Philos Stud (2014) 167:165–181
DOI 10.1007/s11098-013-0228-1

Against simplicity

M. B. Willard

Published online: 9 November 2013

Abstract Sometimes metaphysicians appeal to simplicity as a reason to prefer one metaphysical theory to another, especially when a philosophical dispute has otherwise reached a state of equilibrium. In this paper, I show that given a Quinean conception of metaphysics, several initially plausible justifications for simplicity as a metaphysical criterion do not succeed. If philosophers wish to preserve simplicity as a metaphysical criterion, therefore, they must radically reconceive the project of metaphysics.

Keywords Metaphysics · Ontology · Simplicity · Methodology · Metametaphysics

1 Introduction

The unexamined life may not be worth living, but examining the progress of metaphysics may make even the most equanimous metaphysician cringe. We cringe because recent work in metametaphysics has suggested what we fear when trying to explain our life's work to our more skeptical grandmothers: that there can be no resolution to many or maybe even all metaphysical disputes, that we're wasting our time in a peculiar intellectual chess match. For in every season, each party to a metaphysical dispute postulates an ontology and a structure to make sense of it; each party criticizes its rivals' positions; each party remediates the deficiencies of its own position; this cycle recurs and recurs; until the swift get bored and move onto the newest hot topic, and there is nothing new under the sun except some journal articles and the odd monograph.

M. B. Willard (✉)
Weber State University, Ogden, UT, USA
e-mail: marybethwillard@weber.edu

That is, some philosophers have argued that some or all metaphysical disputes will never reach a metaphysical resolution.[1] Of course, we metaphysicians still have preferences and still will pick sides. We often appeal to the simplicity of a position as a reason to prefer it. Yet we lack a considered defense of simplicity as a bona fide metaphysical criterion. Somewhere along the way we accepted that entities need not be multiplied beyond necessity and that laws should be elegant without bothering to ask why. Perhaps, as Bennett notes, simplicity is not justifiable with respect to metaphysics; and our preference for simplicity is no more than a non-metaphysical taste:

> For all I have said here, then, it remains open that there may be some broader theoretical grounds that can justify our choice. Consider choosing between two empirically equivalent scientific theories. Scientific realists who think that there is a real choice to be make can perhaps do so by appeal to nonempirical criteria – the simplicity and elegance of the overall picture, for example. (2009, 73)

Bennett's conciliatory parallel is not quite right. For while scientists and philosophers of science regularly count simplicity as a virtue of empirical theories, they also regularly provide justifications for relying so heavily on simplicity. Simplicity is not a mere aesthetic preference for minimalism, but a guide to the truth!

Here I hold out hope. On the dominant contemporary conception of metaphysics, the purpose of metaphysics is to serve as a handmaiden to scientific discovery. We offer ontologies consonant with the best physical theories of the world. If those best physical theories of the world are themselves simple, and we have justifications for believing that those best physical theories are simple, then it stands to reason that any metaphysics based on those physical theories must be likewise both simple and justified.[2] If we may appeal to simplicity, then we may resolve those metaphysical disputes.

And here I snatch that hope away. I come bearing no malice towards simplicity. I like my theories presented in neat little packages and tied up with bows. I want to believe! Yet as I will show, a careful examination of the justifications for simplicity in science does not yield a justification for simplicity in metaphysics. Moreover, independent motivation of simplicity will turn out to be incompatible with a particularly influential method of metaphysics. I should stress that I do not take my arguments here to be arguments against justifications of simplicity in the physical sciences. Some of what I say will be suggestive in that direction, but to argue that

[1] For example, Hirsch argues that all metaphysical disputes are really verbal disputes (2009, 2005). Bennett argues that while metaphysical disputes are substantive, there are nevertheless some debates that have reached a point of equilibrium such that they cannot be resolved on metaphysical grounds; Willard argues that structural features of the practice of metaphysics make it reasonable to believe that all metaphysical disputes are not resolvable (Bennett 2009; Willard 2013).

[2] Thanks to L. A. Paul and Michaela McSweeney for conversations and questions that inspired this paper; Heather Demarest and Jonathan Schaffer for helpful comments on an earlier draft of this paper; and, Rachael Briggs, Jason Turner, Daniel Korman, Lina Jansson, Ishani Maitra and participants at the 2013 Bellingham Summer Philosophy Conference for a vigorous and fruitful discussion.

simplicity is an unjustified criterion in the sciences is far too large a topic for what I have planned here. My concern is to show only that appealing to the scientific practice of valuing simplicity does not help the metaphysician justify simplicity in her own choice of theories.

In Sect. 2, I will sketch how simplicity is used in contemporary metaphysical debates. In Sect. 3, I will examine three kinds of justifications for simplicity in the natural sciences, concluding that none of them offer good reasons for preferring simplicity in metaphysics. Finally, in Sect. 4, I will show that we are left with a dilemma; either we give up the Quinean method for metaphysics, or we concede that our preference for simplicity is non-metaphysical, and our metaphysical debates dismissible.

