

Property Instrumentalism

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Abstract

Nominalism is the view that everything is particular. Properties, if there are any, are an exception. But properties are very difficult to understand. They are abstract objects; that, of course, violates the nominalist “intuition.” But common-sense formulations of what properties are (for example, in the “one-over-many” problem) seem to be flat out contradictory: for example, the property of being a cat is wholly present in each of its instances, and survives the destruction of any one of the instances. This paper considers *instrumentalism* about properties: property theory is false, but turns out to be a useful instrument for talking about and classifying the world.

Since he cannot in any way attain to the true causes, he will adopt whatever suppositions enable the motions to be computed correctly from the principles of geometry for the future as well as for the past.
—Andreas Osiander

1 The problem of properties

This banana is yellow. The stove is hot. The car has half a tank of gas. My laptop has 4gb of RAM. 2 is even, both 2 and 3 are prime. Melvin and Tiny are cats. “An insect that has some of the same anatomical features as some mature, well-formed female spider has some of the same anatomical features as any mature, well-formed female spider of the same species” (van Inwagen, 2009, 506).

These sentences are all true. They all point to or presuppose or rely on a perfectly fundamental distinction: between individual things, and ways those things are.

We take the distinction to be a distinction of beings: there are particulars, and there are properties.

There is logical space here. Consider Russell's argument for universals (Russell, 1912):

Let us consider, say, such a notion as *justice*. If we ask ourselves what justice is, it is natural to proceed by considering this, that, and the other just act, with a view to discovering what they have in common. They must all, in some sense, partake properties of a common nature, which will be found in whatever is just and in nothing else. This common nature, by virtue of which they are all just, will be justice itself, the pure essence the admixture of which with facts of ordinary life produces the multiplicity of just acts. (Russell, 1912)

The form of the argument appears to be this:

There are many acts which are all one thing: just.

Therefore, there is one thing that the many just acts are: justice itself.

The argument is evidently not deductively valid: the premise is about various just acts, but the conclusion is about something else: justice itself. It's also clearly not an "inductive" or sampling argument.

It's probably best thought of as an inference to the best explanation (Swyer, 1982). Properties or universals explain a lot. They could be the referents of predicate expressions. They provide a solution to the "one over many" problem: how can many distinct things be one thing? George (Bealer, 1993) argues that universals are "uniquely suited to carry a certain kind of modal information" (6). Universals supply an explanation for "genuine unities" (being an emerald is a genuine unity, being an emerald (an emerald if observed before 2000 otherwise a sapphire) is not). David Armstrong says that the ontological ground for a law that all *A*'s are *B*'s is a "necessitation relation" that relates the universals *A* and *B*. Universals solve various underdetermination problems (Lewis, 1983): the Quine indeterminacy of translation problem and its offspring, the Kripke-Wittgenstein puzzle. And so forth.

While properties explain a lot, a lot looks to want explaining about them.

In the *Phaedo* Plato has Socrates recount his history of his enthusiasm for natural science and wisdom about the causes of things. He finally decides (100d) that he doesn't understand "those

other sophisticated causes” and will cling to the idea that what makes the beautiful thing beautiful is

the presence of, or the sharing in, or however you may describe its relationship to that Beautiful we mentioned, for I will not insist on the precise nature of the relationship, but that all things are beautiful by the Beautiful.

So we have various particular beautiful things (this cat, that bridge, the Parthenon, Alcibiades, ...). And we have “those realities” (76d): the Beautiful, the Good, and so forth. The latter are intelligible but not sensible, unchanging and unchangeable. You can see and touch the former, they change and grow old and break and die.

The inference to “those realities” is, I think, an uphill battle. We have the various changing particular things. Why do we need these other things? We can be talked into the jump from their intelligibility to their being. But why should we let ourselves?

It would be the crassest sort of empiricism to say that we have no experience of them. Nevertheless there’s something true here. Suppose “experience” means what I can see, hear, touch, smell, taste. I experience this beautiful cat. But I don’t experience the beauty of this beautiful cat (unless that means something harmless like “I experience that the cat is beautiful”). We certainly do have the experience of *understanding*: I take it that this is the subject of Plato’s description of the ecstatic vision of the philosopher in the *Symposium*. But there are ways of understanding what understanding is that do not require extra ontology. Nor do we have to construe understanding as a kind of experiencing that just doesn’t have a sensory modality.

So there is something initially problematic about moving from these two beautiful cats to the things that they share: the property or universal for being a cat, for being beautiful.

