Keep the chickens cooped: the epistemic inadequacy of free range metaphysics

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The prospect of naturalizing metaphysics has received much renewed interest since James Ladyman and Don Ross' famous (2007) polemic, *Every Thing Must Go*.[2] In it, Ladyman and Ross rail against what they call *neo-scholastic metaphysics* — metaphysics that "floats entirely free of science" (2007, 9). They argue, *inter alia*, that neo-scholastic metaphysics relies upon epistemically dubious philosophical intuitions, conserves folk concepts in a manner counterproductive to the purposes of objective inquiry, and lacks the rigorous error filters of science. They therefore call for its discontinuation. They prescribe instead a naturalized metaphysics, the sole task of which is to unify scientific theses, giving explicit primacy to physics. And while the burgeoning discipline of scientific metaphysics indicates a trend toward naturalization, the arguments that are meant to motivate naturalized over non-naturalized metaphysics have not been fully satisfactory.[3] In particular, negative campaigns against non-naturalized metaphysics have sometimes failed to accurately characterize the target of their criticism (Hawley 2010), to avoid the historical failures of logical positivism and to clearly distinguish naturalized from non-naturalized metaphysics (McLeod and Parsons 2013). So there is much work to be done to better motivate the naturalization of metaphysics. This paper aims to contribute to that work, by identifying and criticizing a class of theories I call *free range metaphysics*. I will argue that free range metaphysics does not produce justified theories of reality, since the constraints on its content are not sufficiently robust and their satisfaction secures insufficient epistemic warrant.

1 Free range metaphysics

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[2] See Callender (2011), French (2014), French and McKenzie (2012), Maclaurin and Dyke (2012), Ladyman, Ross, and Kincaid (2013), and Morganti (2013).

[3] On scientific metaphysics, see Calosi and Morganti (2015), Dorato (2015), Dorato and Morganti (2013), Ereshefsky (2010), Ereshefsky and Pedroso (2013), Kistler (2010), Loewer (2012), Maudlin (2007), Morganti (2008), Ney (2012), Ney and Albert (2013), Norton (2015), Pradeu and Guay (2015), Ruetsche (2011), Waters (forthcoming), and the other contributions to this issue.

It is no easy task to define metaphysics. Metaphysicians conceive of their discipline in a variety of different ways. Karen Bennett surveys some of them:

> They say that metaphysics is the study of 'being *qua* being' (Aristotle, *Metaphysics* book IV). They say that it is the attempt to 'get behind all appearances and describe things as they really are' (van Inwagen 1998, 11), and that it is the study of 'what the world is like… as opposed to… how we think and talk about the world' (Sider 2008, 1 and note 1). They say that metaphysics is 'inquiry into the most basic and general features of reality and our place in it' (Kim and Sosa 1999, ix). They say that it is the study of 'the fundamental structure of reality' (Sider 2011, 1). And they say that is 'about what grounds what. It is about the structure of the world. It is about what is fundamental, and what derives from it' (Schaffer 2009, 379). (2016, 28-29)

But most of the standard conceptions fail in one way or another. According to Bennett, a definition of metaphysics should do three things. It should: 1) somewhat distinguish metaphysics from science, 2) give metaphysics a subject-matter even if there is no fundamental level, and 3) reflect the actual practices of metaphysicians (2016, 29-30). Bennett argues that definitions according to which metaphysics attempts to "'get behind the appearances' and study 'what the world is like'" fail to accomplish 1) (2016, 29). The view that metaphysics studies the fundamental nature or structure of reality fails to accomplish 1), 2), and 3) (2016, 29-30). Finally, the Aristotelean conception of metaphysics as the study of being *qua* being fails to accomplish 3), since metaphysicians investigate other categories and particular phenomena (2016, 31).

I agree with Bennett, but suggest a revision of the second criterion. In my view, the problem with definitions according to which metaphysics studies fundamentalia is not that they rob the discipline of a subject-matter if there are no fundamentalia, but that they beg the question against legitimately metaphysical views according to which there are no fundamentalia. So the second criterion should require that we do not beg the question in that manner. In addition to ruling out the study-of-the-fundamental definition, this revised criterion would rule out definitions claiming metaphysics to be the study of objective reality, which beg the question against idealist metaphysics.[4] At any rate, some of the standard definitions of metaphysics fail to do what we would like them to.

These problems are reflective of the more general difficulty of delineating disciplines in a principled manner. Because of that difficulty, I can only gesture toward the sort of thing metaphysics does. Metaphysics describes aspects of reality at a relatively high level of abstraction. In Craig Callender's words, metaphysics makes claims about the world "more abstract and distantly related to experiment than… science" (2011, 47). Specifically, it concerns

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[4] I thank Jesse Prinz for this last point.

what exists (ontology), the nature of the existents, the relations that obtain among them, as well as the nature of the properties and relations. For instance, it asks whether numbers, minds, substances, mereological sums, and universals exist. It asks about the nature of causation, the conditions for object identity and persistence, and so on. The only definition I will give is an ostensive one — *metaphysics* is whatever it is that we do in metaphysics anthologies, journal articles, and classrooms.

Free range metaphysics is metaphysics that science has only a nominal role in constraining. Academic metaphysics that floats entirely free of science does not really exist, since most educated people have undergone at least some basic level of science education, which contributes to the background of belief against which they form metaphysical judgments. But in free range metaphysics, science plays a minimal role. In the construction of free range metaphysical theories, the institutional products of science — data, theories, books and journal articles — are not directly or explicitly appealed to. That is, free range metaphysics does not directly engage with science. Instead, it is constrained primarily by logical demands, such as the demand for consistency, aesthetic demands, such as the demand for simplicity, and psychological demands, such as the demands for intuitive plausibility and explanatory power. I call these theories 'free range' because the minimal constraints on their content permit the theories to go more or less where they will. That is, any number of metaphysical theories could satisfy the constraints. I will argue that, while free range might be good in the case of chickens, it isn't in the case of metaphysics — at least not from an epistemic standpoint.[5]

Free range metaphysics is pervasive. Open a metaphysics anthology and you may find some scientifically-informed discussions of time, causation, natural laws, and so forth. But you will certainly find a number of discussions of personal and numerical identity, possible worlds, properties, substances, universals and other abstract entities, conducted without explicit appeal to

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[5] An anonymous reviewer brings to my attention a possible comparison between free range metaphysics and pure mathematics. However, I think the two are unlike one another in some important respects. First, while free range metaphysics is not *a priori* (see section 2.4 below), I take pure mathematics to be — not in the naive sense of it being completely independent of experience, but in the sense that it proceeds from the armchair, without being substantially constrained by empirical beliefs or evidence. Second, I take free range metaphysics to make substantive claims about the world; I take pure mathematics not to. However, I don't have the space to defend these contentious claims about mathematics here.

science.[6] These discussions often attempt to formulate the simplest and most explanatorily powerful theories consistent with the participants' intuitions. I will give three examples.

The first example is Peter van Inwagen's (1981) rejection of the doctrine of arbitrary undetached parts. According to that doctrine, for every material object occupying some spatial region at time *t*, a material object exists at any of the region's occupiable sub-regions at *t* (1981, 191). Van Inwagen argues against the doctrine by *reductio,* showing that in practice it entails violations of the transitivity of identity (1981, 195). So his rejection of the doctrine hinges on certain logical entailments being at odds with a feature of identity we take, on intuitive or conceptual grounds, to be essential to it. In the absence of any explicit appeal to science, this counts as free range metaphysics.