2 Simplicity as a tiebreaker

Philosophers do not agree on what precisely constitutes simplicity. A brief glance at the literature would give the impression that simplicity denotes whatever virtues a philosopher hopes her theory has and that her opponent lacks. More seriously, *simplicity* includes both ontological parsimony and theoretical elegance. To be ontologically parsimonious is to refuse to postulate new entities or kinds of entities without a good reason to do so. Elegance refers to the laws or principles postulated by a theory, and an elegant theory is one that explains a wide variety of phenomena while incurring a minimal theoretical cost.

Philosophers do not agree on one standard criterion for simplicity in part because they disagree on how to weight the values of parsimony and elegance. For example, Lewis notes that it is difficult to determine how much one should balance the simplicity and strength of a theory (2001, 73). We might be inclined to suspect that there's a natural equilibrium; a theory is either going to be relatively complex with respect to its laws or it is going to have to postulate more entities to do the work that the laws haven't done. In any case, while there is no real consensus on whether parsimony or elegance is to be preferred, broadly the two principles together comprise simplicity.

For my purposes, more detail is not required. We have a rough idea of what simplicity is, but more importantly, we have a rough idea of when to deploy it. Appeals to simplicity suggest that simplicity in metaphysics is always a secondary consideration when deciding between two rival metaphysical hypotheses.

On what I will term the Quinean conception of metaphysics, the task of metaphysics is to identify what there is. The method of metaphysics proceeds as follows: first, identify the best theory of the world, viz., physics, and translate it, using some paraphrases as desired, into first-order logic. Figure out what you need to quantify over in order to make the theory true, and then read the existential commitments off of the domain of the theory.[3]

[3] Adapted from Schaffer (2009, 366).

I suggest that metaphysicians working within this method typically disagree about how to translate the physical theory into first-order logic. For example, suppose it looks as if the best physical theory of the world requires the postulation of numbers. A Platonist about numbers will translate physics in such a way that she quantifies over numbers, and thus she will have good reason to think that her translation is committed to the existence of numbers. A nominalist about numbers will translate physics in such a way that avoids quantifying over numbers, and thus she will have good reason to think that her translation is not committed to the existence of numbers. If these two philosophers take themselves to be disputing each other, then their dispute will hinge on who has the better translation of the physical theory into canonical logic.

If they are to dispute successfully, they will need to proceed by finding something wrong about the other side's translation. The first area to look whether there is anything within the physical theory that one side can express which the other cannot; for example, the task of *Science Without Numbers* is to show that everything that the Platonist says can be done only by postulating the existence of numbers can be done without postulating them. Yet typically, after a few exchanges, we will discover that there is no difference in expressive power between the sides in the debate. It is then that both sides turn to simplicity to nudge the balance of evidence in their favor.

That is, suppose we have two metaphysical theories of a given discourse, A and B, and they are equivalent with respect to expressive power. If A is simpler than B, then we have a reason to prefer A to be and to treat it as the correct theory of the discourse.

While our model of metaphysical theory choice resembles our model of scientific theory choice, there is still a need for justification for simplicity in metaphysics beyond the justification offered for simplicity in physics, because typically all parties to the dispute agree on the physical theory offered. Philosophers who focus on time, for example, will not typically dispute Einstein's theory of relativity; instead, they dispute whether the theory commits them to a three- or four-dimensionalist analysis of time.

As long as such disputes are possible, and as long as they are settled by appealing to considerations like parsimony and elegance, we will require an additional justification for the use of simplicity in metaphysics.

Note that simplicity, while a potential tiebreaker, need not be the only criterion available to break a tie; I take myself to be committed only to the claim that it is a lesser criterion on the Quinean conception of metaphysics than is expressive power. Someone might prefer A to B because while both theories offer expressively equivalent theories, the global consequences of A might be thought to be preferable to the global consequences of B given the theorist's other philosophical commitments. For example, theory A might be particularly friendly to theism, and so a philosopher who is a theist would have a reason to prefer theory A to theory B. Such concerns, however, are not strictly speaking metaphysical concerns, and here we are interested in whether simplicity can be construed as a metaphysical criterion.

For simplicity to be a true metaphysical criterion, there have to be metaphysical grounds by which a simpler theory is rightly preferred. It will not suffice to point out that philosophers generally prefer simpler theories over more complicated theories; we need a reason to think that a simpler theory is metaphysically superior.

Here's a thought. Simplicity in the sciences is thought to aim at truth, and justifications for preferring simpler theories in science aim to show that a preference for simpler theories in science lead to theories that are, or are more likely to be, true. And while philosophers have not argued directly for the use of simplicity as a criterion in metaphysics, they have argued extensively for simplicity as a criterion in the sciences.

Thus, a natural place to begin lies with the kinds of justifications offered for the use of simplicity in the sciences. Such justifications are too numerous to be treated individually, but they fall into three categories which will allow us to treat them together. Pragmatic or methodological theories explain that the value of simplicity lies in its practical utility; roughly, simplicity amounts to a reliable heuristic for identifying theories that will be easier to use, and theories that are easier to use will introduce less error. A posteriori theories tie the value of simplicity to its empirically observable track record. A priori theories hold instead that simplicity must be a condition or background assumption held prior to any scientific investigation.

