

The 'Intrinsic Nature' Argument for Panpsychism

Part 1: Intrinsic Properties and Panpsychism

Strawson's case in favor of panpsychism is at heart an updated version of a venerable form of argument I'll call the 'intrinsic nature' argument. It is an extremely interesting argument which deploys all sorts of high caliber metaphysical weaponry (despite the 'down home' appeals to common sense which Strawson frequently makes). The argument is also subtle and intricate. So let's spend some time trying to articulate its general form.

Strawson characterizes his version of panpsychism, or 'real physicalism', as the view that 'everything that concretely exists is intrinsically experience-involving'. He approvingly quotes several of Russell's remarks, the general upshot of which is that 'we know nothing about the intrinsic quality of physical events except when these are mental events that we directly experience' which sentiment is echoed by various pronouncements of Eddington, such as 'science has nothing to say as to the intrinsic nature of the atom'. In whatever way the argument is going to proceed, it evidently depends upon some conception of the intrinsic nature of things. What is this supposed to be?

The philosophical literature on the distinction between intrinsic and extrinsic properties (or relational properties) is vexed and very far from settled (see Humberstone 1996 for an extensive review and discussion). The core intuition would seem to be the idea that the intrinsic properties of X are the properties that all duplicates of X would have. Thus, for example, any duplicate of me would have the same mass as I do (so mass looks like an intrinsic property) but would differ from me in not being an uncle (so uncle-hood looks – as it should – to be a non-intrinsic or extrinsic property). But there does not seem to be any way to define duplication in the relevant sense without circular reference back to intrinsic properties. Another way to get at the idea is to characterize the intrinsic properties as those which X would persist in exemplifying were it absolutely alone in the universe. That is, the intrinsics are the properties X has 'all by itself' or 'of its own nature'. For example, the clearly extrinsic (or relational, I will not attempt to forge a distinction between these notions here) property of 'being an uncle' is not a property one can have if one is absolutely alone in the universe. This suggests that a simple characterization of the notion of intrinsic property would be something like 'F is an intrinsic property of x just in case Fx does not imply the existence of anything distinct from x'. Unfortunately, this won't quite do. In the first place, necessary existents are entailed by anything having any property. Kim (1982) amended the condition to require that Fx not entail the existence of a distinct, contingent thing. But as Lewis (1983) pointed out the property of *loneliness* (being absolutely alone in the world¹) is obviously extrinsic and yet its possession does not

1 Or, taking into account again the problem of necessary existents, loneliness should be defined

entail the existence of any distinct contingent beings. Langton and Lewis (1998) suggest that the intrinsics are the properties which are logically independent of both loneliness and accompaniment, that is, F is an intrinsic property of x just in case Fx is compatible with loneliness and accompaniment and $\sim Fx$ is similarly compatible with both loneliness and accompaniment. On the face of it however, this criterion appears to make the relational property of '... loves a ' (where a is some object) into an intrinsic property, for a can love itself or not whether or not it is accompanied. Be that as it may, the concept of the intrinsic properties of an object seems intuitively intelligible, despite the difficulties philosophers have in spelling it out precisely in non question begging terms. It may well be that the concept of intrinsicness is a 'primitive' notion. The point here is simply that a difficult metaphysical question lurks within the issue of intrinsicness itself, even prior to putting the concept to any argumentative use.

This example of the relational property of '... loves a ' raises another issue. If there were extrinsic properties which supervened upon an object's intrinsic properties, then they would show up as intrinsics themselves according to our test criteria. While it may seem like an idle worry, since it appears obvious that extrinsic properties such as 'being an uncle' do not supervene on their subject's intrinsic properties, the history of philosophy reveals a powerful current of thought which endorses exactly this kind of supervenience which is also important for the intrinsic nature argument for panpsychism.