The second example is Judith Jarvis Thomson's (1998) treatment of the statue and the clay. Thomson proceeds by considering a number of examples, making intuitive observations about them, and accepting or rejecting mereological theses on the basis of those intuitions. For instance, she reports: "Some philosophers… conclude that artifacts cannot undergo replacement of any part, and others that there are no artifacts at all. These [views] strike me as *weird*" (original emphasis, 1998, 153). According to Thomson, a more natural view takes the following intuitive considerations on board:

> If you get a new windshield wiper for your car, then in one way, of course, your car is not the same… but it is *it*, the same car, that has changed. I think we had better agree, and thus that we had better reject the Identity Thesis… it seems as plain as day that we do ordinarily think and say that artifacts can and often do undergo replacement of parts. (original emphasis, 1998, 152-3)

She takes these everyday intuitive judgments to be an important source of evidence for or against certain metaphysical theses. She also claims that, in general, "Philosophy should not depart more than it absolutely has to from what we ordinarily think and say" (1998, 153). That is, our

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[6] I do not mean to suggest that the topic makes a metaphysical theory free range or otherwise. It is, rather, a matter of how the theory is constructed. Granted, there may be some metaphysical topics that belong to free range metaphysics necessarily — topics that science has no bearing on in principle. It would be difficult to know which topics science cannot speak to in principle, since the course of inquiry is unpredictable and since our modal judgments about the capacities of science are not very reliable (see Ladyman and Ross 2007, 16). But we can say, for instance, that the nature of the forms belongs necessarily to free range metaphysics. Still, it remains the case that metaphysical inquiries that investigate topics necessarily alien to science are free range insofar as they proceed independently of science.

The topic of investigation is also important to the extent that it constrains the process of naturalization. Whether there are presently discoverable points of contact between science and some metaphysical theory depends, among other things, on the topic of the metaphysical theory. In particular, it depends on whether the domain of science overlaps with the domain of the metaphysical theory, or whether any scientific evidence is relevant to the metaphysical subject-matter, or whether scientific practices or concepts or heuristics can be usefully applied in our investigations of the metaphysical subject-matter. So the topic of inquiry partly determines whether some metaphysical theory can be naturalized or not. Still, whether it is naturalized or not depends on the actual methods used in its formulation.

argumentative conclusions and broader theories should largely respect our everyday intuitive judgments. To the extent that Thomson's claims are constrained primarily by ordinary intuition and not by science, her (1998) treatment of the statue and the clay is an example of free range metaphysics.

Lastly, Kit Fine's (2001) treatment of grounding is also a clear example of free range metaphysics. Fine articulates his method for the investigation of grounding as follows:

> [There are] two main sources of evidence for making judgements of ground. The first is intuitive. We appear to be in possession of a wealth of intuitions concerning what does or does not ground what… The other main source of evidence is explanatory in character… a system of grounds may be appraised, in much the same way as any other explanatory scheme, on the basis of such considerations as simplicity, breadth, coherence, or non-circularity. Perhaps the most important virtue in this regard is explanatory strength… (2001, 21-2)

The evidential sources that Fine lists above are logical (coherence, non-circularity), aesthetic (simplicity), and psychological (intuitiveness, explanatory strength). Insofar as Fine's methodology places only these logical, aesthetic, and psychological constraints on theoretical content, his (2001) metaphysics of grounding is an example of free range metaphysics. So much for examples.

2 Epistemic failures

I argue that free range metaphysics is epistemically inadequate for two reasons. First, the constraints on its content are not sufficiently *robust*, where robustness is a function of how much theoretical content the constraint permits into the theory. The more a constraint permits into the theory, the less robust that constraint is. A robust theoretical constraint is like a selective bouncer at a club, who lets in only the few people who meet his strict criteria for inclusion. It is good that he does so, because a club that is too inclusive is not a very good club. Likewise, a theory that permits too much theoretical content is not a very good theory. Lack of robust constraint is problematic if we assume that there is a unique, consistent, and limited set of metaphysical facts that we want our theory to target — limited in the sense that not everything is true. To say that the constraints on free range metaphysics fail to be sufficiently robust is *not* to say that we should reject or eschew those constraints. Some of them may be well-motivated or useful for the

purposes of theory selection. Rather, it is to say that the criteria should not stand alone.[7] Second, satisfying these constraints secures little epistemic warrant, because they permit into the theory both demonstrable falsehoods and claims that we have little reason to accept.[8] I will demonstrate both of these points by examining the constraints in turn.

2.1 Consistency

The consistency constraint on theoretical content requires that none of a theory's theses contradict one another. A natural rationale for such a constraint is that inconsistency indicates falsity.[9] While the examples above do not explicitly involve a consistency constraint, the constraint is usually implicit and almost always present. The consistency constraint is highly permissive. That is because, for any proposition p, the set of propositions consistent with it is infinitely large. The demonstration is simple — just add disjuncts to p: p or q, p or r, p or s, and so on to infinity. One could equally well add conjuncts, just in case the conjunct neither *is* nor *implies* $\neg p$. Further, the consistency requirement does not constrain which theses we initially countenance. It offers no guidance regarding what goes into the theory in the first place; once we have accepted some theoretical claims, it rules out only the theses that strictly contradict them. So the consistency constraint fails to be robust.

Moreover, satisfying the constraint also fails to secure epistemic warrant, because it permits into the theory demonstrable falsehoods and theses we have no reason to accept. For instance, I might have a theory according to which the world contains a single apple and nothing else.[10] The apple theory is internally consistent, since it contains just one self-consistent thesis.

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[7] Karen Bennett (2009) argues that, in certain cases, the criteria do not much help with theory selection. She shows that in some metaphysical debates "there are *few* grounds for choosing" between rival theories, because measures of simplicity trade off against one another and because the problems that arise for one arise for the other in one form or another (2009, 73). In those cases, she claims, we have "little justification" for believing either view (2009, 42). Her claim is localized to the particular metaphysical debates she takes pains to describe. My claim here is broader. Moreover, my argument focuses not on trade-offs of simplicity or pervasive problems, but on the *weakness* of the theoretical constraints on free range metaphysics.

[8] Compare Uriah Kriegel (2013). Kriegel argues that in revisionary metaphysics, what we take to be theoretical virtues (including, *inter alia*, simplicity and intuitiveness) fail to be truth-conducive. By contrast, my present concern is not with truth-conduciveness, but rather, with the aptness of such virtues (or constraints, in my terminology) to robustly constrain theoretical content and secure epistemic warrant.

[9] I thank an anonymous reviewer for pointing this out.

[10] Note that the apple theory, while it is a metaphysical theory of sorts, isn't a serious metaphysical theory. It is not meant to be reflective of actual metaphysical practice. Actual metaphysical theories are subject to further constraints. So the example does not commit me to any assumptions about the methods or aims of metaphysics. Rather, it is an example of a theory that we explicitly hold accountable only to the consistency constraint, which allows us to isolate and evaluate that constraint.

But it is demonstrably false — look around! — and I have no reason to accept it.[11] Such examples come easily and they show how weakly the demand for consistency constrains theorizing.