Grant for the sake of argument that all three kinds of justifications enjoy a reasonable amount of plausibility when applied to the practice of scientific inquiry. The question for us is what would have to be true in order for such justifications to provide additional justification for metaphysical simplicity.

It is tempting to think that a justification for simplicity in scientific inquiry, whatever its form, will itself justify metaphysical simplicity indirectly. After all, on the Quinean conception of metaphysics, the range of possible metaphysical theories will be constrained by scientific discovery. Surely if scientific theories have to be simple, metaphysical theories will have to be simple, too.

Won't they?

3 Three kinds of justification

Quine's justification of simplicity in physics is generally received as methodological or pragmatic. There are practical reasons that scientists prefer simple theories to more complicated theories. Quine writes that simpler theories are regarded not just as more desirable, but as more probable, and he offers four reasons that those theories might be thought to be more probable. Scientists might be subject to wishful thinking; it would be nice if the world worked out in pleasing elegant patterns.

Or, it might be an artifact of perceptual bias. We human beings are wired to see the world in a certain way, and this affects the design of our experimental criteria in such a way that simplicity thus becomes an experimentally imposed bias that is impossible for us to get past.

Finally, our preference for parsimony and elegance might result from the fact that simpler hypotheses may stand a better chance of confirmation, whether it results from the simpler theory precluding the more complex theory, or because the more elegant theory admits of a wider range of phenomena, meaning that more experimental results will count as confirmation (Quine 1966).

Alone, this is not a very good methodological justification of simplicity, for although Quine gives us reasons that perhaps we cannot do any better than adopt the

simplest theory, it does not follow from that we should believe that the simplest theory is more likely to be true. Suppose that true scientific theories are those that correspond to the real world; a theory that postulates electrons is true if and only if there are electrons. If simple theories are more likely to be confirmed due to some limitation of our perceptual apparatus, for example, we should have no confidence that our confirmed theories will really correspond to reality.

If the pragmatic justification of simplicity is to be successful, then, it should be married to a pragmatic justification of truth. On such a view, a true theory just is one that has been confirmed by its experimental results. To acknowledge that a theory has been confirmed, but then to wonder whether it is true is to misunderstand badly limits of the scientific method. Thus, the argument from confirmation: if confirmation amounts to scientific truth, and simplicity is a reliable guide to choosing the theory most likely to be confirmed, then simplicity is a perfectly justified criterion to use in theory choice:

1. Simpler theories are more likely to be confirmed than complex theories.
2. All theories that are confirmed are true.
3. Therefore, simpler theories are more likely to be true than complex theories.

So let us grant that there is a plausible pragmatic or methodological justification for simplicity in the case of the natural sciences. Does this argument give us any justification to take simplicity as a metaphysical criterion?

Some philosophers of science would deny that there is a clear distinction to be drawn between the work of physics and metaphysics, and as a result, some ontological decisions will be determined by the results of empirical investigation not yet conducted. In such cases, while there may be rival metaphysical interpretations of physical data, the dispute is not taken to have reached a tie; the game is in the eighth inning, but the ninth is yet to be played. If metaphysics theories can be taken to be confirmed by empirical observation, then the above argument would hold for metaphysics as well as physics.[4]

But not all metaphysicians take their disputes to be resolvable in principle by appealing to empirical data. In that case, there are two problems that I can see with trying to construct a parallel justification for metaphysics, and I'll take them in the order of severity. First, it is not at all obvious that a pragmatic conception of truth is palatable given our typical metaphysical ambitions. We suppose commonly that metaphysics aims at discerning the true structure of reality; we claim to write the book of the world. It should matter to the metaphysician that her theory corresponds to reality. It matters to me.

But perhaps it doesn't bother you as much. Fair enough; there's a deeper problem with respect to confirmation. A metaphysical theory is not going to be confirmed directly by an empirical observation. Instead, the empirical observation will confirm a scientific theory, and there will still be a question of which ontology best fits the newly confirmed scientific theory. Metaphysical theories are second-order theories. All one needs to hold in order to believe that scientific confirmation will not settle a

[4] Thanks to Louis deRosset and Michaela McSweeney for pressure on this point.

metaphysical dispute is that it is reasonable to believe that any scientific theory will have at least two plausible metaphysical explanations.

So we must construe "confirmation" not as referring to empirical confirmation, but as to something relating the metaphysical theory to the scientific discourse which it seeks to explain. But here's the problem. Recall that the Quinean method admits simplicity as a criterion of theory choice only after translating the prevailing scientific theory into first-order logic. For example, we assume that Platonism about numbers and nominalism about numbers each manage to preserve the discourse of mathematics; if one does not, we do not even need to look at simplicity to decide between the two theories. We will have already decided in favor of the more expressive theory.

