

Postscript

SHAMIK DASGUPTA AND JASON TURNER

February 4, 2014

SD: You argued that algebraic generalism faces two problems: logical double-counting and the idler's revenge. You then offered me a chalice in *functorese generalism*, a generalist view which, you say, avoids both problems. But you argued that the chalice is poisoned: it is no better than *quantifier generalism*, a view I am uncertain of.

JT: Right. That's why I'm not yet ready to give up on fundamental individuals.

SD: I think the two problems facing algebraic generalism are not as pressing as you suggest, so I'm happy to concede that your chalice is poisoned. Still, let me raise one worry about your argument against functorese generalism. Could you remind me how it proceeds?

JT: Sure. Assume that *quantifier generalism* is wrong because it violates the principle I called \exists -Ground, which says that existential quantifications are grounded in their instances. If an individual a is F, this principle implies:

(1) $(\exists x)Fx$ because Fa .

The argument's first stage argues from (1) to the truth of its counterpart in the language $\mathcal{F}_{\exists p}$ where variable binding is done by operators:

(2) $\exists_p(F)$ because Fa .

The second stage argues that, thanks to the plausible principle of interpretation (*), the symbol ' c ' in the language \mathcal{F} means the same as ' \exists_p '. If so there should be no difference in ground. Thus:

(3) $c(F)$ because Fa ,

contra functorese generalism.

SD: Very nice. And your principle (*) is plausible indeed. But it only applies to cases where speakers of the two languages assent to exactly the same sentences, *modulo* substitution of the two terms. If they do, (*) says that the two terms have the same interpretation.

But what if the speakers differ with regards to which sentences they assent to, *precisely on the issue of what grounds what*? Suppose we assent to (1), speakers

of \mathcal{F}_{\exists_p} assent to (2), but speakers of \mathcal{F} do *not* assent to (3). Then your principle (*) does not apply and we cannot infer that ' \exists_p ' means the same as ' c '.

Indeed there might be a divergence in assent *because* of a difference in meaning. Perhaps (1) is analytic of ' $(\exists x)$ ' but (3) is not analytic of ' c '. Thus while you say 'if the sentences of \mathcal{F}_{\exists_p} are grounded in individuals and those of \mathcal{F} aren't, it had better be because of a difference in meaning between them' (p. X), the explanation might go the other way: a difference in meaning might explain the difference in ground.

JT: Yes, the functorese generalist might refuse to assert (3), and if so then (*) doesn't apply. But I worry this move cheats.

Imagine a quantifier generalist who, after seeing the Grounding Argument, simply introduces a new expression ' δ '. He insists that it is intersubstitutable *salva veritate* in all 'because'-free contexts, but not in 'because'-using ones. According to him truths of the form ' δxFx ' are not grounded in truths of the forms ' Fa '. This move avoids the Grounding Argument — but smacks of cheating.

SD: Agreed: that certainly is cheating!

JT: The original idea was that (*) told us *why* the δ -move was cheating, and we could use it to expose predicate functorese as similarly cheating — and as hiding the cheat behind irrelevant technicalities about variable binding.

If you're right about (1)–(3), then (*) doesn't quite do the job — for my original argument, and for the \exists/δ proposal, too, because the δ -user will dissent from

(4) $(\delta x)Fx$ because Fa

even while assenting to (1). But it seems pretty clear to me what whatever principle *does* explain why the δ -move is cheating will also unmask c as a cheater, too.

SD: Perhaps, though I'm uncertain about the matter. Still, I agree that the burden is on the functorese generalist to explain the difference between her view and the δ -user.

In any case, let's leave that issue for others to pursue. For we're only talking about *functorese* generalism because you said that it is a view that avoids the two worries—of logical double-counting and the idler's revenge—that you raised for *algebraic* generalism. And I think those worries have replies.

JT: Do tell.

SD: Start with the idler's revenge. Your argument involved two claims. First, that the properties and relations (henceforth, the properties) of algebraic generalism are idlers. And second, that if they're idlers then algebraic generalism is no better off than individualism with regards to idlers. I think there is room to resist both claims.

