

PROPERTIES AND UNIVERSALS 4

Michael Gabbay

Department of Philosophy

Kings College London

Shoemaker on the individuation of properties

Locke distinguishes between Primary and Secondary qualities of an object. A primary quality is one which is retained through divisibility and which

we may observe to produce simple ideas in us, viz. solidity, extension, figure, motion or rest, and number. (2:8:9)

Secondary qualities are

...in truth are nothing in the objects themselves but power to produce various sensations in us by their primary qualities. . . (2:8:10)

Locke understands properties in terms of their powers. For example:

the power to produce any idea in our mind, I call quality of the subject wherein that power is. (2:8:8)

Shoemaker's proposal is to view properties as powers, and individuate them in terms of their causal powers.

Just as powers can be thought of as functions from circumstances to causal effects, so the properties on which powers depend can be thought of as functions from [sets of] properties to [sets of] powers. ('Properties', p242).

Dispositions vs Powers

At first glance this suggestion is that all properties are dispositions, and this seems obviously false.

Just as the property of being copper is more than just a power to produce an idea in us, we would think that Copper is not merely a disposition to cause certain effect. Also, a properties seem essentially different from powers, for example, the same powers can be consequences of different properties (the power to think is different from the property of being a mind).

Shoemaker argues that there is common confusion about dispositions and powers. On the one hand there is a clear distinction between dispositional and non-dispositional predicates:

We can have a dispositional predicate, e.g. 'flexible', 'soluble' etc.. Where a certain causal power is built into the meaning of the predicate. Certainly, the causal powers of copper are not built into the meaning of the term 'copper'.

Indeed, Shoemaker suggests that 'dispositional' is a term that should apply only to predicates.

On the other hand, there is a difference between a powers and the properties 'in virtue of which' (Shoemaker's in virtue of which will turn out to be entailment) an object has its powers.

An object may have a certain property, and in virtue of having that property it will cause death if injected. Thus, in virtue of having that property and object has the the power of being poisonous. But the property is not identical to the power to cause death if injected, as many other properties imbue such a power.

Properties are like Lockes primary qualities in that they are the things *in virtue of which* entities have powers.

We must be careful to distinguish two interpretations of Shoemaker here:

(1) Properties are clusters of powers

(2) Properties are individuated by their causal powers

Talk of properties as 'conditional powers' does make Shoemaker's proposal look like (1), but actually his suggestion is more like (2): without an ontology ontology, we can say much about properties in terms of their causal powers.

Note that Shoemaker's conditional powers are not the references of dispositional predicates. Dispositional predicates perhaps refer to powers, which may be thought of as functions from circumstances to effects. Properties, on the other hand, may be thought of as functions from (other) properties to powers.

Conditional Powers

Properties can be thought of as sets of powers that are conditionalised on other properties an object might possess.

There is a power of being able to slice bread, call it p , something can slice bread if it produces certain effects in certain circumstances. So, in the circumstances of being pressed against bread something with the power p will produce the effect of sliced bread

There is the property of being made of steel. This in itself is not a power, but will imbue powers on things which possess other properties. So for example, something made of steel has the power to slice bread conditionally on, among other things, it being knife-sized and sharp. But this is not all, in conjunction with being-knife sized, something made of steel has the power to cast a certain shadow when held up to the light etc.

But the property of being made of steel together with the property of being pin shaped or molten, will result in a different collection of powers.

If p is a power, then a thing has a *conditional power* P if, conditionally on it having certain properties, it has the power p .

so something made of steel has the conditional power to slice bread (if it is knife-sized and sharp).

Shoemaker then gives an identity condition for conditional powers:

If P is the conditional power of having power p conditionally on properties X , and P' is the conditional power of having p' conditionally on properties X' , then $P = P'$ exactly when $p = p'$ and $X = X'$.

So the individuation conditions for conditional powers are just the powers and conditions that constitute them: the same powers conditional on the same properties yields the same conditional power.

Individuating Properties

Properties can now be individuated by the conditional powers they impart on the object that possess them. So a property can be identified by a cluster of conditional powers.

A consequence of this is that the property of being trilateral and triangular are the same property as they will not differ in the conditional powers they contribute to an object.

In fact, it seems that necessarily coextensive properties, on this view, will be the same (but this does not yet follow, more needs to be said on which clusters of conditional powers are the mark of a property).

Shoemaker does not find this unacceptable, arguing that we must not make the mistake of holding properties as the meanings of predicate expressions (and concepts from the things they are concepts of).

Note that the kind of properties Shoemaker is individuating here are the sparse natural properties (or perhaps the less sparse intrinsic properties).

He refers to the other, abundant, properties as mere-Cambridge properties suggesting that the mere-Cambridge properties of an object are those that cannot be determined of it by examining it alone. So perhaps he is individuating intrinsic properties (but remembering Lewis' characterisation of intrinsic properties in terms of natural ones, it is enough to discuss only the natural properties).

But which clusters of conditional powers constitute properties? Not any cluster will do. Shoemaker suggests that conditional powers P and P' belong to the same property whenever either (i) whatever has one has the other or (ii) there is some third conditional power such that whatever has it has both P and P' . In other words, P and P' belong to the same properties when there is a certain lawlike connection between them.