One more try; read Quine's methodological criterion as a hedged bet in the case of new discoveries. Scientists should prefer simpler theories because they are more likely to be confirmed by new empirical data. The analogue for metaphysics would perhaps be the development of a flexible ontological structure that could anticipate revisions to a scientific theory. Perhaps metaphysicians should prefer a simpler theory, because in the likely event that the scientific theory needs to be revised in the light of new data, a simpler theory will be better placed to offer a revised ontology.

This, however, is not obvious as simplicity can be understood as either ontological parsimony or syntactic elegance, and it is hard to say how an unknown discovery will affect a theory. A theory that is ontologically abundant may be better placed to deal with new observations because the addition of a new object will be a minimal addition to an already large ontology; a syntactic elegant theory may need to overhaul its laws entirely. Moreover, it will not be clear in advance how a given theory's rivals will adapt to a new scientific theory.

Thus, it appears that appeals to methodology, while they may suffice for supporting simplicity in scientific theory choice, will not suffice for justifying simplicity in metaphysical theory choice.

Some justifications of simplicity proceed a posteriori; simplicity's connection to truth rests in empirical experience. One reason to prefer simplicity lies in its historical success. The adoption of the heliocentric theory of the solar system over the older geocentric theory is one well-worn myth, according to which the nimble and sleekit heliocentric theory eventually won out over the creaky, ad hoc geocentric theory. Over time, it would become clear that the heliocentric model also afforded the scientists greater predictive power, but the initial choice of theory depended not on that predictive power, but on the simplicity of the newer model. The theory maintenance lesson for the rest of us: when your theory starts to develop epicycles, it's probably time to consider trading it in for a newer model.

That is, our previous experience with scientific theories suggests to us that simpler theories have a better chance of being correct than more complicated theories. And while we may be wrong about the success of any given simple theory over its more complicated rivals, we are no less rational for taking simplicity as a point in favor of a theory. So the argument from success for simplicity turns out to be:

4. Simple theories have proven to be more successful than complex theories in the past.
5. It is reasonable to believe that this pattern will continue.

6. Therefore, it is reasonable to believe of any simple theory that it will be more successful than its complex rivals.

Hume pressured the second premise, as to believe that it is reasonable to hold that simple theories will continue to be more successful than their rivals requires a belief that the future will resemble the past. But I will set aside such skeptical concerns here for now.

Nor am I particularly concerned that the first premise, like most myths, is almost assuredly false, for my focus here is not to critique this with respect to simplicity's role in scientific justification. If we were to adopt this model for metaphysics, philosophers would be justified in preferring simpler metaphysical theories because in the past, simpler metaphysical theories have met with more explanatory and predictive success than have more complicated metaphysical theories.

Yet nothing is more resilient than a metaphysical theory; stake it with the best philosophical arguments at a crossroads, and find that tens or hundreds of years later, the view is resurrected with a fresh gleam in its eye and hordes of Igors and Igorinas ready to help it along. If science instructs us to stand on the shoulders of giants that we may see further, philosophy delights in peeping in the smallest furrows to see what small seedling has been overlooked, and may with nurture, grow in the light of the 21st century.

In other words, the first premise is false. Scientific theories may be able to justify the use of simplicity by appealing to the progress that science has made, but metaphysics lacks such a theory of progress. Even if one could be convinced that progress was a notion appropriate to metaphysical inquiry, it is hard to say what a theory of metaphysical progress would look like.

There are other ways to construe an a posteriori justification for simplicity in science. Sober, for example, conceives of the confirmation of scientific hypotheses as a three-place relation between the hypothesis, the observations, and the background assumptions of the scientists. He construes simplicity as a constraint on the background assumptions; it "embodies empirical assumptions about the way the world is." (Sober 1988, 59) Scientific appeals to simplicity are disguised appeals to empirical background assumptions.

For example, the belief that the observation of a white crow disconfirms the hypothesis that all ravens are black depends on the empirically discovered belief that crows and ravens are biologically related. Thus, it is simpler to suppose that the observation of the white crow disconfirms the hypothesis that all ravens are black, because the alternative would be to overrule other presumably well-supported beliefs about the evolutionary history of birds. Likewise, the belief that the observation of a black raven partially confirms that all ravens are black depends on other beliefs about sample size and experimental methodology. When these background beliefs are not made explicit, they are referred to collectively as simplicity.

Similarly, Baker argues that a preference for simplicity is empirically supported. He considers a case from early studies of Beta decay in the 1930s:

> In these experiments, the total mass-energy of the system of particles before Beta decay is greater than the total mass-energy of the observed particles that are emitted following the decay, and the total spin of the particles in the system

> before decay exceeds by ½ the total spin of the observed particles emitted following the decay. Being unwilling to give up the laws of conservation of mass-energy or conservation of spin, scientists concluded that there were particles being emitted following Beta decay which had not been detected by their instruments. Their response was to posit a 'new' fundamental particle, the neutrino, with variable mass-energy and with spin $\frac{1}{2}$, and to hypothesize that exactly one neutrino is emitted by each electron during Beta decay. (Baker 2003, 246)

Baker then considers the question of why they postulated the one particle, with spin $\frac{1}{2}$, instead of packets of n particles consisting of spin $\frac{1}{2n}$. He gives as a reason not, as one might expect, an appeal to Ockham's razor with respect to quantitative parsimony, but instead argues that postulating neutrino is more justified, because were the scientists to postulate packets of particles, they would also need to explain why those particles never occurred singly. Postulating the neutrino not only explains what is observed, but explains the absence of what has not been observed. To postulate more objects would have required an additional explanation: why are the packets never observed singly?