The most famous and extreme proponent of this view was Leibniz who held that the entire world could be reconstructed given the information contained within, or determined by, the intrinsic properties of any individual (see e.g. Leibniz 1714/1989). For Leibniz, it would be possible for God, at least, to tell whether or not I am an uncle merely by examining me and me alone. It's worth pointing out a slight subtlety in the claim that the intrinsic properties determine the relational properties. The rather hackneyed example is the relational property belonging to Socrates of being shorter than Plato. It is plausible (assuming that height is an intrinsic property) that this property is indeed determined by the intrinsic features of the subjects taken together – once we know the heights of Plato and Socrates, we can know that Socrates is shorter than Plato². The kind of determination here is that of the relational properties of things depending on the intrinsic properties of the relevant relata. This is a relatively weak view. Leibniz maintained the stronger view that the distribution of relational properties throughout the world is determined entirely by any individual's intrinsic properties. The mechanism behind this miracle is of course that the intrinsic properties of anything are determined by

as being unaccompanied in the world by any distinct contingent beings.

² Thus 'x is shorter than y' is what Bradley (1893) called an internal relation. Notoriously he went on to argue that these were the only kinds of relations there could be. So, crudely speaking, Bradley too joins the philosophers who believe that all relational properties supervene on intrinsic properties. For a classic discussion of this issue, which much relevance to this paper as well, see Moore (1919).

the intrinsic properties of anything else!

Leibniz's panpsychism stems from his view that only mental features have the right characteristics to perform the reduction of the relational to the intrinsic. Essentially, it is only via mental *representation* that an entire world can be wrapped up inside a single individual so that all the relations can be 'read off' the intrinsic properties of that individual.

But leaving aside the mechanism, let us codify the key feature of Leibniz's position at issue in a principle, the Principle of the Reducibility of Relations, PRR:

PRR: All extrinsic properties are determined by intrinsic properties.

PRR can then be divided into strong and weak versions, whenever it matters, as discussed above.

The sheer audacity of PRR is most apparent if we think of the most purely extrinsic relations we are familiar with: spatial relations. The idea that my intrinsic properties somehow determine that I am 50 miles from a burning barn seems ludicrous. Even on the weak thesis, spatial distance and arrangement seem precisely to be relations that can vary independently of the nature of the objects that enter into them. Leibniz is of course famous for the doctrine that space (and time) is nothing more than a set of relations. But in his view these relations themselves are determined by the intrinsic properties of things. Once again we can see the attractiveness of panpsychism, for it does not seem altogether hopeless to define space and time in terms of perceptual contents, given that there are sufficient perceiving subjects to 'nail down' the infinite and continuously varying spatial and temporal relations that structure our world.³

As pointed out by Moore (1919) PRR implies that intrinsically identical things are numerically the same thing (this is the Leibnizian principle of the identity of indiscernibles). For if the principle of the identity of indiscernibles is false then the relational property of 'being identical to a' will be an extrinsic property (or involve an external relation) which is not determined by intrinsic properties. The principle of the identity of indiscernibles is thought to be implausible by many, but it does follow of course from the Leibnizian idea that the entire structure of the world is encoded in the intrinsic properties of each individual thing⁴.

³ One can attempt to avoid the postulation of this continuous infinity of minds by appeal to certain modal facts about space and time, along the lines of 'position x,y,z,t is defined in terms of what a possible perceiver would perceive under certain circumstances ...'. But this is merely a relational characterization of spatial and temporal structure. On the kind of views we are considering, this would require some intrinsic ground, which seems to reinstate the need for something actual corresponding to each possible position in space and time.

⁴ A theological argument helps make this clear: if the principle of the identity of indiscernibles was false and there were two intrinsically identical things, God would have no reason to place one

Strawson does not endorse the Leibnizian metaphysics, but the intrinsic nature argument he advances has interesting affinities with it. One question is to what extent Strawson has to endorse PRR in the extreme form stated above. It may be that a weaker or circumscribed version will suffice for his argument. For example, the limited claim that *causal relations* are determined by intrinsic properties might suffice. However, once it is allowed that there are some relational properties that are not grounded in intrinsic properties, it may be hard to dispute the cogency of views that assert that the power to matter to generate consciousness is one case of such an ungrounded extrinsic. But not to get ahead of ourselves, let us turn to the argument. It is possible to regard Strawson's argument as a kind of supplement – a crucial one – to the argument for panpsychism advanced by Nagel (1974). The form of Nagel's argument is a destructive dilemma.