Even supposing that the arguments to the universals are taken to be rationally persuasive, it’s not easy to see what the arguments prove. They show that there are universals. What else can we say about them? Very high level general things: whenever two particular things are similar or resemble one another, they share a property; the properties a thing has account for how it behaves in accord with the laws of nature; properties have something like adicity. Sometimes properties come in groups. Red, blue, green are all colors. Color and texture and smell and sound are sensible. Can we say anything as it were more concrete about the universals themselves? What does their existence consist in? Obviously not anything like the existence of particular things, material things.

But what, then? These other characteristics of particular material things contribute an infinity of new information about those particular individual things: this cat was born in Georgia, is afraid of us at some times of the day but not at others, was wounded but seems to have recovered, is inclined to let this other cat be dominant when there is food available, and so forth. There is precisely *no* information of this sort available about universals. Of course, that makes perfect sense given their nature as it flows from the inferences to the best explanation: they are timeless, changeless, non-spatio-temporal, etc. So of course they don't have histories or preferences or scars or whatever. But if there is any way to resist the arguments for their existence, this excuse looks perfectly lame: the reason they don't contribute any information about themselves is that they never were there in the first place (Yablo).

Now, the history of the subject is littered with efforts either to prove that these extra things are real, or that they are not. There are very persuasive arguments on both sides. On the one hand, it is intuitively extremely unpalatable to suppose that in addition to the kings and cabbages there are also universals. (The problem isn't beauty or justice: it's things like charge, or mass, or velocity.) On the other hand, it is inescapable that we will talk about properties. The arguments that they are indispensable are utterly compelling.

2 Instrumentalism

There is a strategy available: instrumentalism about properties (Forbes, 1983; Field, 1980; van Fraassen, 1980; Cartwright, 1983; Rosen, 1990; Yablo, 2005; Balaguer, 1998). We accept the theory of properties. But we don't have to believe it. We can use it without saying that it is true.

There are a number of things that will seem problematic about property instrumentalism. The remainder of this paper will be a sequence of issues about instrumentalism. For some of them I suggest that instrumentalism has answers. For others, I will leave the issue unanswered: part of my goal for this paper is to figure out whether there is a more or less decisive refutation of property instrumentalism available.

2.1 Instrumentalism vs. Fictionalism

The terminology for this family of views is not clear (Rosen, 2005). I call the view I am favoring “instrumentalism” rather than “fictionalism” in order to put aside the worry that if the claim is that properties are fictional entities, I will have to provide an account of fictional entities. But “instrumentalism” is itself a problematic term. I don’t want to be saying that property instrumentalism says that property theory has only instrumental virtues. If the indispensability arguments are right, it’s not just that property theory provides, say, a handy abbreviation for something otherwise hard to say. It’s rather that there are true things about the world that we can’t say unless we say them using property theory. So the virtues of an instrumental theory of properties may be related to truth, even if the theory itself is not true.

I assume a few things about how my version of instrumentalism is supposed to work. The words used to express the theory gain their meanings from ordinary uses of language, except for those cases where terms are defined within the theory; but those definitions must eventually unpack into meanings that come from outside the theory. The sentences of property theory, according to property instrumentalism, express propositions that are truth-evaluable. Typical problematic propositions (“the property of being red is a color property”) are literally false (construing the definite description as quantificational). Hence property instrumentalism is not non-cognitivism about property talk.

2.2 “On what there is”

How, in general, are we supposed to decide what there is? A philosopher may argue that there are non-existent things, for instance as follows: Sherlock Holmes does not exist, therefore there is at least one thing that does not exist. If it’s *that* easy, then ontology is easy. But it’s not.

(Quine, 1948) is the general strategy I favor. There are well-known problems and worries about Quine’s method. But I think it is, as Yablo puts it, ontology’s last best hope. We conceive of the world as one thing and our theories as another. It’s got to be possible that our theories are incorrect. But our theories are what we have. We build them up in order to make sense of what there is; there cannot, it would seem, be an argument that we should not prefer the theory that is the best one we can come up with.

Quine’s method, famously, is a way of justifying an ontology of abstract objects; in Quine’s

case, the favored objects are sets (Quine, 1968); the Putnam-Quine argument for the existence of numbers is that they are indispensable for scientific practice, and hence must be part of our best theory of what the world is like. (van Inwagen, 2009) deploys the Quinean method to get the conclusion that there are properties. So why am I not a happy Quinean property theorist?

The situation is awkward. On the one hand, I need to subscribe to the indispensability thesis. If properties were dispensible, then I would just dispense with them. If linguistic or concept nominalism (the views that properties are words or concepts) could be made to work, there would be no point in any kind of serious commitment to talking about properties. Moreover, I need a pretty robust set of arguments that property talk really is indispensable. Certainly philosophers have claimed that it is, and for good reasons. It would be good if I could at this point display a more or less knock-down argument that property talk is indispensable.