2.2 Simplicity

Aesthetic norms favouring simplicity are *prima facie* a good deal more robust than the consistency constraint. While these norms are not as ubiquitous as the consistency constraint, they are also frequently assumed. Where they operate — in Fine's (2001) method, for instance — they palpably constrain theorizing. For instance, Ockham's Razor precludes theoretical claims that posit entities beyond necessity. However, as William Wimsatt points out, the necessity clause of Ockham's Razor is open to interpretation, so much so that "With the right standards, one could remain an Ockhamite while recognizing a world which has the rich multi-layered and interdependent ontology of the tropical rain forest" (1994, 1). For instance, one could construe the necessity clause in terms of explanatory necessity. On that construal, a posit would be necessary if it filled some explanatory gap. An abundant number of theses, positing an abundant roster of entities, might provide us with the resources to meet that explanatory need — say, by allowing us to explain reference (see Eklund 2006 on neo-Fregeanism) or intentionality (see Priest 2014 on Meinongianism). Now, there are lots of metrics of simplicity (see Kriegel 2013). And, as Bennett points out, gains on one metric of simplicity can result in losses on other metrics, so that "we are just riding a see-saw—fewer objects, more properties; more objects, fewer properties" (2009, 65). All this goes to show that demands for simplicity leave a good deal of wiggle room. The Ockhamite claims we should have good reasons for positing things, but there can be all sorts of good reasons, and some reasons permit all sorts of posits and accompanying theses. So Ockham's Razor and other norms favouring simplicity fail to be robust on certain interpretations.

Regardless of how one interprets such norms, their satisfaction still fails to secure epistemic warrant. The theory I mentioned above, according to which the world is populated only by a single apple, is simple in the sense that its ontology is sparse. But as I noted above, it is demonstrably false and I have no reason to accept it. Note also that the theory is both consistent and simple, so adding the two constraints together did not remedy the lack of robustness or epistemic warrant.

2.3 Intuitive plausibility

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[11] Of course, the success of the demonstration hinges on our accepting the evidence of our senses. I assume that we should.

I will construe *intuitions* as immediate, non-inferential judgments (see Devitt 2015).[12] However*,* I discount immediate perceptual judgments as intuitions. Intuitions in this sense are often used to constrain the content of metaphysical theories.[13] The sorts of intuitions that typically pertain to our metaphysical theories are *philosophical intuitions* — by which I just mean intuitions about matters philosophical, without any commitment to their being a distinct or *sui generis* kind of intuition. More specifically, they are *metaphysical intuitions*, which I take to be a species of philosophical intuition about the world and its workings.

In the context of free range metaphysics, the intuition constraint is more robust than the previous constraints, because metaphysical intuitions suggest a fairly particular conception of the world and its workings, so that one dismisses as strange a good many theses. Moreover, with the intuition constraint comes a requirement for adequacy to common sense and everyday observational facts. As a result, it rules out crank theories like the apple theory. However, it is not clear how much guidance my metaphysical intuitions really offer: while it seems to me that the world contains more than a single apple, my intuitions about, say, Swampman are less clearcut. Moreover, intuitive plausibility may not really be so robust a constraint, considering that philosophical intuitions more broadly can be pushed around in various ways. Some empirical evidence suggests that philosophical intuitions vary in accordance with: our theories (Machery and Stich 2012); our cultural background, socioeconomic status, and educational background (Machery, Mallon, Nichols and Stich 2004; Nichols, Stich, and Weinberg 2003; Weinberg, Nichols & Stich 2001); and with other non-truth-tracking factors, like the wording and context of survey questions (Andow 2016; Sinnott-Armstrong 2008; Petrinovich and O'Neill 1996), the order of presentation of cases (Schwitzgebel and Cushman 2012; Swain, Alexander, and Weinberg 2008; Weinberg, Gonnerman, Buckner, and Alexander 2010; Wiegmann, Okan, and Nagel 2012), and emotional affect (Nichols and Knobe 2007), including disgust (Wheatley and Haidt 2005).[14]

But more pressing than the question of how much guidance my philosophical intuitions offer, is the question of why I should take them as a guide in the first place. When considering the epistemic status of philosophical intuitions, we should consider their source. But since philosophical intuitions are heterogeneous and include intuitions about moral, modal, logical, and linguistic matters, among others, there are potentially many sources. Alvin Goldman (2007) suggests that philosophical intuitions have their source in personal concepts. Timothy

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[12] There is, of course, a whole literature on intuition (see Chudnoff 2014 for an overview). At this juncture, I don't mean to commit to any view of what intuitions are or what the term means — I'm just stipulating.

[13] Dorr (2010) claims that intuition-talk by metaphysicians is a kind of humble rhetoric that signals assumptions, rather than being evidential. See Eklund (2013) and Maclaurin and Dyke (2012) for replies.

[14] See Devitt (2012) for a critical response to some of this work.

Williamson (2007) claims that the source of *modal* judgment is a background of experience and an accompanying folk physics, together with a capacity for ordinary counterfactual reasoning. Some of the experimental results surveyed above suggest that some philosophical intuitions are partly the product of cultural learning. Shaun Nichols and Josh Knobe (2007) also suggest a number of possible psychological sources of moral intuition, including "the distorting effects of emotion and motivation", an "underlying system for making responsibility judgments", and "an encapsulated module" (2007, 678-679). Similar models could explain metaphysical intuition in particular, though metaphysical intuitions are probably less vulnerable to emotional affect. So, at the minimum, metaphysical intuitions could have some or all of the following sources: concepts, experience, counterfactual reason, cultural learning (including folk theory), emotion and motivation, and an underlying system or module for making metaphysical judgments.

From an evolutionary perspective, it is doubtful that we have an underlying system or module responsible for truth-tracking metaphysical intuitions about the deep underlying structure of reality, since such intuitions would have been neither necessary nor beneficial for the purposes of survival and reproduction (see Ladyman and Ross 2007, 2).[15] As for the other potential sources, it is not clear why any of them should be considered evidential with regard to the deep structural truths of reality. For the most part, personal concepts, cultural learning, emotion, and personal motivation are not relevant to metaphysical truth. These sociological and psychological forms of evidence fail to speak to most metaphysical questions, *qua* questions about *the world*. As for ordinary experience and counterfactual reason, while it is in general a reliable source of evidence, it does not speak to many deep metaphysical questions. My ordinary experience is of macroscopic objects like tables and cats; it tells me very little, if anything, about the underlying nature of the world. In sum: metaphysical intuitions have a variety of potential psychological sources, but none of the ones I have considered would make them good sources of evidence about traditional metaphysical questions.

Moreover, as Ladyman and Ross (2007) point out, metaphysical intuitions have a poor track record when it comes to acquainting us with metaphysical truths. While our metaphysical intuitions are perfectly adequate for the purposes of our everyday activities, science tends not to vindicate them. Ladyman and Ross point out, "science, especially physics, has shown us that the universe is very strange to our inherited conception of what it is like" (2007, 10). For instance, prior to various scientific and mathematical developments, "metaphysicians confidently

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[15] One might object: it is not clear that there is a dedicated module for scientific intuition, either — a module that would have been beneficial for individual survival and reproduction. I thank an anonymous reviewer for the objection. I agree that there is not obviously a *sui generis* module for scientific intuition. But scientific theories do not rest on some scientific analog of metaphysical intuition. While some metaphysical speculation rests on metaphysical intuition, scientific theory typically does not bottom out in scientific intuition. Rather, it rests on evidence that we gather using capacities that we *do* have evolved neural systems for: perceptual systems, systems that enable action and intervention, and so forth.