1. Either consciousness emerges from non-conscious features of the world or else consciousness is a fundamental and ubiquitous feature.
 2. Emergence is impossible.
- Therefore, consciousness is a fundamental and ubiquitous feature (= panpsychism).

The argument is obviously valid but both premises are problematic. The claim of the second premise, that emergence is impossible, will seem implausible to many, especially in light of how fashionable it has become to throw around the term 'emergence'. Nagel says surprisingly little about this but the bottom line is 'there are no truly emergent properties of complex systems. All properties of complex systems that are not relations between it and something else derive from the properties of its constituents and their effects on each other when so combined' (p. 182).

The problem with the first premise is that while the fundamentality of the mental seems to follow from the failure of emergence, the ubiquity of the mental is not so easily established. Why couldn't a fundamental feature appear here and there throughout the world rather than everywhere (perhaps in the way that electric charge or mass are features of some fundamental particles but not others).

Strawson addresses both problems. He argues first that a concept of emergence powerful enough to undercut the argument for panpsychism is incoherent, and then proceeds (perhaps rather cursorily) to address the issue of the ubiquity of the mental. It is in the attack on emergence that the connection with intrinsic properties appears.

at X and the other at Y, or *vice versa* and thus his creation of the world – governed completely by reason – would be frustrated. Leibniz illustrated this point with his lovely tale of the nobleman at Herrenhausen unsuccessfully searching for two leaves of identical appearance.

First, Strawson thinks that the kind of emergence needed to undercut panpsychism is *brute* emergence. Why is that? One argument is that if consciousness emerged from physical processes in the normal manner, in the same sort of way that liquidity emerges from the details of inter-molecular relationships or that tornadoes emerge from the dynamics of heated atmospheres, then there would be no explanatory gap between the physical and consciousness. Since the gap is undeniable, ordinary emergence cannot be the story of consciousness. This invites the reply, which has been made by several philosophers, that the gap is merely a feature of our cognitive limitations, either temporary, awaiting further science to build the bridge between consciousness and the brain (see e.g. Hardcastle 1996) or permanent, reflecting an unfortunately inbuilt weakness of the human mind (see e.g. McGinn). As for the first sort of reply, as Yogi Berra said, it is hard to make predictions, especially about the future. The thing is, though, that while we are ignorant about all sorts of cases of ordinary emergence, it is not that hard to see in a rough way how the explanations might go. We don't understand, for example, how high temperature superconductivity emerges, but we have some idea about how this might go and lots of detailed ideas about the low level interactions that underlie this sort of emergence. The case of consciousness really does seem to be uniquely different. While it is not hard to see how neural activity could possibly underlie all sorts of complex behavior, we have no clue how it could be that certain patterns of neural activity could constitute phenomenal consciousness. One of the nice features of panpsychism is how it evades this problem by being able to assert that the patterns of neural activity have consciousness already built in to them. Still, as we shall see, the width and depth of the explanatory gap depends upon how intrinsic natures are deployed in the anti-emergence argument.

The second sort of reply – that we are constitutionally unable to understand how matter generates consciousness – is little more than an expression of faith in a physicalism which endorses the metaphysical principle Strawson labels NE: physical stuff is, in itself, in its fundamental nature, something wholly and utterly non-experiential. While it is true that almost everyone – at the level of the proverbial 'man in the street' – accepts that there are things that completely lack mental properties (stones, cars, planets, etc.) hardly any of these people have heard of the explanatory gap or have ever thought about the problem of consciousness. I expect that most in this blissfully pre-reflective state would be initially happy to endorse the 'wait for science to explain emergence' line of thought, until the sheer size and unique nature of the explanatory gap is revealed. The subsequent retreat to 'cognitive closure' then really does seem based on stubborn faith in NE plus physicalism.