On the other hand, I need to disavow the standard Quinean methodology.

Why? Because, frankly, I find the property ontology incredible. Some expressions of property theory self-contradictory (for example David Armstrong's claim that immanent universals are wholly present in their instances). Most, or all, theories of properties suffer either from outright contradiction, or else get something fundamental and basic wrong about what properties are supposed to be like (for example Lewis's set nominalism makes the properties—that is, sets of individuals—extrinsic to the individuals). Even supposing various technical difficulties can be worked out, the ontology still seems incredible. My situation resembles Moore's about the skeptic. No matter how good the arguments for them—and I just argued that I need it to turn out that the arguments are “more or less knock-down”—my conviction that the conclusion is literally false remains.

So my property instrumentalism is if anything less plausible than Moore's response to the skeptic. There are arguments for properties, which I need to be irrefutable, for there to be a point to fictionalism, for there to be a point in continuing to talk about properties, yet I find I cannot assent to them.

2.3 Incredulous stare

When I describe instrumentalism about properties in conversation, I often get something like the response Lewis got to realism about possible worlds: the incredulous stare. “These two cats are

cats. They're both the same thing. But that is not because they share a property—being cat—it's just because they are both cats." Huh? replies my interlocutor, incredulously.

Let me say a few things from the point of view of assuming that instrumentalism is right, or that it is a reasonable candidate for being a true theory. If my comments come close to the truth about what we think about properties, then the disposition to the incredulous stare will fade. If it doesn't fade, well then, perhaps instrumentalism is not a good theory about properties.

2.3.1 Truth

In general, when our reason for believing some set of propositions, or believing that a certain kind of entities exist, is a theory, it is reasonable to say that the theory might be false. Our best theory has it that the earth revolves around the sun in an elliptical orbit and that the sun is revolving around the center of our galaxy (and there are other relative movements as well). That theory might be false.

Similarly, if the theory of properties is a theory, then it might actually be true. Or false.

So perhaps the intellectually cautious position is to say that the theory of properties might be false. For those who are troubled by the ontology of properties, this provides a way to accept the theory but nevertheless withhold full commitment.

Perhaps. I suggested above that the ontology and epistemology of properties is *entirely* theoretical. That appears to leave no content to the idea that there might be something the theory is true of, or false about. It seems impossible that the world should contain something exactly like properties, or something that is sort of like properties but about which we have made some mistakes, or something that's actually rather distant from what we think about properties but still recognizably what we had hoped our property theory would be about. No: there's just no room in our picture of the world for anything like properties at all.

So it seems to me that we haven't made clear what it would be for the theory of properties to be true, given that our reasons for believing it do not settle the question.

So the fictionalist has two alternatives about what to say about the truth of property theory, one perhaps uselessly cautious, the other quite alarming: either we cannot know whether the theory of properties is true or false, or else it is simply false.

2.3.2 Structureless world

How alarming?

“If the theory of properties is false, then nothing in the world has any properties. If nothing in the world has any properties, then the world is entirely featureless, and entirely structureless.”

Property instrumentalism holds that the concrete particulars in all their variety are one thing, and our theory, that says there are properties, is another. Things are similar and different in all sorts of ways. There are many apples and there are many cats. *An explanation* for this fact is to say that the apples have the property of being apples, and things are similar when they share properties. Property instrumentalism agrees that this is a good explanation, and that the theory of properties is a good explanation. It just denies that the theory of properties is literally true: that things have properties.

(Balaguer, 1998) makes a distinction between the “nominalistic content” and the “platonistic content” of a theory. Physical theory relies on mathematics. The platonistic content of physics is the part that carries a commitment to numbers. The nominalistic content is what the theory says about the actual world.

This strategy appears more difficult, or more desperate, for property instrumentalism, I think, because we jump to the thought that if there is a way actual things are, that shows that they have properties. The objection is, in essence, if the world is a structured world of different kinds of objects, then there are properties, since without properties there are no structures and no kinds of objects. But that objection begs the question against property instrumentalism.

A parallel with the case of numbers: the number of Mars’s moons is 2. The platonistic content of this claim involves commitment to the number 2. The empirical content is this: Mars has 2 moons. Here, the ‘2’ is functioning as a quantificational adjective (Hofweber, 2005). The way in which it expresses, as we might put it, the number 2, is a complex quantificational structure, which can be spelled out in terms of equinumerosity. That is all in the semantics of the adjective ‘2’, not in reference to platonistic numbers.

Similarly: this apple has the property of being red. The platonistic content is clearly committed to the property of being red. The empirical content is this: this apple is red.