In both proposals, simplicity is to be preferred because simple theories have greater explanatory power. Neither Sober nor Baker argue for a global claim about simplicity. For Sober, the background assumptions, and so what counts as simplicity, will be specific to every individual scientific dispute. For Baker, quantitative parsimony is rationally justified in any situation that involves competing additive hypotheses as in the hypothetical neutrino case, but only in those cases. In both cases, the justification for simplicity lay in its sensitivity to the broader scientific context and its commitments.

If these proposals could be extended to metaphysics, we would have to say something like the following:

7. Simpler metaphysical theories are those with more background assumptions incorporated into the body of the metaphysical theory.
8. Theories with more background assumptions incorporated into the body of the theory are more likely to be correct.
9. Therefore, simpler metaphysical theories are more likely to be correct.

Here's the trouble. Premise (8) is not at all obvious with respect to metaphysics. In the cases that Sober suggests, for example, premise (8) is buttressed by other successful observations and predictions in the sciences. A scientist can have more confidence that a white crow disconfirms the thesis that all ravens are black because her understanding of biology is empirically well supported, and there is a presumption that all scientific theories have to work within what is empirically well supported.

In metaphysical theories, we are lacking equivalent empirical confirmation. No measurement is going to settle whether there are tables or merely particles-arranged-tablewise. Moreover, given the Quinean conception of the role of metaphysics, any serious philosophical dispute that has reached the point where simplicity makes sense as a tiebreaker is one in which the disputants already agree about the empirical facts; they're disagreeing over who has the better philosophical interpretation of the empirical facts.

And while we might take it as a good sign if our theories cohere with the rest of our beliefs, it is hard to see how this would be a reliable indicator of the truth of our beliefs. For suppose once again that our preferred theory has a rival; surely it is plausible that the rival theory also coheres with the rest of its proponents' philosophical beliefs. If simplicity is to function as a tiebreaker, it cannot simply be a measure of consonance with one's background beliefs, because unlike science, which is committed methodologically to naturalism, metaphysics admits of a wider range of background assumptions.

We are left with a priori justifications of simplicity in science. One justification offered in favor of science comes to us from Swinburne. Swinburne argues that simplicity requires a priori justification even in the case of science; a simpler theory is more likely to be confirmed than a more complicated theory. He understands simplicity to include not just parsimony and elegance, but features of the laws of nature and their variables, mathematical formulations, and the properties in which the theory is formulated;"green" is simpler than "grue", because the meaning of "grue" depends on the meaning of "green." (Swinburne 1997, 25–26) Given this understanding of simplicity, Swinburne argues that a simpler hypothesis is more likely to be confirmed than its more complicated rivals.[5]

If truth in science is determined by experimental confirmation, then a theory that is more likely to be confirmed is one that is more likely to be true. Swinburne's a priori principle does not guarantee the truth of a simpler theory, instead arguing that it is more probable that it will be confirmed. Thus, it is more reasonable to believe that a simpler theory will be confirmed over its complex counterpart, and as a result, simplicity is a valuable criterion for scientists.

Greater simplicity, in other words, entails greater prior probability of empirical confirmation. Swinburne takes this principle to be a fundamental synthetic a priori truth; it is a condition on the possibility of scientific investigation. Yet as stated, we see the same problems plague Swinburne as did Quine's pragmatic conception of confirmation. Once simplicity is invoked in a metaphysical dispute, there is no sense in which a theory can be confirmed by more empirical observations, and we do not have an independent model of confirmation for metaphysics.

We are left with a startling conclusion. Although we may have thought that the justification for simplicity in metaphysics would neatly parallel one of the many justifications offered for the use of simplicity in the natural sciences, it turns out that the justifications offered in the sciences involve one of three concepts that simply do not apply to metaphysics as currently practiced:

[5] Huemer (2009, 223–224) discusses a similar (although not a priori) argument, according to which simpler models are more likely to be confirmed or disconfirmed. Suppose that the data to be explained is the wobble in the orbit of Uranus, and we consider the merits of postulating one planet, Neptune, as Leverrier did, over postulating eighty-three planets, which no one did. If we postulate one planet, we can explain the evidence by adjusting the mass and orbit of Neptune; if we postulate eighty-three, we can explain it by adjusting the mass and orbit of all of the postulated planetlets.

The one-planet theory takes a risk, for it would be refuted by any observations that required more planets. The eighty-three planet theory plays it safe, spreading its possibility over a larger range of possible observations. This means, however, given the *actual* observations, that the simple theory is more probable.