I think it's a good idea to try to elucidate the argument against faith-based physicalism from Strawson's article. The core premises of this argument are, first, that physics reveals to us only the relational properties of matter (or 'the physical') and, two, our old friend: relational properties (at least a relevant set of them) are

determined by intrinsic properties. Strawson cites the august authority of Eddington and Russell in support of the first premise, but the view is very widely held and very plausible. If someone asks what an electron is, all we can say is that is a 'particle' with a certain mass ($9.10938188 \times 10^{-31}$ kilogram), electric charge -1 , spin $\frac{1}{2}$, etc. Each of these attributes can only be defined relationally and all we know about them is what these relations provide. A mass of m is just that property such that something with it will obey the relation that $m = F/a$ for a force F and acceleration a , and so on. Another way to put this, in line with the way Russell views things, is that all that science provides, or can provide, is structural or purely mathematical information about the world. To add a quote to those Strawson assembles, but one that might seem to cut against the move towards panpsychism, Russell says: 'the only legitimate attitude about the physical world seems to be one of complete agnosticism as regards all but its mathematical properties' (1927, 270).

If we couple the idea that physics provides us insight only into relational properties of matter with the (appropriate form of the) reducibility principle, we are forced to postulate an intrinsic ground for the relational, structural or mathematical properties. One central and vitally significant element of the structural properties of matter as revealed to us by physics is the causal relationships which matter can form. Indeed, these structural features may *exhaust* what science can tell us about the physical world. These fall naturally into fundamental and emergent 'levels'. The force experienced by an electron in an electric field is fundamental, the capacity of hurricanes to wreak destruction is derived and appears a very long way from the fundamental forces at work. These derived causal relations are the province of 'ordinary', non-brute emergence – they are determined by, and in ways that are, in principle, intelligible to us, the fundamental causal relationships. A lot of science is the investigation of these mechanisms of emergence. But we eventually reach the fundamental causal relations which are, according to the reducibility principle, in need of an intrinsic ground.

However, we have, it seems, absolutely no knowledge of the intrinsic properties of matter which underwrite their causal relations. But surely, all this rationally licenses is, as Russell says, agnosticism about these intrinsic properties rather than the radical endorsement of an experiential interpretation of them. There are some suggestive hints and significant constraints here though. First, since it is evident that certain configurations of matter generate or constitute conscious states, the intrinsic properties of matter must encompass this power. Second, our own introspective awareness of consciousness reveals it to be an intrinsic property, and given that consciousness is materially realized, consciousness is then an intrinsic property of matter – at least of certain organized material systems.

The realization that states of consciousness are intrinsic properties is of great significance. Although he did not use this language, I think Descartes was the first

person to argue for this thesis. His skeptical worry that it was impossible to tell whether or not he was alone in the universe on the basis of the contents of his consciousness clearly suggests that my duplicates – even if the only thing in the world – would share all my states of consciousness. The philosophical problem of the external world and the coherence of solipsism entail that consciousness is an intrinsic property of things. We do not have to embrace Descartes's dualism to share this insight. We must also recognize that our states of consciousness, though intrinsic, are not at all simple. This might evoke the worry that our states of consciousness are relational structures themselves, whose identity depends upon nothing more than a certain inter-related set of conscious 'parts'. While in a certain sense it is quite true to say that states of consciousness have parts, the phenomenon of the unity of consciousness shows that the nature of a state of consciousness is more than the mere inter-relatedness of these parts. William James pointed this out in a famous passage: 'Take a sentence of a dozen words, and take twelve men and tell to each one word. Then stand the men in a row or jam them in a bunch, and let each think of his word as intently as he will; nowhere will there be a consciousness of the whole sentence' (1890/1950, p. 160). We can read this as an argument against the idea that conscious states are 'structural' in any ordinary sense. Contrast the situation of conscious states with the obvious fallacy in this analogue of James's remark: take a hundred men and give them each a girder. Let them jam the girders together however they will, nowhere will there be a bridge made out of the girders. The emergence of bridges is ordinary fare but the emergence of consciousness seems altogether different.

According to the reducibility principle, matter must have an intrinsic nature to ground the relational or structural features revealed to us by physical science. We are aware of but one intrinsic property of things, and that is consciousness. It is plausible to assert physicalism – we are physical beings and our consciousness is a feature of certain physical structures⁵. Therefore, consciousness is an intrinsic property of matter. To show panpsychism we need to show that consciousness is both fundamental and ubiquitous. The fundamental features of matter are the intrinsic properties that are exemplified by the most basic constituents. The non-fundamental features are determined by them. If consciousness was not fundamental it would have to be determined by the fundamental intrinsic properties of matter.