pronounced that non-Euclidean geometry is impossible as a model of physical space, that it is impossible that there not be deterministic causation, that non-absolute time is impossible, and so on" (2007, 16). Ladyman and Ross don't specify which metaphysicians they have in mind. Kant's defence of the necessity of Euclidean geometry springs immediately to mine. But the curvature of spacetime, the possibility of indeterministic causation, and the framework-relativity of the present moment were all scientific *revelations* — they overturned aspects of our inherited view of the world. Suppose that those aspects rested primarily on metaphysical intuition. This is debatable, but let's suppose it for the moment. If so, then Ladyman and Ross' argument does not cut against what I have called free range metaphysics in particular, but against metaphysical intuition more broadly, as well as the forms of inquiry that depend on it (including free range metaphysics). The point is, then, that the world has proven to be counterintuitive. If so, then metaphysical intuitions should not be considered evidential.[16]

Still supposing that the scientific revelations that Ladyman and Ross cite overturned aspects of our worldview supported primarily by metaphysical intuition, one might object: that just shows the fallibility of our metaphysical intuitions.[17] But science and scientific evidence are similarly fallible, as the history of science shows.[18] Moreover, we shouldn't expect sources of evidence to be infallible. I grant the latter two points. However, I wish to stress that science falsifies metaphysical intuitions not just occasionally, but *regularly*. Here we may discharge our above supposition — even if the examples above don't all cut against metaphysical intuition, there are plenty more that do. Ladyman and Ross, citing Lewis Wolpert, give a number of further examples, including that "[m]ost people… are astounded to be told that there are more molecules in a glass of water than there are glasses of water in the oceans" (2007, 11). Andrew Shtulman and Kelsey Harrington (2016) identify a number of common sense metaphysical intuitions that must be unlearned during the process of science learning, including that "heat is… an immaterial substance that flows in and out of objects", "evolution is… a process that guarantees organisms the traits they need in order to survive", and "objects… move only if imparted an internal force, or impetus, and will remain in motion until that impetus dissipates" (2016, 119). Shtulman and Harrington also mention some scientific theses that overturn our metaphysical intuitions, including that air is composed of matter and that humans have evolved from sea-faring creatures (2016, 121). There are abundantly many examples of science frustrating metaphysical intuitions. We might even think this feature is built into science, since the extent to which science correctly makes *surprising* predictions is taken to be a measure of its success. The point is that, with

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[16] For further arguments against the evidential value of metaphysical intuitions, see Kriegel (2013).

[17] For this point, I thank an audience member at my presentation of this work at the *Canadian Philosophical Association Annual Congress* on May 31, 2015 in Ottawa.

[18] I thank an anonymous reviewer for raising this point.

respect to metaphysical truth, metaphysical intuitions continually fail us, so we should think they are systematically unreliable. From their systematic unreliability, we should draw the following conclusion and take its methodological implications to heart: we are just not very good at intuiting the nature of the world. Metaphysical intuitions simply do not earn their keep. To the extent that we should not trust unreliable sources of evidence, and absent some grounds for thinking that we're improving in this respect, we should assign metaphysical intuitions no great evidential role.[19]

2.4 Explanatory power

Some metaphysicians, like Fine (2001), appeal to explanatory power as a criterion for the evaluation of metaphysical theses. In the sciences, explanatory power can be an important indicator of the credibility of a hypothesis (for examples, see Kitcher 1981). As Ladyman and Ross point out, "[s]ome metaphysicians have realized that they can imitate science by treating their kind of inquiry as the search for explanations too, albeit in a different domain" (2007, 17).[20] Many metaphysical theses are produced by abduction and so are meant to explain certain evidence. For instance, the claim that there are non-existent objects is meant to explain how we can have intentional attitudes toward Sherlock Holmes and square circles (see Crane 2013 and Priest 2014). In this section of the paper, I will argue that, in the context of free range metaphysics, the explanatory power constraint is both permissive and insufficient to secure epistemic warrant. Recall, however, that I don't take that conclusion to show that we should abandon the constraint.

Prima facie, very many things can putatively explain a set of evidence.[21] For instance, the evil demon hypothesis putatively explains my phenomenal states. The hypothesis suggests that for each of my phenomenal states, I have it because the demon wills it so. But the evil demon hypothesis may fail to be an explanation, or a *powerful* explanation. So we have to consider what qualifies as an explanation — as a metaphysical explanation, in particular — and by virtue of what one of them is powerful or not. These are loaded questions, too grand to settle here, for which there may not be a single answer (see Colombo 2016). So let me remain neutral on the

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[19] Note that this argument is not probabilistic. It makes no claim about the probability of current or future metaphysical intuitions turning out to be false. It simply denounces a form of evidence on the basis of its systematic unreliability. So the base rate fallacy does not threaten here.

[20] See Ladyman (2012) for a comparison of the role of explanation in metaphysics and in science.

[21] I say 'putatively explain' in case the reader thinks explanations must be factive. If they must be factive, then there is an epistemic problem with regard to the conditions under which we can know something to be an explanation. But at any rate, what we care about is *putative* explanations, since it will be those that constrain our theories. We will permit into the theory what we take to be explanatory.

precise account of explanation and instead consider some well-known candidate measures of explanatory power.

Peter Lipton (2004) suggests that the power of an explanation can be gauged in terms of i) the extent to which it renders the explanandum intelligible, or ii) its likeliness given the evidence. He calls these, respectively, the *loveliness* and *likeliness* of the explanation (2004, 59). Let's consider loveliness first. According to Lipton, the loveliest explanations "provide the most understanding" (2004, 59). But this needs spelling out. How does an explanation facilitate intelligibility or understanding? Among other things, it could be a matter of providing a relevant causal story (Salmon 1984) or of unifying knowledge (Kitcher 1981, 1989).[22] In the sections below, I will consider both options. Either way, we want to know how robust the constraint is. So we need to consider how the constraint operates. I will find that on both the causal and the unificationist accounts, the explanatory power constraint operates against a background of empirical belief. The free range metaphysician may argue that the empirical background helps to robustly constrain and support her theories. However, I will show why that is not so.

Suppose first that explaining is a matter of providing a relevant causal story. For any given explanandum, I can tell all sorts of relevant causal stories. For instance, for each of my phenomenal contents, I can explain that content by saying the evil demon caused it, or that God did, or gremlins, or whatever. Any number of relevant putative causes could explain my phenomenal experience. So for a causal story to give us a *good* or *powerful* explanation, it should be *plausible given what we know*. Given what we know, the evil demon hypothesis and its kin are not plausible causal stories. They are certainly logically possible and consistent with the available empirical evidence, but our evidence does not support them. We have a good deal of knowledge about the world, and our knowledge of the world provides us with little, if any, evidence from reliable sources of supernatural creatures such as evil demons. Of course, this line doesn't defeat the skeptic, but it is a common sense response that one might find attractive. At any rate, notice that the *given what we know* clause brings into the picture a background of empirical belief. So on this interpretation, our loveliness criterion is empirical, and the empirically-informed background of belief may be said to constrain the causal stories we countenance.

Moreover, it's not *just* this causal interpretation that builds in a background of empirical belief. Suppose it's *the unification of knowledge* that facilitates understanding and thereby makes an explanation lovely. If so, an explanation facilitates understanding by fitting into our systematic picture of the world. Now, in Kitcher's unificationist view, the 'systematic picture' is the set of sentences currently accepted by a scientific community (1981, 512 & 519). If we

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[22] While Salmon and Kitcher account for scientific explanation, the central thrust of their views might help us flesh out how metaphysical explanation can be lovely in Lipton's sense.

follow Kitcher on this matter, then the explanatory power criterion becomes a scientific constraint, not a free range one (recall that the constraints on free range metaphysics by definition exclude scientific constraints). However, one could have a unificationist theory of explanation that does not build in science. One could hold a view according to which something is explanatory relative to a set of folk beliefs held by an individual or shared by a community. Since our folk picture of the world is based largely on our empirical observations, this way of cashing out the explanatory power constraint makes it inherently empirical, too. So both the causal and the unificationist understandings of loveliness are empirical.