Groups *IS* a property-less world a structure-less world? If there is space and time, then there is change. Different things change in different ways. To properties there correspond groupings of things that change. Some of those groupings turn out to be regular, or regular enough to be useful.

So I think with particulars and space and time, we can recover at least the functional profile of a lot of interesting properties, and with those functional profiles we get all, or a lot of, the structure of the world. It's a question whether that much already brings properties back into the ontology. It's also a question whether trading properties for sets is a helpful advance (Daly, 2008). We can be fictionalists about sets; we can also do set theory without sets-as-things. It's difficulty (and I hope interesting) to know how to move here: the particular/property distinction is so basic to the way we think that we're going to find that distinction no matter where we look.

2.4 The Brock-Rosen objection

(Rosen, 1993) objects to his own (Rosen, 1990) proposal about fictionalism about possible worlds. His fictionalism provides translations of modal sentences into and out of Lewis's theory of possible worlds. The crux of the objection is that there are theorems within possible world theory that translate out into sentences *about possible worlds*.

There is a nice literature on this objection: Rosen offers a fix, as do Menzies and Pettit, Hale criticises the fix, (Woodward, 2008) fixes it again.

I suggest that the problem is one of construing the relation between the modal sentences and the theory of possible worlds as a *translation*. Property instrumentalism doesn't offer translations. Rather, it offers an instrumental theory. There are (Sellars) "theory entrance" and "theory exit" rules: when you have two cats, then there is a property they share; since sharing natural kind properties like being a cat implies sharing several other properties, we can conclude that these two particulars are similar in several ways particular to cats. The critical thing is that the theory entrance and exit rules must be clear that we cannot export the problematic ontological claims. (It would have surprised Osiander if we insisted that the signature Copernican claim that the sun is at the center of the universe could be exported from the theory.)

2.5 What is the theory of properties?

“The theory of numbers (e.g. Peano arithmetic) is rich and fruitful. It is quite clear how to write down the theory and to see what its consequences are. What is the theory of properties?”

I see two answers to this question.

First, second-order logic is a good candidate to be the formal theory of properties (Hale, 2012). The formal theory has very little to say about the nature of the properties themselves.

Second, there is a lot of richness in ordinary discourse properties. Perhaps there is too much. There are many theories of properties. They are supposed to explain genuine similarities, genuine unities, causation, meaning (they are expressed by predicates or sentences), and perhaps other things as well. Different theories of properties display different kinds of structure and richness.

For example, there is a rich contemporary literature on different ontologies for laws and causation: universals, tropes, dispositions, etc. This literature can be construed as a discussion of the right kind of structure for a theory of properties that makes sense of causation in the natural world. Is the ontology abundant or sparse? are there both dispositional and categorical properties? or is one of these categories enough? The issues are complex and delicate (Engelhard, 2010).

Lewis commented (Lewis, 1983) that we shouldn't take sides, for example in the question about abundant and sparse ontologies of properties. Instead, we should pick our projects and ontology, and then pick our concept of property. This attitude is consistent with property instrumentalism. Properties are theoretical entities, and for different theories and purposes. It is therefore up to us to write down a theory that suits our purposes. E.g. Lewis proposes that properties are sets of actual and possible individuals. This theory offers clear identity conditions on properties, as clear as the identity conditions on sets. It entails that two properties can be strictly identical, or strictly distinct, or neither: if the sets are identical, disjoint, or have a non-empty intersection. This particular theory of properties is handy for expressing a solution (author, year) to the problem of “higher level causation” (the worry that all causation happens at the fundamental, physical level). So: can properties overlap the way Lewis-properties can have non-empty intersections? How could we possibly answer this question, if not by setting up a theory of properties that makes the most sense of the things we need to say about things and their similarities and differences?

On the other hand, the Lewis set-based account of properties is not a good theory for expressing a semantic theory (Brogaard, 2007). Perhaps there is a different theory of properties, with different

axioms, different structures, that does a better job. Property instrumentalism has no particular difficulty with pluralism here. Since in fact there are no properties, what matters is the structures in the property theories and how well they let us construct theories of other things. Conflict across theories of properties cannot be a problem, since there is no theory-independent reality *about properties* to capture.

3 Conclusion

The history of the problem of properties suggests that there's something really odd going on. We begin with ordinary things and their similarities and differences. We try to explain that in terms of ontology: there are non-ordinary things (properties and particulars) and their relations underly the ordinary things. The ontology is problematic in various ways, some technical, some intuitive.

Perhaps a really different angle on this might work. We offer an explanation: some kind of theory of how things are that makes sense of what we begin with. The theory need not be true; it need not refer. Ideally, there is both a demonstrable need for the theory (the indispensability arguments) and a really strong reason to think that it really doesn't refer. It talks about properties, but there are none.

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