A coherent concept of confirmation In the sciences, simplicity may function as a heuristic, as a reliable guide that a theory stands a good chance of confirmation. The trouble is that in a metaphysical dispute that has turned to considerations of parsimony and elegance in order to break a tie, there is no sense of what it would mean for a philosophical dispute to be confirmed or disconfirmed.

A coherent concept of progress Simplicity, on some readings, has had an extraordinarily good track record, so even if it is hard to say exactly why we value simplicity in the sciences, it seems like at least it's not a bad rule of thumb to think that a simple theory is more likely to be true than its rivals. Some scientific disputes are settled, and we can construct a coherent narrative about how the simplicity of a theory functioned as a secret sign to alert us to its truth.

A common philosophical ground The method of science is philosophically constrained as scientists are methodologically committed to naturalism. While there are scientific disputes, both sides are working within the same philosophical framework with respect to what would count as confirmation of a theory. This means that in a scientific dispute, simplicity can defined perhaps in terms of those common assumptions. In philosophy, there is no particular reason that a philosopher should limit herself to naturalism, and thus no obvious way to define simplicity in a way that both sides would accept.

I have not shown conclusively that there is no way to adapt scientific justifications of simplicity to a metaphysical context, but these considerations seem to provide at least good reason to think that if metaphysical simplicity is going to piggyback on scientific simplicity, we will need to come up with a different way of looking at it.

4 Simplicity and necessity

Metaphysics cannot adapt scientific justifications straightforwardly. But there is still something compelling about the idea that simplicity's value in the natural sciences should provide an a posteriori justification for simplicity's value in metaphysics, especially given the conception of metaphysics as a handmaiden to science.

Moreover, we appear to use considerations of simplicity in ordinary reasoning. Suppose I return to my office after a morning of teaching, and open my desk drawer with anticipation only to discover that my secret stash of dark chocolate has gone missing. My mind will naturally turn to identifying the possible culprits: the chocoholic colleague who often shares a snack with me and knows where the chocolates are stored, the department secretary with a key to my office, the hungry philosophy students loitering nearby, and so forth. I should *not* postulate the existence of small chocolate-thieving elves, arguably because the ordinary simpler explanations are more likely.[6]

In other words, perhaps the justification we need for simplicity in metaphysics is no more than the justification we require in ordinary reasoning. After all, practicing

[6] Though see Huemer (2009) for reasons to think that simplicity is not a driving consideration even in ordinary reasoning.

metaphysics shouldn't make us *worse* at reasoning. Physics has turned out to be simple, and metaphysics has something to do with physics, so perhaps it's just a safe bet that metaphysics is simple, too.

10. If our best theories of the natural world are simple, then it is likely that our best metaphysical theories of the world are also simple.
11. Our best theories of the natural world are simple.
12. Therefore, it is likely that our best metaphysical theories of the world are simple.[7]

A thorough examination of this kind argument is beyond the scope of this paper, for there are many iterations of this argument that we could consider. We would have to discern whether our commitment is to simplicity in nature or simplicity in our *theories* of nature, and whether by 'likelihood' we mean objective probability or rational credence or something else entirely.

It is not, however, necessary to consider them individually in great detail, for it turns out to be difficult to explain why premise (10) should compel us without begging the question. It is an inductive inference, and its plausibility, and perhaps the plausibility of premise (11), belies a pre-existing commitment to simplicity. It is simpler to assume that nature is uniform than it is to assume otherwise. In other words, to believe that simple physics makes simple metaphysics more likely presupposes that simplicity is already an underlying criterion of theory choice. As such, the argument in support of simplicity is circular.

Moreover, it is plausible that we are thinking not of likelihood, but subscribing to something like the following principle:

13. If our best theories of the natural world are simple, then our best metaphysical theories of the world must also be simple.

And from this principle, we can generate the following argument.

14. Our best theories of the natural world are simple.
15. Therefore, our best metaphysical theories of the world must also be simple.

Premise (14) seems to be correct. But premise (13), however, is ambiguous between the following formulations:

16. Necessarily, if our best theories of the natural world are simple, then our best metaphysical theories of the world are also simple.
17. If our best theories of the natural world are simple, then necessarily our best metaphysical theories of the world are also simple.

Which is the best translation? It strikes me that Premise (16) is probably what we mean to assert when we wish to tie the purported simplicity of the natural world to the simplicity of metaphysics. We let our minds wander over the space of possibilities, and we pick up and examine all of the possible worlds in which the

[7] Thanks to both Heather Demarest and Jonathan Schaffer for encouraging me to consider this possible response.

laws of nature are simple, and we discover that all of the worlds with simple laws of nature are also worlds with simple metaphysical structures.

But this is too quick. First, if we take conceivability as a guide to possibility, we can conceive of a world where the physical theories of nature are simple because the fundamental structure of the work is very complex. We could get simplicity arising out of complexity. Second, we might hold that simplicity with respect to the natural sciences concerns pragmatic or methodological simplicity. Perhaps the best we can do given our physical and cognitive limitations is to describe the world simply; perhaps we have no need, given our finite aims, to admit of more complex theories. Nevertheless, it seems to be plausible to hold that science aims at methodological simplicity while remaining agnostic on whether metaphysics also needs to be simple.