It may be possible to postulate that matter possesses fundamental intrinsic properties which are entirely non-experiential and which nonetheless permit matter to subvene states of consciousness and of which we are entirely ignorant. I think this calls out for rather too much faith in physicalism. The faith based physicalism

⁵ This is a merely empirical premise, but it is well supported by common sense and scientific evidence of the vital link between brains and consciousness. It is a virtue of panpsychism that it permits us to be physical beings in the face of the difficulties of conceiving of consciousness as a physical phenomenon.

which endorses NE retained some plausibility when it maintained that our cognitive powers were too weak to see how matter as science reveals it could generate consciousness. But given the reducibility thesis, matter as science reveals it is simply not the kind of thing that could generate anything, except via the inapplicable and irrelevant mechanisms of ordinary emergence. We have to turn to the intrinsic properties for that. We have one ready to hand in consciousness itself. Nothing justifies the brute posit of additional intrinsic properties with this power, except the verbal demand that it be 'non-mental'. It is not clear to me that there is anything more than a merely verbal issue at this point, whether to *call* the intrinsic property at issue phenomenal or proto-phenomenal or absolutely and definitely non-mental (though we know nothing about it whatsoever) yet capable of producing conscious states.

And notice that the production of consciousness cannot be accomplished in such a way as to make conscious states merely structural or relational. For we know they are intrinsic features of things.

Ubiquity remains unproven. As Strawson notes, considerations of parsimony and elegance discourage us from doling out fundamental mentality to electrons but not positrons. After all, it seems we could build a conscious being out of anti-matter no less than matter. One might still worry that to the extent that there are physical entities which play no role whatsoever in the constitution and operation of the brain – neutrinos as it may be – there is ground to deny any experiential aspect to at least these elements of the material world. But again, that forces us, by the reducibility principle, to invent new intrinsic natures that are absolutely unknowable and uninvestigatable. On the other hand, if this line of argument is acceptable, then it seems to suggest that *all* of matter's relational properties should be traced back to experiential intrinsic properties. This is to get on the road to Leibniz's position, I think.

Part 2: Radical Relationalism

I hope the argument I've sketched expresses and elucidates something of Strawson's argument for panpsychism. If the way I'm looking at it is right, then the argument depends upon the heavy duty metaphysical premise of reducibility (although presumably not such an extreme version as PRR). There are two core issues that arise here. The first, explored in part 1 is about how the intrinsic nature of matter should be understood. The second is: why should matter have any intrinsic properties at all? An alternative view is what may be called 'relationalism' which asserts that *all* there is to matter is the set of inter-relationships which science reveals. Relationalism is undeniably plausible in certain domains. In graph theory – a mathematical discipline exemplified by Euler's treatment of the Königsberg bridge problem – for example, there is nothing more to a graph than the set of relationships between the nodes. And the nodes themselves are defined

by their place within the overall set of relationships. Within the realm of the mathematics, relationalism seems to be the generally correct ontological account. Does the number 2 have intrinsic properties apart from its relational place within the system of numbers? Relationalism within the realm of the concrete is much more controversial, and it has not been much discussed among philosophers with the exception of the so-called structural realists in the philosophy of science (see e.g. Worrall 1989, Ladyman 1998; see also Dipert 1997 for a distinctive treatment of the issue of relationalism).

Structural realism can be quickly, if superficially, characterized in terms of the Ramsey method of eliminating theoretical terms from a syntactical specification of a theory. In this well known procedure, Ramsey replaces each referring term in the theory with an existentially bound variable; the Ramsified version of a theory says only that there exist certain entities that are inter-related thus-and-so. An ontological reading of structural realism then goes on to assert that there is nothing more to the entities (which are asserted to exist) than their place within this relational system. A theory becomes rather like a mathematical 'graph' and the nature of the entities involved reduces to their place within this structural description. The reducibility principle is simply rejected.