The same goes for likeliness. My judgment that an explanation is likely could be one of two things: either 1) an intuition or 2) the output of a statistical inference.[23] Either way, empirical information will constrain my judgment. If my judgment is intuitive, my intuition is formed against a background of empirical belief. If my judgment is the output of a statistical inference, then an empirical background of belief helps to determine the priors that will, ideally, figure into my reasoning. So if explanatory power is a function of likeliness, then the explanatory power constraint is also empirical. The upshot of the section so far is this: however we understand explanatory power, the explanatory power constraint is empirical.

Note that this implies that free range metaphysics, insofar as it is beholden to an explanatory power constraint, is not *a priori*. So, while it may be tempting to use 'a priori metaphysics' as a quick gloss for the sort of metaphysics I am criticizing, that is just not the right joint to carve at. Setting free range metaphysics aside for a moment, we might wonder whether the above paragraph suggests that there is no *a priori* metaphysics whatsoever. It does imply that any form of metaphysics that requires its contents to be explanatorily powerful is not *a priori*. While it is certainly possible for metaphysics to proceed without any explanatory aims — imagine some metaphysical theory about an esoteric topic removed from experience that we just aim to make an internally coherent system — I will remain neutral on whether it ever does proceed that way. It would be an interesting research program to examine the explanatory demands on current metaphysical theories.

The free range metaphysician may feel a glimmer of hope at this juncture. She may feel that, having established that the explanatory power constraint is empirical, she has a foothold to defend her methodology. Surely, she thinks, the background of empirical belief makes the explanatory power constraint robust, since it limits the number of acceptable metaphysical explanations. While the empirical background cannot decisively rule out the truth of evil demon hypotheses, it makes them implausible and therefore precludes her from countenancing them as

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[23] For this point, I thank an audience member at my talk "No Escape for No Miracles: The No-Miracles Argument and The Base-Rate Fallacy" at the *Canadian Society for the History and Philosophy of Science Annual Meeting* on May 28, 2016 in Calgary.

explanations. The world with which our hopeful metaphysician is experientially acquainted seems not to include things like supernatural demons or gods or gremlins. So the background of empirical belief will preclude her from finding the crank hypotheses she dreams up explanatorily powerful. Moreover, the hopeful metaphysician also thinks that epistemic warrant can piggyback on the empirical credentials of the explanations she finds powerful. Surely, she thinks, free range metaphysical explanations receive warrant by being held accountable to the tribunal of experience. So the hopeful metaphysician thinks that the explanatory power constraint, *qua* empirical constraint, can robustly constrain her free range metaphysical theories and secure evidential support for them.

I have two replies to the hopeful metaphysician. First, in the context of free range metaphysics, the explanatory power constraint operates against a folk-theoretic background of empirical belief. That is, it operates against a background of belief that is only minimally informed by science. Outside free range metaphysics, explanations are frequently judged to be powerful against a fuller background of scientific knowledge. But once the institutional outputs of science are playing any more than a nominal constraining role, by definition we no longer have free range metaphysics.[24] So we have at best a kind of folk physics in the background. But folk theory shouldn't constrain metaphysics, for reasons we have already seen. Namely, the world tends to frustrate our intuitive or folk-theoretic conception of it. So the explanatory power constraint on free range metaphysics fails to secure epistemic warrant, notwithstanding that it operates against a partly empirical background of belief.

Second, even operating against an empirically-informed background, the explanatory power constraint *still* fails to be robust and to secure epistemic warrant. Let's dispense with the unificationist understanding of explanatory power first. For the purposes of metaphysical inquiry, we should not be interested in unifying folk theory, since it is partly based on intuitions. Moreover, all sorts of metaphysical explanations, including crank explanations that I have little-to-no evidence for, can unify a system. I can derive all the constituents of my system of belief from a God hypothesis, or an evil demon hypothesis, and so on. So on a unificationist construal, the explanatory power constraint fails to be robust and to secure epistemic warrant.

On the other construals of explanatory power, judgments of explanatory power collapse into intuitive judgements, which we have seen to be both permissive and epistemically dubious. Which *causal stories* we find plausible given our background beliefs is an intuitive matter. Many people find it plausible, even against an empirically-informed background of beliefs, that angels, devils, and gods figure into explanatory causal stories. Likewise, which explanations we find *likely* can be a straightforwardly intuitive matter — a matter of which ones we find plausible

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[24] That is why scientific theories, such as Darwin's evolutionary theory, whose success is primarily a function of their explanatory power, are not free range theories.

given our evidence. Even judgments of the statistical probability of putative metaphysical explanations rely on intuition. Although we assign priors against a background of empirical knowledge, to the extent that the background sometimes offers little guidance, we set those priors on the basis of intuition. So judgements of explanatory power, understood in terms of relevant causal stories or in terms of likeliness, depend crucially on intuitive judgment, which is neither robust nor justificatory. My point is this: no matter how we cash out the explanatory power constraint on free range metaphysics, *notwithstanding* its empirical status, the constraint fails to be robust and to secure epistemic warrant.

2.5 No joint sufficiency

So far I have shown only that the constraints traditionally taken to constrain metaphysical theorizing are not individually adequate constraints. Might they be jointly sufficient? Suppose a theory is logically consistent, simple, intuitive, and explanatorily powerful. Is that enough for robust constraint or epistemic warrant? I have demonstrated that each theoretical constraint is extremely weak. Adding up these extremely weak constraints would amount to still minimal theoretical constraint. We have already seen that adding up some of them did not help matters, since the apple theory was both simple and consistent. Take those two constraints and add to them the demands for intuitive plausibility and explanatory power. We have seen that on several conceptions of explanatory power, judgments of it are intuitive judgments. Where that is the case, the explanatory power constraint collapses largely into the intuitive plausibility constraint. That is, most of the constraining work is done by intuitions. So we now have essentially three constraints: simplicity, consistency, and intuitive plausibility. Together, the first two are highly permissive. As we have seen, there are reasons not to place the third constraint on our metaphysics at all. But setting that aside, we have also seen that the intuitive plausibility constraint is permissive to the extent that our intuitions can be pushed around in various ways. So imagine the range of theories that could, actually of potentially (with some manipulation of our intuitions), satisfy our requirements for simplicity, consistency, and intuitive plausibility. It's enormous. This indicates that the constraints on free range metaphysics are not jointly robust. And in some ways, the state of metaphysics reflects this. Though disagreement is a feature of most epistemic life — in the sciences, too — the deep and persistent disagreements that plague free range metaphysics, and the sheer number of theoretical alternatives on offer for each subject matter, are symptoms of this insufficient constraint. So the constraints on free range metaphysics, both individually and jointly, fail to be sufficiently robust or to secure epistemic warrant. Therefore free range metaphysics is epistemically inadequate.