Yet there's a deeper and more obvious problem. If we rewrite the argument using premise (16), even if the premises strike us as true, it's invalid.

16. Necessarily, if our best theories of the natural world are simple, then our best metaphysical theories of the world are also simple.
14. Our best theories of the natural world are simple.
18. Therefore, necessarily our best metaphysical theories of the natural world are simple.

One cannot establish a necessary conclusion from premises that are not themselves necessary.

So perhaps we should rewrite the argument using premise 8 instead.

17. If our best theories of the natural world are simple, then necessarily our best metaphysical theories of the world are also simple.
14. Our best theories of the natural world are simple.
18. Therefore, necessarily our best metaphysical theories of the world are simple.

Now the argument is valid, and we get the conclusion that we intuited. But premise (17) is bizarre: actually simple physics entails necessarily simple metaphysics.[8] So what should we do?

To make a valid argument out of the first formulation of the argument, we would need to ensure that its second premise is also necessary, yielding us:

16. Necessarily, if our best physical theories of the world are simple, our best metaphysical theories of the world must also be simple.
19. Necessarily, our best physical theories of the world are simple.
18. Therefore, necessarily, our best metaphysical theories of the world are also simple.

A curiosity emerges here. In adding the necessity operator to premise (14), we are now giving up on part of the challenge to which we initially responded. The challenge from the philosophers of science was the suggestion that it was somehow our commitment to simplicity in physics that underlay our commitment to

[8] Thanks to Heather Demarest and Jonathan Schaffer for encouraging me to clarify this point, and to Heather for the apt formulation of the problem with premise (17).

simplicity in metaphysics, that we could somehow glean metaphysical simplicity from the success of science.

But if I'm right, and this is the only way to salvage the argument, notice now that both the simplicity of the physical laws of nature and the simplicity of our metaphysical theories are dependent on something else. That is, however we construe the necessity operator, it is no longer the success of simple theories in physics that alone underlies our putative commitment to simplicity in metaphysics. We need some other reason that explains them both.

If we wish to strive for the end of the journey which we began, we must construe necessity here as metaphysical necessity. And here we are likely to balk at premise (19). Why is it necessarily the case that the best physical theory of the natural world is simple?

Let's start with the ontological parsimony, and recall Baker's example (though not his reasoning.) Suppose it strikes us as reasonable to prefer a physical theory that postulated neutrinos instead of $\frac{1}{5}$ neutrinos arranged in packets of five. If pressed for a reason for our preference, we might argue that given the phenomena that have been observed, there is no good reason to postulate packets of neutrinos when postulating the single neutrino will do so. That is, there would need to be a reason for us to add extra entities.

In other words, it looks like we are accepting Ockham's razor: entities are not be multiplied beyond necessity. Yet if we dig further into the motivations for Ockham's razor, we will find that its underlying motivation also allows us to posit the elegance of the laws. Why should we not hold that entities are not to be multiplied beyond necessity? To put it plainly, to add more entities than necessary would be to add entities *without a sufficient reason for doing so*. Our approach to ontology should be explicable. A commitment to ontological parsimony sneaks in a commitment to the principle of sufficient reason.

Once we have a commitment to the principle of sufficient reason, we then can argue that it is necessary to postulate only elegant laws. An elegant law is one that, among other virtues, allows the theorist to explain a lot of phenomena with minimal theoretical payout. Suppose that one is deciding between less elegant and more elegant formulations of a set of laws. On the assumption that both sets of laws explain all of the phenomena, there is no reason to prefer the more complicated theoretical formula when the simpler one suffices. That is, while the principle of sufficient reason does not by itself guarantee that everything has a simple explanation for its existence, it does exert a kind of selection pressure toward simple explanations whenever possible.

Yet one might shiver at the prospect of having to accept the principle of sufficient reason. With great rationality comes great responsibility: commitments to necessitarianism, the existence of God, and so forth. Most philosophers today will not want to accept the principle of sufficient reason.

It may be possible to interpret the necessity box as a grounding relationship, where $\Box_\zeta$ means "necessary given certain fundamental features of reality."

$\Box_\zeta$ (If our best physical theories of the world are simple, our best metaphysical theories of the world are simple.)

$\Box_\zeta$ (Our best physical theories of the world are simple.)
$\Box_\zeta$ (Our best metaphysical theories of the world are simple.)

Not everything requires an explanation, but those that do require explanations are grounded in those that do not. Suppose there are some fundamental features of reality that ground everything else. These fundamental features themselves need no further explanation, perhaps because they are not the kinds of things that need to be explained. They in turn explain the existence of everything else. If fundamentality includes simplicity, then there would be a good reason to think that the metaphysical principles that describe the world fundamentally would also have to be simple.

So we might be able to save simplicity without accepting the principle of sufficient reason by incorporating it into grounding. I say might because it is not at all clear that the proponent of grounding would be able to draw a principled line between the entities that need to be explained and the entities that do not.[9] Moreover, one might think that if the principle of sufficient reason explains a commitment to simplicity, then that is a good reason to think that simplicity itself should not be taken as fundamental, as it can be explained in terms of something more fundamental. Metaphysicians desiring metaphysical motivations for science might be rationalists after all!