How does the argument for panpsychism look if we deny that relational properties (or some relevant subset of them) need to be determined by intrinsic properties? Quite different. If all there is to matter is its relational or structural properties then the impetus to seek an intrinsic 'background' to underpin them completely evaporates. Does this really affect the overall argument however? The explanatory gap remains, since we lack any glimmering of an explanation of how matter as science reveals it to be (the relational structure) could generate or constitute states of consciousness. But now it is *much* more plausible to claim that this is a merely temporary failure which awaits advances in neuroscience. This idea is hopeless from the point of view of the intrinsic nature argument, for the only thing that science will ever reveal are more of the relational properties of matter. But once we deny the reducibility principle, then the kind of structure which science is so good at discovering is all there is to discover. In particular, according to relationalism, there is nothing more to consciousness than its place in a system of relations linking it to events in the material world as well as other mental states. Presumably, nothing stands in the way of neuroscience discovering this system of relations in the brain.

Relationalism thus construed sounds like functionalism, but there is a big difference. Standard functionalism buys into the line of thought that leads to the intrinsic nature argument. Functionalism requires that the system of relations it specifies be implemented or realized by some appropriately organized system of entities whose own properties permit them to 'mimic' the functional specification of the system. The affinity with the reducibility principle is clear. But relationalism

dispenses with the realization requirement: the system of relations is enough all by itself to underpin the reality of the entities at issue. The electron, according to relationalism, is just, as it were, a node in a system of relations whose identity and complete nature is fixed simply by its place in that system. There is no need for a 'qualitative something' to realize the electron. The same would be true of consciousness, and its proprietary system of relations might well be a neural structure (relationalism need not deny that there is a hierarchy of relational structures within nature, but it is 'relations all the way down').

So, on the relationalist view, the explanatory gap could easily be nothing but an artifact of the immaturity of theoretical neuroscience. It is also possible for the relationalist to endorse the stronger claim that the explanatory gap is unbridgeable because of innate human cognitive limitations. Here too, relationalism lends extra plausibility to this account of the explanatory gap, for the limitations at issue will now be of the rather straightforward kind of intractable complexity of relational structure rather than some mysterious failure to grasp the 'intrinsic connection' between the purely spatial and causal features of matter and phenomenal experience.

Relationalism undercuts the claim that the ontological investigations of science are essentially deficient and thereby seriously weakens the intrinsic nature argument for panpsychism. No intrinsic experientiality need be accorded to matter, any more than intrinsic anything else. Physicalists might therefore wish to embrace it as a doctrine which enshrines science as the final ontological arbiter and dissolves the explanatory gap. Perhaps, too, physicalists would hope that relationalism would relegate the intrinsic nature argument to the discredited realm of transcendent metaphysics, thus explaining why panpsychism exudes, as Nagel put it, 'the faintly sickening odor of something put together in the metaphysical laboratory'.

However, relationalism faces a number of difficulties and I would like to conclude this paper by outlining some of them⁶.

Strawson advances some considerations that might provide the starting point of an attack on relationalism where he says 'one needs to abandon the idea that there is any sharp or categorial distinction between an object and its propertiedness. One needs to grasp fully the point that "property dualism", applied to intrinsic, non-relational properties, is strictly incoherent in so far as it purports to be genuinely distinct from substance dualism, because there is nothing more to a thing's being

⁶ One point worth mentioning is that there are two senses in which relational properties require an intrinsic ground (see Moore 1919). One is, as we have been exploring, the intrinsics determine the relational properties. The other is a weaker view: relational properties require relata with intrinsic properties but these properties do not determine the relational properties. The weaker view is more plausible, but will not serve to motivate the intrinsic nature argument (as I see it), except in the sense that we already know that consciousness is intrinsic and (presumably) cannot be determined by merely relational properties (see below).

than its intrinsic, non-relational propertiedness' (p. 20). The argument that this suggests to me is this. Relations require relata. There is no real distinction between having intrinsic properties and being an individual. The relata of any relation are individuals. Therefore they possess intrinsic properties. Unfortunately, I think the relationalist is likely to complain that the second premise here begs the question. Why could not the relata be ontologically constituted out of the relations they stand in (as are the nodes in a graph conceived of as an abstract mathematical object). Nonetheless, the identification of individuality and possession of intrinsic properties is intuitively correct. In a discussion of Leibniz, where Kant comes close to making the relationalist claim about objects as we experience them, he goes on to say: 'besides external presence, i.e. relational properties of the substance, there are other intrinsic properties, without which the relational properties would not exist, because there would be no subject in which they inhered (Kant 1756/1986, p. 123)⁷. Kant merely states this – there is no argument.