Start with the first. This claim has wider applicability, so put the issue of individualism vs algebraic generalism down for a moment. And let us distinguish a property from its causal role. The causal role of a property P might be defined by taking the laws governing it, conjoining them to form a statement T(P), and then replacing all occurrences of P with a variable, resulting in a predicate T(X). This expresses the second-order property of *causing this and being caused by that*, and so on. This is its causal role. Now in your chapter you mentioned an argument—inspired by Langton (1998) and Lewis (2009)—that we can know that some property or other fills the mass-role, but we cannot know *which* property it is.

JT: That's right. The rough argument is that we can't tell the difference between our world and one just like it except that mass and charge have "switched roles". So the property itself (e.g. mass) is "hidden" behind its causal role in much the same way that a fundamental individual is, according to you, hidden behind its properties.

SD: I like this argument. At least, I find it convincing with regards to so-called "theoretical" properties like mass and charge. But not for so-called "observable" properties like red and blue. If one switches these latter, so that anything red becomes blue (and vice-versa), the difference is arguably discernible!

JT: I'll grant that if by "observable" properties we mean *phenomenal* properties. (Lewis (2009, 217) did, too, in a way.) I'm less confident this holds for other sorts of 'observables,' but I won't fuss about that.

SD: And I'll grant that these theoretical properties are idlers, as you argue.

Then if idlers are a vice, the natural reaction is to *do to theoretical properties what the generalist does to individuals*. The view would be that all facts about the property are grounded in facts about their causal role (where this role might involve how it interacts with observable properties). This is "causal structuralism" about properties.¹

¹See Shoemaker 1984 and Hawthorne 2001 for discussions of causal structuralism. Ney (2007) argues that if one is moved by the Langton-Lewis argument, one should be moved to endorse something like causal structuralism.

Call a property a *quiddity* if it is not grounded in its causal role. What the Langton-Lewis argument shows is that quiddities are idlers. Causal structuralism rejects quiddities, and so rejects what was shown to be an idler.

So we have an idler argument against quiddities. And (returning to individuals) we have an idler argument against fundamental individuals. To be rid of *all* idlers, then, one might endorse generalism and causal structuralism together! The technical details of this kind of view are not yet worked out, so I cannot say that I endorse it. But since I think that idlers are a vice, I am eager to see it developed.

JT: Wait. This anti-idler crusade is pushing us much farther than I thought we wanted to go. Suppose I'm right that the only 'observable' properties are phenomenal properties. If so, then you end up with a view where everything is grounded in phenomenal properties, bringing us dangerously close to phenomenalism or neo-Berkeleyan idealism. I thought the argument against individuals was supposed to stem from principles fairly uncontroversial to scientific realists; if the principles get us phenomenalism, they seem pretty controversial after all. I'm inclined to reject the argument before I let it push me to phenomenalism.

SD: Well it's not clear that that's the right description of the resulting view! But even if it is, the principle only tells us to dispense with idlers *when all else is equal*. So if at some point along the road the resulting view violates some other principle you hold dear—epistemic conservatism, or some principle that leads to realism—then stop. I'm eager to explore where the argument against idlers leads, but if you aren't we needn't disagree on the case of individuals.

JT: I'm not so sure. Suppose you dispense with fundamental individuals because they are idlers, but go no further. Then, as we agreed earlier, the generalist view you endorse quantifies over quiddities. If you concede that these are idlers, then the view is just as lousy with idlers as the original individualist view. This is the idlers' revenge.

SD: Yes, the generalist view under discussion does have *one* kind of idler: the quiddities. So it isn't perfect. But the corresponding individualist view has *two* kinds of idlers: quiddities *and* individuals. With respect to the principle that idlers are a vice, the generalist does better.