Epistemic virtues of this view

This way of individuating properties exactly matches our way of coming to know about them. Properties an objects are recognised by how the object causally influences other objects. We know that an object is sharp, e.g. by observing it cut something, or by hardening it and then cutting something with it etc.

Given this, suppose that properties are individuated on some other basis than their causal (conditional) powers. Then it is possible that there be:

- two distinct properties with the same conditional powers
- two utterly indistinguishable objects with different properties
- a property the conditional powers of which change over time
- something that undergoes a radical change in properties without any change in its powers
- something that undergoes a radical change in powers without any change in its properties

Shoemaker objects that if these are possible we cannot know many things we take ourselves to know. We can never know if two objects have the same properties, and given identical test results, we can never infer that the same properties are present etc.

There seems to be nothing, other than its causal potentialities, which plausibly can be used to track a property. (Do tropes or universals lend themselves to being identified in terms of their causal powers?)

Shoemaker's metaphysical consequences of this view

(1) If some of the actual properties are instantiated (in a possible world), then all of them are.

The conditional powers of one property will make reference to other properties, and the conditional powers of these will make reference to others and so on. If some (actual) properties are instantiated but not others, then it is because they are causally isolated from each other. Shoemaker argues that it is unlikely that there are any properties so totally isolated from each other.

For example, shape and colour are connected by the colour having the causal power to reflect a certain pattern of light (at a certain frequency) conditionally on the object's shape.

(2) All the lawlike connections between the conditional powers that individuate a property hold necessarily.

Remember that clusters are identified by lawlike connections between their members (P and P' are part of the same cluster if whatever has one has the other). Suppose that the lawlike connections between individuating conditional powers for a property X are true only contingently. Then there is a possible world, with the powers of the actual one, where they are not true and so X is not instantiated. But this contradicts (1).

Basically, the argument here is that if you individuate one property differently then, since it is mentioned in all other properties, they will turn out differently too (and so all conditional powers change).

(3) All properties must be individuated by all of their conditional powers.

Shoemaker's argument for this is epistemological. Suppose properties are individuated by an essential core cluster of conditional powers. Then the lawlike connections between the conditional powers are, by (2) necessary. But the lawlike connections between the conditional powers outside the clusters are contingent. Shoemaker argues that there would be no way to tell which is which, for these connections are necessary *a posteriori* and so discovering them empirically tells us nothing about whether they are necessary. Therefore we could not properly individuate properties, which we clearly do.

(4) All the conditional powers of a property hold necessarily of it

This follows from (1), (2) and (3).

So causal necessity is just a species of metaphysical necessity!

Actually I think this does not follow, the sorts of properties being individuated are intrinsic properties (e.g. charge and spin) but many causal laws apply to extrinsic properties, or to things that are not really properties of objects. For example, laws about forces and velocities (or perhaps even relativistic mass) are not about the intrinsic properties of the sort Shoemaker is considering (to use Shoemaker's suggested test, the velocity of a particle is not something that can be determined by considering it alone). So causal laws about extrinsic properties need not be necessary.

The theory has, at least, the strong consequence that all the causal laws about intrinsic relations are metaphysical necessities.

To many it is an attractive consequence of the theory that it is in a sense a matter of necessity that a hard stone will shatter a glass window when thrown at it. It is part of the individuation conditions of 'hard', 'rock' 'glass' and 'shatter' that a hard rock will shatter a glass window.

Objections

(1) The account is circular

Shoemaker is well aware that his use of the notion of a property in his criterion for property identity appears circular. Indeed, the circularity permeates the definition of a power (as properties are need again to identify sameness of circumstance and effect). But such circularities are vicious if the theory is taken to be a reductive analysis of property in terms of causal powers. However, if the theory is intended to illuminate a the interrelations between properties an causality, then arguably he has succeeded in furthering an understanding of properties we already possess.

(2) Properties never seem to act

When an object, in virtue of possessing a property, exercises a power, often it will produce a change in another object. This change will be a change in properties, which is characterised by a change in causal potentialities. Thus the effects of any change in properties is merely a change in causal potentialities (which can cause only other changes in causal potentialities in other properties etc.). Properties, so the objection goes, never do anything except shift potentialities around.

Unless Shoemaker is interpreted as identifying properties with causal potentialities this objection does not apply. If properties are merely *individuated* by their conditional powers then when there is a change in an object, not only is there a change in its conditional powers, but also in its properties.

Even if he does accept that properties are merely causal potentialities then the objection seems to do little more than state an intuition that they are not. For it would be precisely the point of the causal potentialities view that action and change is entirely constituted by changes in potentialities.

(3) The possibility of shared potentialities

Shoemaker cites a counterexample to his thesis:

Imagine a world in which the basic physical elements include the substances A, B, C and D . Suppose that X is a compound of A and B and Y is a compound of C and D . We can suppose that... the property of being made of X and the property of being made of Y share all of their causal potentialities. ... It follows... that being made of X and being made of Y are the same property.

Shoemaker suggests that his account should be revised as follows:

... for properties F and G to be identical, it is necessary *both* that F and G have the same causal potentialities *and*... that whatever set of circumstances is sufficient to cause the instantiation of F is sufficient to cause the instantiation of G , and vice versa.

But perhaps we need not go so far. Why not accept that X and Y are indeed the same compound (i.e. have the same properties), but allow that there are two different ways of forming it.