Another argument against relationalism appeals to some fairly conventional philosophical wisdom that itself possesses close ties to the reducibility principle: that dispositions require a categorical base. A good number, perhaps most or conceivably even all of the relational properties which science discovers about matter are causal dispositions. If dispositions require (metaphysically) a base of intrinsic properties which determines their powers then we have an argument from the relational structures revealed by science to the need for some intrinsic nature which subvenes these powers. Science itself provides innumerable examples of how dispositions are based upon lower level *structures*. But it does not directly follow that the hierarchy of causal relationships has to bottom out in intrinsic properties rather than some fundamental system of relational properties (see Lycan's 1987 discussion of 'levelism'). Strawson perhaps advances a version of this argument where he asserts against brute emergentism that causal powers require an intrinsic base. Against this, the relationalist is likely to assert that there really is nothing more to causation than certain patterns of relations amongst events. It may be yet another argument against relationalism that philosophers have so dismally failed to produce any such structural analysis of causation despite many years of efforts.

One of the core intuitions about intrinsic properties is that they are the properties that things have 'in themselves', the properties that something would retain even if it was the only thing in the universe. If we add the premise that things can exist as the sole denizen of a world (in some appropriately weak modal form – that fact that I need oxygen to survive will not prevent me from having intrinsic properties) we have an argument against relationalism. Individuals can, on this view, be 'pulled out' of the relations they may find themselves in and exist entirely apart from them. This is possible only if they possess intrinsic properties. So

⁷ For this passage and many ideas that influenced this paper, see Langton's remarkable *Kantian Humility* (1998). Although rather controversial as an interpretation of Kant (see Falkenstein 2001) the book is a wellspring of ideas on the issue of intrinsicity and related areas.

relationalism must be false. Here, the relationalist would have to deny the modal premise despite its intuitive plausibility. If relationalism is true then no entity can exist by itself – all entities metaphysically imply the existence of other things, just as it is impossible for a node of a particular graph to exist apart from the rest of the graph. However, the evident difference between concrete individuals and the merely abstractly specified structures of graph theory (and other mathematical constructs) tells against relationalism here. What is concreteness, if not the ability of concrete things to exist apart from other things?

One can further argue against relationalism by an indeterminacy argument (this argument has clear affinities with the first given above and the immediately preceding argument). The linchpin premise here is that structure is insufficient to nail down the particularity of the concrete entities which enter into any system of relations. Contrast this with the evident success of relationalism in the mathematical realm. It seems ludicrous to suppose that the mathematical concept of a particular graph is somehow deficient because the nodes are not specified in any way beyond their place in the system of connections which describe the graph. The current argument re-emphasizes that this is precisely a key difference between the concrete and the abstract.

A famous – at least within structural realist circles – argument by the mathematician Max Newman (1928) originally directed at Russell's claim that science provides only structural information about the world can be deployed to put some real meat on the bones assembled above. The conclusion of Newman's argument, when interpreted to bear on relationalism, is that the existence of a system of relations is trivially true of a set of objects, so unless there is something, as Newman says, 'qualitative' (I read this as involving intrinsic properties) about the relata, relationalism says exactly nothing about the world, beyond an assertion of cardinality⁸. This is because, assuming there are enough entities it follows from pure logic that any system of relations over those entities is instantiated. How can that be? Because, conceived apart from considerations of the intrinsic properties of the relata, relations are simply sets of ordered sequences of entities (e.g. a two-place relation is a set of ordered pairs) and, given the entities, those sets and sequences will automatically exist. Newman puts it thus: 'any collection of things