3 Collateral benefits

Before drawing a normative conclusion from the various epistemic deficiencies I have pointed out, I must pause. As Steve French and Kerry McKenzie point out, "whatever exactly the problem with contemporary metaphysics is taken to be… the appropriate *reaction* to it… has to be considered carefully" (original emphasis, 2012, 44). That is because, notwithstanding its deficiencies, free range metaphysics may have some value that we should recognize and preserve. I will now consider some candidate sources of value — that is, some possible collateral benefits of free range metaphysics.[25]

3.1 Clarity

In his (2010) review of *Every Thing Must Go*, Cian Dorr comments that Ladyman and Ross "have missed what is best and most distinctive about the tradition they set themselves against: its gradual raising of the standards of clarity and explicitness in the statement of metaphysical claims" (2010, np). Just as analytic philosophy more broadly, with its attention to logic and language, increased the standards of clarity in the statement of philosophical claims, analytic metaphysics has increased the standard of clarity that we hold metaphysical claims to. According to Dorr, "[m]uch of what is distinctive about the analytic way of doing metaphysics is meant to guard against the danger that we might accidentally lapse into nonsense, or launch into disputes that turn out to be merely verbal" (2010, np). To that end, analytic metaphysicians focus on theses "that can be stated using familiar everyday words" (2010, np). When they introduce technical terms, they "propose logical constraints on the new vocabulary, and attempt to draw connections between it and questions expressed in more familiar terms, in the hopes of thereby imposing enough discipline on its use to fend off the charge of unintelligibility" (2010, np). For instance, to great benefit, metaphysicians have required that the terms *fundamental* and *derivative* be accompanied by an "adequately expressive language" for talking about more fundamental things without mentioning derivative things (2010, np). As a result of their "patience for fine distinctions and quibbling objections", analytic metaphysicians have developed "techniques… for stating claims clear and explicit enough to be worthy targets of argument… [and] crafting a view coherent and explicit enough for arguments to get any grip" (2010, np). The claim is not just that free range metaphysics is really clear. To that, I could respond that clarity for its own sake has limited value. The claim is also *not* that clarity does not, or cannot, occur in other domains. That would be patently false. The claim is, rather, that the discipline of analytic metaphysics has produced something of value: techniques for the formulation of claims that meet a comparatively high standard of clarity. One might think that having done so somewhat mitigates against the epistemic failings that I have detailed.

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[25] Note that my use of the phrase 'collateral benefits' here echoes Maclaurin and Dyke (2012).

3.2 Fruitfulness in science

Free range metaphysics is sometimes fertile ground for science. Philosophy more broadly sometimes plays what Peter Godfrey-Smith (2014, unpublished) calls an *incubator* role with respect to the sciences.[26] He explains, "In its relation to science, philosophy has often also functioned as an 'incubator' of theoretical ideas, a place where they can be developed in a speculative way while they are in a form that cannot be tested empirically" (2014, 1). He gives a number of examples of scientific work that originated in philosophy: associationism; much of the current theoretical framework in cognitive psychology and linguistics; the embodied approach to cognition; the Bayes net approach to causal relations; the modern development of computers; and even the more scientific aspect of Marxism, the origin of which is to be found in Hegel (unpublished, 2-3). On this view, metaphysical theories are speculative sketches that are not sufficiently worked out to be empirically tractable; nonetheless, they sometimes give rise to questions of scientific interest and tractability. It is not unlike the way that theoretical physics sometimes incubates experimental physics — as it did in the case of general relativity. While philosophy "has no monopoly" on this incubator role, "[i]ncubation of new ideas is undeniably important" (unpublished, 3). One might argue that whatever normative conclusion I draw, it should preserve this incubator function.

3.3 Fruitfulness in scientifically engaged philosophy

French and McKenzie articulate a further collateral benefit of free range, or, as they call it, *fantasy* metaphysics (2012, 43). Although they share Ladyman and Ross' (2007) dubiousness of such metaphysics, they resist the conclusion that it should be discontinued. In fact, they argue that proscribing such metaphysics would be "counterproductive" (2012, 44). That is because, according to French and McKenzie, free range metaphysics is enormously beneficial to those who engage philosophically with science. It is a toolbox that provides conceptual and formal frameworks useful in the formulation of scientifically engaged philosophical theories. As they put it, "the products of analytic metaphysics can be regarded as available for plundering… in order that we might exploit them for our own purposes" and avoid having to "develop the appropriate resources from scratch" (2012, 44). More recently, French calls this the *Viking Approach* to metaphysics, in which metaphysicians play the role of "hapless peasants, happily tilling their fields of compositionality and ontological dependence, before being pillaged by ruthless realist marauders" (2014, 50). For instance, ontic structural realists pillage metaphysics

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[26] The unpublished paper is called *On the Relation Between Philosophy and Science* and can be found at the following URL: petergodfreysmith.com/wp-content/uploads/2013/06/PhilosophyScience_PGS_2013_C.pdf

when they invoke notions of "'modal structure'… fundamentality and the metaphysics of relations" (2012, 44). Further:

> The growing literature on ontological dependence… is proving useful in expressing the core metaphysical claim of ontic structuralism, namely, that physical objects are ontologically secondary to structures… A form of truthmaker theory might also be deployed in order to articulate the eliminativism about objects that 'radical' ontic structural realism endorses… Even the work of Lewis… has been summoned in defense against the triviality objection to structuralism. (French and McKenzie 2012, 44)

So free range metaphysics furnishes us with conceptual and formal tools useful for articulating naturalistic views. Just as pure mathematics can turn out to be useful in physics, free range metaphysics can turn out to be useful in scientifically engaged philosophy (French and McKenzie 2012, 44). Because free range metaphysics can produce tools useful to our more legitimate theoretical enterprises, "we, as naturalistic philosophers, have to *value* scientifically disinterested metaphysics" — or at least recognize its potential value (2012, 45). So it is "very difficult to oppose scientifically disinterested metaphysics *tout court*" (2012, 45). And, French and McKenzie note, since the course of inquiry is unpredictable, "It seems folly to try to predict in advance what will or will not prove useful to us in the course of time" (2012, 45). Since free range metaphysics cannot produce useful tools in a purposive, premeditated manner, it must do so by happy accident. And for that reason, one might say, with French, "Run free, metaphysicians!"[27]

4 Normative conclusion

The normative conclusion that I draw here has a good deal to keep in balance. On the one hand, it should reflect and remedy the epistemic deficiencies I pointed out in §2 above. On the other hand, if we take free range metaphysics to have the collateral benefits I surveyed in §3 and if we take those benefits to be sufficiently valuable, then my conclusion should also respect and preserve them.

Just how valuable are those collateral benefits? As we have seen, free range metaphysics is not *unique* in having them. Other activities — including analytic philosophy broadly construed, theoretical physics, and mathematics — yield techniques conducive to great clarity, incubate scientific activity, and produce useful formal tools, respectively. Now, one might argue that free range metaphysics accomplishes one or many of those tasks *uniquely well*. I will not consider that argument here. My interest is just in the fact that it has benefits at all. While other

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[27] French made this remark following his talk "Between Humeanism and Dispostionalism; or, How to Construct a Modal Framework for Modern Science by Appropriating Metaphysical Devices" at the conference *New Trends in the Metaphysics of Science* on December 17, 2015.

intellectual activities may produce benefits of the same type, free range metaphysics produces a number of *token* benefits, and has the potential to produce more. To the extent that these token benefits aid human inquiry, free range metaphysics has value.

