Quidditism vs causal essentialism

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Properties seminar

1. Swoyer's argument against DTA

> In effect, [DTA] offer us a second-order Humean picture, according to
> which it is simply a brute fact that given properties happen to stand in the
> [N] relation to each other; different laws could hold in different possible
> worlds, and it is just a cosmic coincidence that a given law holds in certain
> worlds but not in others. On this account, hydrogen might have had
> an atomic number of 124, neutrons a positive charge, and an increase in
> the pressure of a gas at constant volume always been accompanied by a
> decrease in its temperature — it is simply fortuitous that the [N] relation
> didn't hold between properties in such a way that these things happen
> as a matter of law. But to regard the relation of nomic implication in
> this way is to relinquish the view that there is something about the very
> natures of pressure and temperature themselves that accounts for their
> lawful connection. (Swoyer, 1982, p. 211)

Objection 1: the necessity of laws doesn't follow from causal essentialism, since
there could have existed different properties. Objection 2: how does calling
the laws "metaphysically necessary" help?

2. "Distinctions without differences"

> The quidditist is… committed to distinctions which my intuitions tell
> me are distinctions without differences… Let us start by considering the
> world isomorphic with ours, but where a quark colour has swapped places
> with a quark flavour. To the inhabitants of such a world, their world looks
> just like ours, but in reality it is supposed to be quite different. Can that
> really be? My intuition is that to play the nomological role of some colour
> or flavour is to be that colour or flavour, and that the idea of two qualities
> swapping nomological roles is thus unintelligible.

> This is not a verificationist argument. It is not like the case of a world
> which is just like ours except for having come into existence five minutes
> ago complete with fossils and (pseudo-)memories. In such a case there is
> something distinguishing that world from ours which its inhabitants are
> prevented from knowing, giving them the illusion that their world is like

ours. But in the case of colour/flavour exchange, the inhabitants could happily know all the truths about their world, and the narrow content of their knowledge would be identical with ours (or with what ours would be if we knew everything), and still their world is supposed to be different from ours, and their knowledge to differ from ours in its broad content. More apt than the comparison with a world without a past would perhaps be the following: someone living in a Newtonian world with absolute space might be tempted to think that things could all have been ten centimetres to the left of where they are. (Black, 2000, p. 94)

3. Categorical properties unknowable

We are all familiar with arguments with the following structure: If metaphysics M is right, then there are unlucky worlds where our judgments are way off with respect to subject matter S. Further, there is a natural sense in which, if M is right, we can't tell whether we are in an unlucky world. But we are very knowledgeable about subject matter S. If we can t tell whether we are in an unlucky world, we are not knowledgeable about subject matter S. So metaphysics M is all wrong…

If metaphysical realism about physical objects is true, then there are unlucky worlds where we are brains in vats. Supposing realism is true, we can't tell whether we are in a brain in a vat world. But we know a whole lot about tables. So we should not be metaphysical realists about physical objects. (Hawthorne, 2001, pp. 365–6)

When we think of categorical grounds, we are apt to think of a spatial configuration of things—hard, massy, shaped things resisting penetration and displacement by others of their kind. But the categorical credentials of any item in this list are poor. Resistance is *par excellence* dispositional; extension is only of use, as Leibniz insisted, if there is some other property whose instancing defines the boundaries; hardness goes with resistance, and mass is knowable only by its dynamical effects. Turn up the magnification and we find things like an electrical charge at a point, or rather varying over a region, but the magnitude of a field at a region is known only through its effect on other things in spatial relations to that region. A region with charge is very different from a region without: perhaps different enough to explain all we could ever know about nature. It differs precisely in its dispositions or powers. But science finds only dispositional properties, all the way down. Blackburn (1990, pp. 62–3)

> G [the purported categorical ground of a disposition] will remain, therefore, entirely beyond our ken, a something- we-know-not-what identified only by the powers and dispositions it supports. (Blackburn, 1990, p. 64)

> … our best physical understanding of the world gives us no conception of what they [the categorical properties] might be. (Blackburn, 1990, p. 65)

What is the conclusion of this argument? Lewis (2009), a quidditist, argues that in some possible world w, charge and mass swap the nomic roles they have in the actual world (@). He concludes that we don't know whether we're in w or @, and that we don't know that charge plays the role that we take it to play. (He doesn't take this to be an objection—why think we know everything?)