⁸ The idea that the number of things is independent of the relations into which they fall perhaps by itself comes close to providing an argument against relationalism, suggesting that there is some definite 'thingness' which anchors the metaphysical possibility of counting individual things. In this light, it is interesting that particle number is *not* in general an eigenvalue of states in quantum field theory. A defender of the reducibility principle might well take this as a sign that the intrinsic properties are quite different than the kinds of things studied by physical science. The example of Leibniz once more comes to mind. On the other side, and frequently voiced, is the claim that quantum mechanics is trying to tell us that relationalism of some kind is true (see Teller 1986). I find it somewhat strange however that we should use physical science, which is limited to discovering the relational structure of things, in an argument that all there is, is relational structure.

can be organized so as to have the structure W , provided there are the right number of them' (p. 144).

It is very satisfying to see that the intrinsic nature argument is exactly what is required to avoid Newman's problem, and one would want it to be the case that both Russell and Eddington's deployment of consciousness as an intrinsic nature was explicitly directed at this issue. Alas, things are not nearly so clear cut (see Demopoulos and Friedman 1985, Russell 1968 (in which a letter to Newman appears on p. 176), Braithwaite 1940, Eddington 1941 and Solomon 1989). Nonetheless, this seems a very powerful argument against relationalism⁹.

Finally, we might appeal to the phenomenology of consciousness itself as evidence that some things (such as *me*) have intrinsic properties. As discussed above, my current state of consciousness seems to be something that could exist even if I was the only thing in the universe¹⁰. Its causal conditions are no doubt richly connected to a host of other things tracing back to the big bang, but in itself it appears serenely independent of everything else. Therefore, there are at least some beings which are not 'purely relational' and therefore pure relationalism is false. But, comes the objection, relationalism could be true of matter. Not if I am a material thing, as I appear to be¹¹. Consciousness itself provides perhaps the best argument that there are intrinsic properties, and this is exactly why consciousness appears as so troubling or even alien to the scientific picture of the world which deals

9 It's worth pointing out that some philosophers (e.g. Maxwell 1971, perhaps Chalmers 2005) have taken *causation* to be among the qualitative properties needed to evade Newman's problem. To the extent that causation itself is seen to be purely relational this obviously won't do, so this maneuver appears to require that causal powers be determined by intrinsic features. It's also worth noting that Kant explicitly denied this (see Langton 1998) and maintained that causal powers could vary across intrinsic identicals. There is some intuitive support for this too. Couldn't God have made G slightly different and thence have altered the causal powers of things without changing anything intrinsic about them? In fact, could God not set G to zero, and thus remove the causal power to gravitate without changing the intrinsic properties of matter? Other anti-Newman ploys depend upon distinctions between 'real' versus 'merely logical' or 'Cambridge' relations or other more or less dubious metaphysical maneuvers.

10 Perhaps it would be safer, given worries about content externalism, to assert only that a state of consciousness introspectively indistinguishable from my own is the sort of thing that could exist even if its subject was the sole inhabitant of the universe. Perceptual states provide more examples of extrinsic properties for which it is hard to see how they could be determined by intrinsic properties. Any state with external content will likewise provide an example of a seemingly pure extrinsic property.

11 This raises the spectre of strange metaphysical view, the inverse of right thinking philosophical common sense (as I see it), in which the intrinsic properties of things are determined by their relational properties. This would make it possible for consciousness to be an intrinsic property of material objects without requiring that the fundamental physical things have intrinsic properties of their own. One argument against this is the possibility that there are metaphysical *simples* which have no spatial parts but which do have properties of phenomenal consciousness. While I am not such a metaphysically simple entity, a state of consciousness indistinguishable from my own could be possessed by such a thing. Therefore it can't be the case that all intrinsic properties are dependent upon relational properties.

exclusively with relational or structural features, leaving aside any attempt to grapple with intrinsic natures. This is a positive feature so long as science is dealing with, as Eddington puts it, 'meter readings' or the relations amongst observable events. But it prevents science from being able to even begin to address the problem of consciousness. Maybe this is the ultimate source of the explanatory gap, which shows the limits of the methodology of empirical science. This is perhaps the most important lesson we should draw from Strawson's article.

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