Since consigning inquiries to the flames is a grave matter, we should do so only when the inquiry does much more harm than good. So let us take stock of the harm free range metaphysics causes. As French and McKenzie point out, metaphysicians believe themselves to accomplish a good deal more than collaterally aiding human inquiry. They "hold that there is value to their discipline beyond it serving as a production line for constructions that might eventually be used and abused by [other inquirers]" (2012, 45). Metaphysics is "intended to be more than just a toolbox and to itself have some direct bearing on reality" (2012, 43). That is, metaphysics attempts to discern metaphysical truth and, to that end, to produce justified theories of reality. This is clear from the standard conceptions of metaphysics that we saw Bennett survey at the beginning of section 1, including metaphysics as the study of: being *qua* being, things as they really are, the most basic and general features of reality, the structure of the world, and the fundamental. Whether the metaphysician aims to describe the nature of being, things as they are, certain features of reality, structure, or the fundamental, she hopes to discern facts about the target of her inquiry. So metaphysicians *standardly* conceive of their discipline as one that is truth-directed. To get at the truth, the metaphysician aims to produce justified theories. But given the epistemic deficiencies I have articulated in this paper, the free range metaphysician lacks the resources to do so. While the outputs of free range metaphysics have some pragmatic value, they lack sufficient epistemic justification. So free range metaphysics is harmful to the extent that its proponents believe it to be an epistemically adequate form of inquiry that produces justified theories about the nature of the world. That is, the harm is that the free range metaphysician exhibits a kind of *bad faith* by thinking her metaphysics has fully satisfactory epistemic credentials over and above its pragmatic ones, when, as this paper has shown, it does not.

Even humbler metaphysicians who see their discipline as "not about explanatorily ultimate aspects of reality that are actual" but rather, about "*the most explanatorily basic necessities and possibilities*" (original emphasis, Conee and Sider 2005, 203), or as an inquiry into "what there could be" (Lowe 1998, 9), exhibit bad faith. Here I agree with Callender (2011), who argues against the value of modal intuitions that are independent of science. He comments, "From the history of science don't we learn that many 'impossibilities' end up possible, and vice versa?" (2011, 41). He continues:

> [T]here is no interesting species of metaphysical modality that is largely immune to science. Our modal intuitions are historically conditioned and possibly unreliable and inconsistent. The only way to weed out the good from the bad is to see what results from

a comprehensive theory that seriously attempts to model some or all of the actual world. (2011, 44)

And our best comprehensive theories of the actual world are scientific ones. We shouldn't take seriously any modal claim generated independently of such a comprehensive theory: "Being connected to a good systemization of the world is either *constitutive* or *symptomatic* of serious possibilities" (2011, 45). Likewise, French and McKenzie argue that "*even if* metaphysics regards itself as the study of the possible, given the central *methodological* role of the actual in systematic modal theorizing and physics' privileged role within it" metaphysics must be scientifically informed (original emphases, 2012, 56-7). So free range theorizing is equally dubious in limning the structure of metaphysical modality as it is in describing the structure of the actual world. The free range metaphysician cannot dodge my criticisms by claiming that she deals only in possibilities or in modal structure more broadly. The point stands that the harm of free range metaphysics is its bad faith; any free range metaphysician who thinks her inquiry adequately justifies metaphysical claims — whether they be claims about the actual world or about modal structure — participates in that harm.

While the harm is serious, some institutional delusion does not so far outweigh the above pragmatic benefits that it warrants consignment to the flames. That is, I cannot in good conscience recommend the discontinuation of free range metaphysics. But I can recommend resolving the discipline's bad faith. The free range metaphysician *need not* be deluded about the epistemic credentials of her discipline. Such delusion is not requisite to achieve the collateral benefits discussed above. Rather than thinking of herself as producing justified theories, the free range metaphysician can think of herself as systematically exploring theoretical space and building coherent systems, in the process of which she sometimes produces theoretical goods useful to other forms of inquiry. So the normative conclusion I wish to draw here is this: free range metaphysicians should not deceive themselves by thinking they produce justified theories of the underlying the nature of reality.

If we are interested in producing justified metaphysical theories, then we had better keep the chickens cooped — that is, we had better place further constraints on the content of our free range metaphysical theories where possible. It may not always be possible, in which case the free range activity may persist and continue producing its actual and potential collateral benefits. But we should determine where it is possible and constrain accordingly. We can determine whether and which further constraints can be added fruitfully through trial and error — that is, by seeing which additional, well-motivated (non ad-hoc) constraints pertain to and help narrow the content of our theories. Though I do not have room to make the argument here, the advocate of naturalization can argue that a scientific constraint on theoretical content puts naturalized metaphysics on firmer epistemic ground than the free range alternative.

Sum

I began by identifying a class of metaphysical theories that I call free range metaphysics. I argued that free range metaphysics is epistemically inadequate because, individually and jointly, the constraints on its content — including consistency, simplicity, intuitive plausibility, and explanatory power — fail to robustly constrain theoretical content or to secure epistemic warrant. However, since free range metaphysics yields clarity-conducive techniques, incubates science, and produces conceptual and formal tools useful for scientifically engaged philosophy, I do not recommend its discontinuation. I do recommend, however, ending the discipline's bad faith. That is, I urge that free range metaphysics not be taken to have fully satisfactory epistemic credentials over and above its pragmatic ones. If naturalized or scientific metaphysics can be shown to be better constrained and justified than free range metaphysics — and I think it can — then we will have a clear case for the epistemic superiority of the one over the other.

References

Andow, James. 2016. "Reliable But Not Home Free? What Framing Effects Mean for Moral Intuitions." *Philosophical Psychology* 6: 1–8.

Bennett, Karen. 2009. "Composition, Colocation, and Metaontology." In *Metametaphysics: New Essays on the Foundations of Ontology*, edited by David Chalmers, David Manley, and Ryan Wasserman, 38–76. Oxford: Oxford UP.

——-. 2016. "There Is No Special Problem with Metaphysics." *Philosophical Studies* 173: 21–37.

Callender, Craig. 2011. "Philosophy of Science and Metaphysics." In *The Continuum Companion to The Philosophy of Science*, edited by Steven French and Juha Saatsi, 33–54. New York: Continuum.

Calosi, Claudio, and Matteo Morganti. 2015. "Humean Supervenience, Composition as Identity and Quantum Wholes." *Erkenntnis*, 1–22.

Chudnoff, Elijah. 2014. *Intuition*. Oxford: Oxford UP.

Colombo, Matteo. 2016. "Experimental Philosophy of Explanation Rising: The Case for a Plurality of Concepts of Explanation." *Cognitive Science* 40 (4): 1–15.

Conee, Earl, and Ted Sider. 2005. *Riddles of Existence: A Guided Tour of Metaphysics*. Oxford: Oxford UP.

Crane, Tim. 2013. *The Objects of Thought*. Oxford: Oxford UP.

Devitt, Michael. 2012. "Whither Experimental Semantics?" *Theoria* 27 (1): 5–36.

——-. 2015. "Relying on Intuitions: Where Cappelen and Deutsch Go Wrong." *Inquiry* 58 (7–8): 669–699.

Dorato, Mauro. 2015. "Events and the Ontology of Quantum Mechanics." *Topoi* 34 (2): 369–378.

Dorato, Mauro, and Matteo Morganti. 2013. "Grades of Individuality: A Pluralistic View of Identity in Quantum Mechanics and in the Sciences." *Philosophical Studies* 163 (3): 591–610.

Dorr, Cian. 2010. "Review: Every Thing Must Go." *Notre Dame Philosophical Review*. ndpr.nd.edu/news/24377-every-thing-must-go-metaphysics-naturalized/.

Eklund, Matti. 2006. "Neo-Fregean Ontology." *Philosophical Perspectives* 20 (Metaphysics): 95–121.

——-. 2013. "Trends and Progress in Philosophy." *Metaphilosophy* 44 (3): 276–292.

Ereshefsky, Marc. 2010. "What's Wrong with the New Biological Essentialism." *Philosophy of Science* 77 (5): 674–685.

Ereshefsky, Marc, and Makmiller Pedroso. 2013. "Biological Individuality: The Case of Biofilms." *Biology and Philosophy* 28 (2): 331–349.