JT: Fair point. But I was thinking the individualist shouldn't have the quiddities. She should be a nominalist, at least at the fundamental level: There are fundamental facts such as "x is negatively charged," but none such as "x has the

quiddity *negative charge*". This individualist theory only has one kind of idler, the individuals, since it has dispensed with the quiddities.

SD: That's an interesting move, but I'm not sure it works. Granted, your nominalist only *quantifies* over one kind of idler, the individuals. But the other kind of idler remains. It's just that now it shows up in her *ideology*.

To see the point, consider two theories, T1 and T2. Both are theories of Newtonian space and imply that absolute velocity is real. The only difference is that T1 is platonistic and quantifies over absolute velocities, while T2 is nominalistic. T2 contains a host of predicates, one for each absolute velocity, but no reference to anything that is an absolute velocity.

Now T1 contains an idler: absolute velocity. Focusing just on undetectability for brevity, the idea (recall) is that T1 implies that there is a genuine difference between physical systems which differ only in facts about the absolute velocities of things, and that since those physical systems are indiscernible those facts about absolute velocity are undetectable (see my chapter, section 2, for details). But if T1 implies this, T2 does too: the fact that T2 is nominalistic doesn't change the fact that there is a genuine difference between these indiscernible systems. So if T1 contains idlers, T2 does too. The difference is just that T2 does not *quantify* over the idlers. The idleness resides in T2's ideology, not its ontology.

The same goes for the individualist you just mentioned. She replaces each quiddity with a predicate, so she no longer *quantifies* over idlers. But the idleness now resides in her ideology, in the predicates she introduced. So she still has two kinds of idlers. The algebraic generalist has only one, so she does better *vis a vis* idlers.

JT: I see what you mean. But there's still a point to be made in the ball-park. One bad thing about individualism is that it has 'one fact too many': the general facts ' $(\exists x)Fx$ ', which do the real explanatory work, *and* the individualistic facts ' Fa ', which don't do anything but ground the general facts. Algebraic generalism also has one fact too many: the general facts ' $(\exists x)\text{Obtains}(x)$ ', which do the real explanatory work, *and* the quidditistic facts ' $\text{Obtains}(p)$ ', which only get us the general fact. If the individualist is a nominalist, she has her individualistic fact ' Fa ', but (by virtue of her nominalism) no general fact like ' $(\exists X)Xa$ '. So even though her predicate ' F ' is an idler, it doesn't make a fact too many.

These 'facts-too-many' seem epistemically odd to me in their own distinctive way, and maybe that was making me confuse them with your idlers. But I think the facts-too-many are a vice one way or another, and we should try to avoid them if we can. Algebraic generalism gets rid of some of these, but at the cost of introducing new ones.

SD: That's interesting, I hadn't seen that. But if I understand you, *both* your

nominalist individualist and my algebraic generalist have a fact too many, though different ones in each case: the individualist has her individualistic facts, the algebraic generalist has her facts about quiddities. To be clear, I don't see why having a fact too many (in your sense) is a vice. But even if it is, the two theories fare equally with respect to it.

JT: Well, both theories have facts-too-many, but it's not clear to me that they do equally well as a result. Some vices are worse than others, and some *instances* of a vice are worse than others. Reasonable people might think that quiddities as facts-too-many are worse than individuals as facts-too-many.

SD: Perhaps, though I don't see why. Still, suppose there were some reason to think that quiddities as facts-too-many are worse than individuals as facts-too-many. Then the question would be whether this cost is worth the benefit of dispensing with idlers.

JT: Right. And that's relevant to how I was thinking about the logical duplication objection, too. That objection held that the algebraic generalist needs extra logical machinery. For example, where the individualist just uses regular conjunction—i.e. the sentential connective—the algebraic generalist uses that *plus* a distinct conjunctive device that operates on properties. I wasn't thinking that this excess structure is *idle*, but that it is *excess*. The individualist kills two birds with one stone, but the algebraic generalist kills one with two. The excess seems like a cost.

SD: If you're right, then as before the question is whether this cost is worth the benefit of dispensing with idlers.