But whatever the eventual interpretation, notice the problem that has developed for the Quinean methodology. Quine's model assumes a flat ontology; nothing is more fundamental than anything else. Metaphysics is an afterthought to physics.

Yet even if we can find a way to stop short of the principle of sufficient reason, if we want to admit simplicity as a metaphysical criterion, we will need to work it into our metaphysical structure. The metaphysics must be prior to the physics.

It is of course open to us to interpret 'necessity' non-metaphysically. For example, we might interpret simplicity as an aesthetic preference, and so be inclined to read the above argument in the following way:

$\Box_a$ (If our best physical theories of the world are simple, our best metaphysical theories of the world must also be simple.)
$\Box_a$ (Our best physical theories of the world are simple.)
$\Box_a$ (Our best metaphysical theories of the world are simple.)

That is, we can construe necessity as expressing no more than our taste for desert landscapes. Any number of conditions could be substituted for aesthetic preferences, of course: our cognitive limitations, compatibility with our other philosophical or theistic commitments, and so forth. Notice, however, that if we construe necessity in this way, we are implicitly conceding what Bennett argued. While there may be grounds for preferring simpler metaphysical theories, those reasons are global, and not part of our general metaphysical commitments.

In summary, here's the problem. We may resolve Quinean metaphysical disputes with simplicity if and only if simplicity can be justified as a metaphysical criterion. To justify simplicity as a metaphysical criterion, however, requires that we give up

[9] See Della Rocca (2000) for some reasons to think that once one accepts explicability arguments with respect to existence, one must accept the full-blown principle of sufficient reason.

on the Quinean conception of metaphysics. If we don't take simplicity to be a metaphysical criterion, then we cannot resolve metaphysically disputes locally, and many (or all!) such disputes should be dismissed.

We have arrived back where we began.

5 Conclusions

In this paper, I've investigated a common reflexive justification for the use of simplicity in the choice of metaphysical theories, that metaphysical simplicity is justified because simplicity is a guide to truth in the natural sciences. I've shown that the arguments for simplicity in the natural sciences cannot be easily transformed into arguments for simplicity in metaphysics, and that in order to preserve simplicity as a metaphysical criterion, we need to provide independent motivation to accept simplicity on metaphysical grounds.

If we cannot do that, then when we appeal to simplicity to break a tie between two otherwise explanatorily equivalent metaphysical theories, then we are conceding that metaphysics cannot solve its own disputes. If we wish to resolve them, we will be turning to explicitly non-metaphysical reasons. And if that suggests that we should spend our time and energy not on metaphysics, but on other features of our intellectual project—epistemology, even aesthetics—that will help us resolve it.

Alternatively, we can reconceive of the project of metaphysics entirely; conceiving of metaphysics as in a subservient role to physics arguably robs metaphysics of power and autonomy. Here is the challenge: if simplicity is to be a metaphysical criterion, it needs to be built into the conception and structure of metaphysics itself. The rationalists have a way to do it. Are there others?

I didn't promise a *simple* solution.

References

Baker, A. (2003). Quantitative parsimony and explanatory power. *British Journal of Philosophy of Science, 54*, 245–259.

Bennett, K. (2009). Composition, colocation, and metaontology. In D. J. Chalmers, D. Manley, & R. Wasserman (Eds.), *Metametaphysics* (pp. 38–76). Oxford: Oxford University Press.

Della Rocca, M. (2000). PSR. *Philosopher's Imprint, 10*(7), 1–13.

Hirsch, E. (2005). Physical-object ontology, verbal disputes, and common sense. *Philosophy and Phenomenological Research, LXX*(1), 67–97.

Hirsch, E. (2009). Ontology and alternative languages. In D. J. Chalmers, D. Manley, & R. Wasserman (Eds.), *Metametaphysics* (pp. 231–259). Oxford: Oxford University Press.

Huemer, M. (2009). When is parsimony a virtue? *Philosophical Quarterly, 59*(235), 216–236.

Lewis, D. K. (2001). *Counterfactuals* (2nd ed.). Blackwell: Wiley.

Quine, W. V. O. (1966). On simple theories of a complex world. In W. V. O. Quine (Ed.), *The ways of paradox* (pp. 242–245). New York: Random House.

Schaffer, J. (2009). On what grounds what. In D. J. Chalmers, D. Manley, & R. Wasserman (Eds.), *Metametaphysics* (pp. 347–383). Oxford: Oxford University Press.

Sober, E. (1988). *Reconstructing the past: parsimony, evolution, and inference*. Cambridge, MA: The MIT Press.

Swinburne, R. (1997). *Simplicity as evidence of truth*. Milwaukee: Marquette University Press.

Willard, M. B. (2013). Game called on account of fog: Metametaphysics and epistemic dismissivism. *Philosophical Studies*. doi:10.1007/s11098-013-0097-7.