concerns continuity: only in a highly-constrained environment could a temporal series of occasions constitute the privileged historical route we recognize as our stream of consciousness (Whitehead, 1929/1978, pp. 103–9). (A nexus supporting and including this kind of privileged historical route is a good example of a ‘compound individual’.)

[13] This is not to say that *all* objective summing is without mystery. William Seager rightly reminds me of optical illusions and Shepard tones. The point is merely that objective summing offers *some* examples that are unproblematic.

[14] It’s clear Whitehead drew his inspiration for the concept of intensity from the Rationalists’ *quantitas realitatis*. Although I cannot here elaborate on this point, I mention it, even at the risk of puzzling some readers, because it will spare others a great deal of avoidable brain-bending.

Mentality thus depends on structure not for its existence, but for its ability to delineate stable order of macroscopic relevance. And although it depends on structure for this capacity, the structure in question is that of the occasion's environment. Mentality depends on structure without being a property *of* a structure. A good example would be the case of 'transmutation' discussed above (although it is only one example of the way pronounced mentality depends on environmental structure). There must be an ambient nexus of occasions with similar properties before an occasion experiencing them can 'transmute' them into a homogeneous field characterized by one macroscopically extended quality. The transmuted experience is a property of a single occasion, but it depends on its structured environment. Notice also that what makes this event characteristically 'mental' (by conventional criteria) is the presence of introspectable qualia different from what are inferred to be the actual properties of the objects experienced. On Whitehead's account this disparity results from the greater role asserted by the subject occasion's spontaneity in synthesizing its environment (Whitehead, 1933/1967, pp. 209–19), but notice that this, in turn, depends on opportunities afforded by the organization of the environment being synthesized. Every way we look at it, *mentality is the property of a single occasion that, while synchronically autonomous, depends diachronically on its context.*

It follows that, in the absence of an appropriately structured environment, mentality is still present, still responsible for the integration of ambient causal influences into a unified occasion, but in this case mentality will lack the characteristic traits we normally recognize as 'mental' (Whitehead, 1929/1978, pp. 245, 285). And this is precisely the result that Whitehead wants: in this case the mental is, to all appearances, the *same* as what we normally mean by 'the physical'. We could say that for Whitehead a mental event, as we ordinarily understand this, is simply a physical event that has — and is taking advantage of — an especially complex environment. And conversely, a physical event, as we normally understand it, is simply a mental event that lacks (or fails to creatively exploit) a complex environment.<sup>15</sup>

Whitehead's theory of *nexūs* of actual occasions thus solves both the composition problem and the fundamentality/complexity problem.

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[15] In this paper I cannot go into the sufficient conditions of manifest mentality (i.e. what is required for an occasion to 'take advantage of' or 'exploit' a complex environment). Establishing environmental complexity as a *necessary* condition for mentality to manifest as something apparently different from the physical suffices for the present context, namely, for solving the fundamentality/complexity problem.

Even in the case of the compound individual, it is not as subjects of experience that occasions enter into the composition of something higher-order upon which high-grade experience depends, but as objects of experience, and this presents no *in-principle* problem for composition. Furthermore, it follows from this interpretation of mental composition that all fundamental units of nature do indeed have experience, but that only in the context of complexly-structured environments can it be rich enough to distinguish itself and become apparent. So it is true that experience, even at its most complex, is really the property of a Planck-scale unit of nature; but this is possible only because that unit benefits from the massive complexity of the environment it experiences.<sup>16</sup>

### 3. *How Whitehead's treatment of qualia avoids the hard problem*

How does Whitehead deal with the notoriously intractable problem of qualia?