Fine, Kit. 2001. "The Question of Realism." *Philosophers' Imprint* 1 (1): 1–30.

French, Steven. 2014. *The Structure of the World: Metaphysics and Representation.* Oxford: Oxford UP.

French, Steven, and Kerry McKenzie. 2012. "Thinking Outside the Toolbox: Towards a More Productive Engagement Between Metaphysics and Philosophy of Physics." *European Journal of Analytic Philosophy* 8 (1): 42–59.

Godfrey-Smith, Peter. 2014. *Philosophy of Biology*. Princeton, NJ: Princeton UP.

Goldman, Alvin. 2007. "Philosophical Intuitions: Their Target, Their Source, and Their Epistemic Status." *Grazer Philosophische Studien* 74: 1–26.

Hawley, Katherine. 2010. "Critical Notice of Every Thing Must Go." *Metascience* 19 (2): 174–179.

Kistler, Max. 2010. "Mechanisms and Downward Causation." *Philosophical Psychology* 22 (5): 595–609.

Kitcher, Philip. 1981. "Explanatory Unification." *Philosophy of Science* 48 (4): 507–531.

——-. 1989. "Explanatory Unification and the Causal Structure of the World." In *Scientific Explanation*, 410–505. Minneapolis: University of Minnesota Press.

Kriegel, Uriah. 2013. "The Epistemological Challenge of Revisionary Metaphysics." *Philosophers' Imprint* 13 (12): 1–30.

Ladyman, James. 2012. "Science, Metaphysics, and Method." Philosophical Studies 160: 21–51.

Ladyman, James, Don Ross, and Harold Kincaid, eds. 2013. *Scientific Metaphysics*. Oxford: Oxford UP.

Ladyman, James, Don Ross, David Spurrett, and John Collier. 2007. *Every Thing Must Go: Metaphysics Naturalized.* Oxford: Oxford UP.

Lipton, Peter. 2004. *Inference to the Best Explanation*. 2nd edition. London: Routledge.

Loewer, Barry. 2012. "Two Accounts of Laws and Time." *Philosophical Studies* 160 (1): 115–137.

Lowe, E.J. 1998. *The Possibility of Metaphysics: Substance, Identity, and Time*. Oxford: Oxford UP.

Machery, Edouard, Ron Mallon, Shaun Nichols, and Stephen Stich. 2004. "Semantics, Cross-Cultural Style." *Cognition* 92: B1–B12.

Machery, Edouard, and Stephen Stich. 2012. "The Role of Experiment in the Philosophy of Language." In *Routledge Companion to Philosophy of Language*, edited by Gillian Russell and Delia Graff Fara, 495–512. New York: Routledge.

Maclaurin, James, and Heather Dyke. 2012. "What Is Analytic Metaphysics For?" *Australasian Journal of Philosophy* 90 (2): 291–306.

Maudlin, Tim. 2007. *The Metaphysics Within Physics*. Oxford: Oxford UP.

McLeod, Mike, and Josh Parsons. 2013. "Maclaurin and Dyke on Analytic Metaphysics." *Australasian Journal of Philosophy* 91 (1): 173–178.

Morganti, Matteo. 2008. "Weak Discernibility, Quantum Mechanics and the Generalist Picture." *Philosophica* 10 (1/2): 155–183.

——-. 2013. *Combining Science and Metaphysics.* New York: Palgrave Macmillan.

Ney, Alyssa. 2012. "The Status of Our Ordinary Three Dimensions in a Quantum Universe." *Noûs* 46 (3): 525–560.

Ney, Alyssa, and David Albert, eds. 2013. *The Wave Function: Essays in the Metaphysics of Quantum Mechanics*. Oxford: Oxford UP.

Nichols, Shaun, and Joshua Knobe. 2007. "Moral Responsibility and Determinism: The Cognitive Science of Folk Intuitions." *Noûs* 41 (4): 663–685.

Nichols, Shaun, Stephen Stich, and Jonathan Weinberg. 2003. "Metaskepticism: Meditations in Ethnoepistemology." In *The Skeptics,* edited by Steven Luper, 227–247. Burlington: Ashgate Publishing.

Norton, Joshua. 2015. "Weak Discernibility and Relations Between Quanta." *Philosophy of Science* 82 (5): 1188–1199.

Petrinovich, Lewis, and Patricia O'Neill. 1996. "Influence of Wording and Framing Effects on Moral Intuitions." *Ethology and Sociobiology* 17 (3): 145–171.

Pradeu, Thomas, and Alexandre Guay. 2015. *Individuals Across the Sciences.* Oxford: Oxford UP.

Priest, Graham. 2014. *One: Being an Investigation Into the Unity of Reality and of Its Parts, Including the Singular Object Which Is Nothingness.* Oxford: Oxford UP.

Ruetsche, Laura. 2011. *Interpreting Quantum Theories: The Art of the Possible.* Oxford: Oxford UP.

Salmon, Wesley. 1984. *Scientific Explanation and the Causal Structure of the World*. Princeton: Princeton UP.

Schwitzgebel, Eric, and Fiery Cushman. 2012. "Expertise in Moral Reasoning? Order Effects on Moral Judgment in Professional Philosophers and Non-Philosophers." *Mind and Language* 27 (2): 135–153.

Shtulman, Andrew, and Kelsey Harrington. 2016. "Tensions Between Science and Across the Lifespan." *Topics in Cognitive Science* 8: 118–137.

Sinnott-Armstrong, Walter. 2008. "Framing Moral Intuitions." In *Moral Psychology, Vol. 2: The Cognitive Science of Morality*, edited by Walter Sinnott-Armstrong, 47–76. Cambridge, MA: MIT Press.

Swain, Stacey, Joshua Alexander, and Jonathan Weinberg. 2008. "The Instability of Philosophical Intuitions: Running Hot and Cold on Truetemp." *Philosophy and Phenomenological Research* 76 (1): 138–155.

Thomson, Judith Jarvis. 1998. "The Statue and the Clay." *Noûs* 32 (2): 149–173.

van Inwagen, Peter. 1981. "The Doctrine of Arbitrary Undetached Parts." *Pacific Philosophical Quarterly* 62 (April): 123–137.

Waters, Ken. forthcoming. "No General Structure." In *Metaphysics in Philosophy of Science*, edited by Matthew Slater and Zanja Yudell. Oxford: Oxford UP.

Weinberg, Jonathan, Chad Gonnerman, Cameron Buckner, and Joshua Alexander. 2010. "Are Philosophers Expert Intuiters?" *Philosophical Psychology* 23 (2): 331–355.

Weinberg, Jonathan, Shaun Nichols, and Steven Stich. 2001. "Normativity and Epistemic Intuitions." *Philosophical Topics* 29 (1&2): 429–459.

Wheatley, Thalia, and Jonathan Haidt. 2005. "Hypnotic Disgust Makes Moral Judgments More Severe." *Psychological Science* 16 (10): 780–784.

Wiegmann, Alex, Yasmina Okan, and Jonas Nagel. 2012. "Order Effects in Moral Judgment." *Philosophical Psychology* 25 (6): 813–836.

Williamson, Timothy. 2007. "Knowledge of Metaphysical Modality." In *The Philosophy of Philosophy*, 134–179. Malden, MA: Blackwell.

Wimsatt, William. 1994. "The Ontology of Complex Systems: Levels of Organization, Perspectives, and Causal Thickets." *Canadian Journal of Philosophy* 20 (sup 1): 207–274.