JT: So let's talk about whether the costs are worth it. Let's set aside the cost of having a fact-too-many, since we're not agreed about whether algebraic generalism does worse in that respect. Then the situation is this. My nominalist has two kinds of idlers, but no logical duplication. And your algebraic generalist has one fewer kind of idler, but logical duplication. Both theories have their vice. Which vice is worse?

SD: This sort of question is notoriously difficult, and I doubt we can settle it here. But I'm inclined to think that your idlers are the more serious vice. Admittedly, philosophers often emphasize the value in *ontological and ideological simplicity*—on getting by with "fewer primitives"—and logical duplication is bad in that regard. But I'm struck by episodes in scientific history in which

idlers are rejected even when the resulting theory is less simple in this sense. To see this, consider a Newtonian theory formulated 4-dimensionally. Here acceleration can be defined using two primitives: spatial and temporal distance. This theory has an idler in absolute velocity, but to dispense with it one moves to a Neo-Newtonian theory which needs *three* primitives to define acceleration: spatial and temporal distance *plus* the affine connection. In a Neo-Newtonian structure, this latter is not determined by the former two and so must be added by hand. So this move sacrifices ideological simplicity while dispensing with an idler, yet the consensus is that the cost is worth it. Analogously, if I need extra logical primitives to dispense with other idlers, I'll take them.

Are the cases really analogous? It seems so to me, but there is room to disagree and no room to make my case. So I'll finish by emphasizing how much in general we value rejecting idlers. For notice that rejecting them often results in a *radical* revision of pretheoretic belief. This is easy to forget in the case of absolute velocity, familiar as we are to doing without it. But remember, rejecting absolute velocity implies that there is *no fact of the matter* as to whether I am in the same place I was a moment ago! This is a radical revision of pretheoretic belief about place and motion. Whatever is motivating it must be a weighty consideration indeed, and I believe that it is motivated by the drive to reject idlers.

JT: I suspect when it comes metaphysical theorizing I put more weight on 'philosophical' virtues than you do. Since that's a preference I also can't hope to defend here, I won't even try.

But let me note that my complaints about logical duplication were supposed to go beyond vague philosophical worries about ideological simplicity. Scientists want theories without idlers, but they also want theories that *unify* phenomena. For instance, Einstein originally developed special relativity in an attempt to unify disparate accounts of certain electromagnetic phenomena, and one of general relativity's virtues is that it subsumes gravitation to inertial motion. In each case the theory takes phenomena previously thought to be separate and shows them to be ultimately the same thing. That's seen as a virtue. I was thinking logical duplication exhibited the vice corresponding to this virtue: it treated phenomena we previously thought unified as fundamentally disparate. So I was thinking the logical duplication a vice of the sort even scientists wouldn't like.

Of course, even if *that's* right it still leaves us wondering which vice is worse. I'm not aware of science ever becoming *less* unified in order to get rid of idlers; nor am I aware it ever introducing idlers to aid unification. Without clear cases to fall back on it's not obvious how to settle the issue.

SD: Yes, unification is certainly a weighty virtue! I wasn't seeing logical duplication as a violation of unification in quite that sense, but it's a fascinating

idea.

In any event, we agree that the question of how to weigh these vices is difficult, unsettled, and vital.

REFERENCES

- Hawthorne, John (2001). "Causal Structuralism." *Philosophical Perspectives* 15: 361–378.
- Langton, Rae (1998). *Kantian Humility: Our Ignorance of Things in Themselves*. Oxford: Oxford University Press.
- Lewis, David (2009). "Ramseyan Humility." In David Braddon-Mitchell and Robert Nola (eds.), *Conceptual Analysis and Philosophical Naturalism*, 203–222. Cambridge, Mass.: MIT Press.
- Ney, Alyssa (2007). "Physicalism and our Knowledge of Intrinsic Properties." *Australasian Journal of Philosophy* 85: 41–60.
- Shoemaker, Sydney (1984). "Causality and Properties." In *Identity, Cause, and Mind*. New York: Oxford University Press.