Whitehead endorsed a nineteenth-century Platonism according to which qualia are universals (Whitehead, 1925/1967, p. 166; 1929/1978, pp. 62, 114). He grants that these universals are instantiated in two ways: objectively and subjectively (1929/1978, pp. 290–3). Certain of these qualia exist in the external world as properties of the things we experience. But then, according to the doctrine of re-enactment, they also exist subjectively as features of the experiencing itself. The question posed by contemporary cognitive psychology is: *how are these subjectively felt qualities realized in the brain?*

The hard problem of consciousness trades on the assumption that the brain is an object and that the only way qualities could inhere in it is the insentient way qualities are thought to inhere in other bodies. Revisiting my 'all things are made of qualities' thought experiment, we could phrase the hard problem as follows: how can a manifold of unfelt qualities give rise to a subjective unity of felt qualities? Putting the question this way is clearly cognate with a more familiar way of putting it: how can something describable from a third-person perspective give rise to something describable from a first-person perspective? The problem becomes tractable if we allow that the basic difference between subjectively and objectively instantiated qualities is not categorical (feeling vs. being), but a matter of perspective (the

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[16] William Seager (2010) has suggested a very promising emergentist solution to the composition problem that can be read as a (much-needed!) clarification of Whitehead's sketchy notion of transmutation, which I have highlighted in this section. I am grateful to Seager for making me see that 'transmutation' is a form of emergence and hence that Whitehead's solution is essentially emergentist.



epistemic asymmetry I discussed above) heightened by transmutation. If, as I have suggested, things are 'made of' qualities (universals) that are individuated (made concrete) by the 'form' of being felt together in some extensive (spatio-temporal) pattern, that is, by cohering in a subjective unity of experience, then this applies to the brain as much as any other body, and the hard problem doesn't arise. Experience is always already an intrinsic property of the elementary constituents, each of which, with more or less 'intensity', feels and (from the perspective of its individual locus) subjectively unifies the whole brain (which is the proximal nexus to which it belongs). The hard problem assumes that qualia and subjectivity are not features of the ultimate constituents of the brain; it then asks how they could emerge from an organization of elements lacking them.

For Whitehead, what emerges from the complexity and structure of the brain is merely an environment that is stable and organized enough to enable individual occasions to have experience of non-negligible 'intensity' and to enable a temporal nexus of such occasions to sustain, one at a time, the accumulating and apparently continuous experience of a single 'compound' individual. This results in the delineation of a spatially and temporally macroscopic order characterized by stark global contrasts. These contrasts are actually simplifications of the data for they mostly represent only large-scale patterns among the data.

So the situation is the opposite of the one normally envisioned. It is not experience that emerges from the complex organization of things in which qualities inhere non-experientially. What emerges from complex organization is the illusion, necessary for experience to achieve heightened significance, that qualities inhere in things in any way other than by being subjectively felt. When we imagine the constituents of the brain as elements in which qualities inhere only passively (e.g. as soft, grey, wet cells) or as lacking any qualities (e.g. as the mathematically defined entities of particle physics), we are presupposing the transmutation that the massive complexity of our brains makes possible. It is this illusion of passive objectivity that emerges through transmutation of active experiential elements, not experience that emerges through organization of non-experiential elements.

## V. Conclusion

Whitehead's metaphysics envisions a type monism according to which there are indefinitely many actual occasions — evanescent events — that make up the tissue of the world, but they are all

instances of the same type of entity. Within this singular type, Whitehead manages to make the difference between mind and matter a distinction of reason: subject and object become role-manifestations relative to standpoint and time, while the mental and the physical become interdependent poles with inverse (or complementary) capacity for realization in the process of an occasion's becoming. The key to this integration is a novel theory of causality and time that makes experience the interior aspect (and the individuating 'form') of every fundamental event. The resulting type of panpsychism can rebut the two strongest objections to panpsychism and does not have to face the generation problem (the 'hard problem' of explaining consciousness). The theoretical cost of these achievements is obviously quite high, but at any price their success makes them worth scrutinizing to see if less costly models could be engineered. Promising work in this direction (Rosenberg, 2004; 2009; Shields, 2009; Seager, 2010) is already underway.<sup>17</sup>

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