Schaffer: not an objection to the metaphysics of quidditism since the metaphysical possibility of a swap is no more epistemically threatening than the *epistemic* possibility of a swap. Also, the swapping scenarios are just skeptical hypotheses, and can be answered however we answer skeptical hypotheses in general.

4. Shoemaker's epistemic argument

> The supposition that these possibilities are genuine implies, not merely (what might seem harmless) that various things might be the case without its being in any way possible for us to know that they are, but also that it is impossible for us to know various things which we take ourselves to know. If there can be properties that have no potential for contributing to the causal powers of the things that have them, then nothing could be good evidence that the overall resemblance between two things is greater than the overall resemblance between two other things; for even if A and B have closely resembling effects on our senses and our instruments while C and D do not, it might be (for all we know) that C and D share vastly more properties of the causally impotent kind than do A and B. Worse, if two properties can have exactly the same potential for contributing to causal powers, then it is impossible for us even to know (or have any reason for believing) that two things resemble one another by sharing a single property. Moreover, if the properties and causal potentialities of a thing can vary independently of one another, then it is impossible for us to know (or have any good reason for believing) that something has retained a property over time, or that something has undergone a change with respect to the properties that underlie its causal powers. (Shoemaker, 1980, p. 237)

He replies to the objection that rejecting the skeptical hypotheses is simpler:

> Whatever may be true in general of appeals to theoretical simplicity,
> this one seems to me extremely questionable. For here we are not really
> dealing with an explanatory hypothesis at all. If the identity of properties is
> made independent of their causal potentialities, then in what sense do we
> explain sameness or difference of causal potentialities by positing sameness
> or difference of properties? There are of course cases in which we explain
> a constancy in something by positing certain underlying constancies in its
> properties. It is genuinely explanatory to say that something retained the
> same causal power over time because certain of its properties remained
> the same. And this provides, ceteris paribus, a simpler, or at any rate more
> plausible, explanation of the constancy than one that says that the thing
> first had one set of underlying properties and then a different set, and
> that both sets were sufficient to give it that particular power. For example,
> if the water supply was poisonous all day long, it is more plausible to
> suppose that this was due to the presence in it of one poisonous substance
> all day rather than due to its containing cyanide from morning till noon
> and strychnine from noon till night. But in such cases we presuppose
> that the underlying property constancies carry with them constancies in
> causal potentialities, and it is only on this presupposition that positing the
> underlying constancies provides the simplest explanation of the constancy
> to be explained. Plainly this presupposition cannot be operative if what
> the 'inference to the best explanation' purports to explain is, precisely,
> that sameness of property goes with sameness of causal potentialities.
> (Shoemaker, 1980, pp. 237–8)

Reply: the appeal to simplicity isn't meant to explain that "sameness of property
goes with sameness of causal potentialities"; only that, presupposing quidditism,
one should prefer explanations that don't gratuitously multiply differences of
properties.

> This disassociation of property identity from identity of causal potential-
> ity is really an invitation to eliminate reference to properties from our
> explanatory hypotheses altogether; if it were correct then we could, to use
> Wittgenstein's metaphor, 'divide through' by the properties and leave the
> explanatory power of what we say about things untouched. (Shoemaker,
> 1980, p. 238)

5. Modal causal essentialism

Hawthorne distinguishes two versions (he calls it causal structuralism):

Local causal structuralism If two properties (perhaps in different worlds) share their nomic profile then they are identical

Global causal structuralism If two worlds share their nomic profile then they share their property profile

He gives an example that threatens local but not global causal structuralism:

> The following seems to me to be a perfectly possible causal structure: There are four properties, call them A, B, C, D . Here are the laws governing them: A N C, B N C, A and B N D. It is crucial to this structure, note, that A and B are distinct. Their coinstantiation has different effects (the addition of D to the world) than is produced by either being instantiated alone. (p. 373)

6. Essentialist causal essentialism

lawbook: $A_N B \wedge A_N C \wedge B_N C$

How to noncircularly complete "x has $A =_{df}$..." in terms of laws, given that properties, not individuals like x, figure in the laws? Like this?:

$$x \text{ has } A =_{df} \exists p (p_N B \wedge p_N C \wedge x \text{ has } p)$$

For all y, if $\phi(y)$, and $\phi(x) =_{df} \psi(x)$, then $\phi(y)$ because $\psi(y)$

("definiendum holds in virtue of definiens")

If $\phi \wedge \psi$ then: $\phi \wedge \psi$ because ϕ, and $\phi \wedge \psi$ because ψ

("conjunctions hold in virtue of their conjuncts")

For all y, if $\phi(y)$ then: $\exists x \phi(x)$ because $\phi(y)$

("existentials hold in virtue of their instances")

because is factive and transitive and asymmetric

The problem: suppose x has A. Then x has A because $\exists p (p N B \wedge p N C \wedge x$ has $p)$ (definiendum…); but a true instance of this existential is $A N B \wedge A N C \wedge x$ has A; and so the existential holds because of the instance (existentials…); but the instance holds because x has A (conjuncts…), which given transitivity violates asymmetry.

Deny that existentials hold in virtue of their instances?

Instead of formulating the essentialist claim using "$=_{df}$", we might formulate it instead using i) Fine's (1994) notion of a property possessed in virtue of the essences of given objects, and ii) Fine's treatment of recriprocal essence:

A, B, and C are essentially $\lambda p_1, p_2, p_3 (p_1 N p_2 \wedge p_1 N p_3 \wedge p_2 N p_3)$

But this doesn't specify *how* the possession of the property is supposed to originate in the essences of A, B, and C.

Perhaps formulate the essentialist claim in terms of causation rather than laws? Replace laws like $A N B$ and $A N C$ with universally quantified facts like these:

For all objects x and times t, if x has A at t then the event $[x, A, t]$ causes the event $[x, B, t]$

For all objects x and times t, if x has A at t then the event $[x, A, t]$ causes the event $[x, C, t]$

But we still can't formulate a noncircular definition of A. This is no good since the events involved in causation involve properties:

x is A at $t =_{\mathrm{df}}$ at t, x causes the event $[x, B, t]$ and x causes the event $[x, C, t]$

7. Fundamentalist causal essentialism

The quidditist's picture, in fundamentalist terms, is that properties like mass and charge are fundamental properties; and facts about their instantiation are fundamental facts. The causal essentialist must seemingly deny part of this picture, since the picture says that the fundamental facts about property instantiation are independent of nomic role. Challenges then facing the causal essentialist:

- the causal essentialist must hold that laws are fundamental; but laws involve properties; and any property that occurs in a fundamental fact must itself be a fundamental property ("purity").

- the view cannot be that it's only laws that are fundamental facts, since there must be fundamental facts describing e.g. initial conditions. The view needs fundamental facts that are somehow a blend of nomic facts and matters of particular fact.

The most simple-minded view might be that the fundamental facts are existential:
$$\exists p (p_N B \wedge p_N C \wedge x \text{ has } p)$$

or
$$\exists p_1 \exists p_2 \exists p_3 (p_1 {}_N p_2 \wedge p_1 {}_N p_3 \wedge p_2 {}_N p_3 \wedge x \text{ has } p_1)$$

But this has similar problems to those discussed earlier. A more radical approach is to make all property talk relational. Introduce a primitive predicate $R(X)$, read "the Xs resemble one another perfectly in some one fundamental respect". (Compare resemblance nominalism.) This view gives the causal essentialist one desired result: it doesn't allow distinct worlds in which properties permute roles.

A more deeply causal version would replace $R(X)$ with $N(X, Y)$: "the Xs collectively necessitate the Ys". The idea is that as groups, the Xs and the Ys are such that anything that is one of the Xs must, by law, also be one of the Ys.

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