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Fundamentality and the prior probability of theism

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Abstract: Paul Draper has recently developed an account of intrinsic probability according to which a theory's intrinsic probability is determined by its modesty and coherence. He employs this account in an argument that Source Physicalism (SP) and Source Idealism (SI) are equally intrinsically probable. Since SP and SI are not exhaustive, and Theism is one very specific version of SI, it follows that the intrinsic probability of Theism is very low. I argue here that considerations of fundamentality show that more work needs to be done to defend the claim that P (SP) = P(SI).

Introduction

Those who take the Bayesian approach to the Theism debate must give some account of the prior probability of Theism, and this requires a criterion for determining the intrinsic probability of hypotheses.[1] Richard Swinburne has given an account of intrinsic probability according to which the intrinsic probability of a hypothesis is determined by its simplicity and scope (or content), although primarily by its simplicity (Swinburne (2004), 53–56). From this theory of intrinsic probability Swinburne argues that Theism is more intrinsically probable than any competing explanation of the existence of the type of world we inhabit (*ibid.*, 336–342).[2] However, it is not clear how Swinburne can give any precise comparison of the prior probabilities of Theism and its competitors.

Paul Draper has recently developed a promising approach to comparing the prior probabilities of Theism and its competitors which identifies two mutually exclusive and very general hypotheses, Source Physicalism (SP) and Source Idealism (SI), which he argues are equally intrinsically probable due to their symmetry with regard to his criteria of intrinsic probability – coherence and scope (the inverse of which he calls 'modesty'). Since Theism is one version of SI, Theism can

have an intrinsic probability no greater than ½, and the amount of probability space taken up by both non-Theistic versions of SI and competitors to both SI and SP provides parameters for determining roughly how much less than ½ is Theism's intrinsic probability. In what follows I will present Draper's argument for the low prior probability of Theism before developing an objection to his argument that SP and SI are equally intrinsically probable.

Draper's argument

According to Draper's definitions, 'Source Physicalists . . . believe that the physical world existed before the mental world and caused the mental world to come into existence' whereas 'Source Idealists believe that the mental world existed before the physical world and caused the physical world to come into existence' (Draper (2017), 68). SP and SI do not completely cover the space of possibilities, since there are other views that do not fall under either category (e.g. panpsychism, axiarchism, and eliminativism), and these views Draper groups together under the title 'Otherism' (see *ibid.*, 69). So, SP, SI, and Otherism form a mutually exclusive and exhaustive set of views (and so their probabilities sum to 1). The argument for the low prior probability of Theism, then, proceeds in the following way:

(D1) The prior probability of SP is equal to the prior probability of SI.

(D2) The prior probability of Otherism is greater than zero.

(D3) Therefore, the prior probability of SI is less than ½.

(D4) The prior probability of Theism is many times less than the prior probability of SI.

(D5) Therefore, the prior probability of Theism is many times less than ½.

Premise (D4) follows from the fact that Theism is one version of SI, and takes up only a small proportion of the SI probability space.

> Theism is much less probable intrinsically than Source Idealism because it claims that Source Idealism is true and then adds two other claims to Source Idealism, namely, the claim that the mental reality responsible for the existence of physical reality is a person and the further very immodest claim that this person is omnipotent, omniscient, and omnibenevolent. (*ibid.*, 72)

So, the larger the proportion of the probability space taken up by non-Theistic versions of SI, the lower the prior probability of Theism. Additionally, the higher the prior probability of Otherism, the lower the prior probability of SI and thus of Theism.

One may worry about the status of certain versions of theism on Draper's argument. For instance, process theism holds that neither God nor the universe is the original cause of the other, so it would count as a form of Otherism, rather than SI. However, Draper's target is a classical or traditional form of theism (what he calls

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theism 'with a capital "T" ') according to which 'a personal God who is all powerful, all knowing, and perfectly good created the natural world', so he is fine with some accounts of God (small-'T' theisms) counting as versions of Otherism (*ibid.*, 65, 69). Nevertheless, there are versions of Theism (big-'T') in which God creates a universe that does not begin to exist but exists co-eternally with God. So, on this view God caused the physical world to come into existence but did not exist *before* the physical world. However, this view is compatible with SI as long as we understand the priority of the mental to be causal priority, rather than temporal priority. This would mean that on SI, the mental exists temporally before or simultaneously with the physical (and SP holds the reverse).[3]

The rest of this article will focus on (D1). Why should we think that SP and SI are equally intrinsically probable? Draper's argument for (D1) relies on his theory of intrinsic probability. Draper introduces his theory by comparing it to Swinburne's, which takes the relevant criteria for determining intrinsic probability to be modesty (i.e. smallness of scope or content) and simplicity. Draper, by contrast, takes modesty and coherence to be the criteria for determining intrinsic probability (see Swinburne (1997); *Idem* (2004), ch. 3; Draper (2016)). Both Swinburne and Draper agree that 'the less a hypothesis says that might be false (that is, the more modest it is), the more likely it is a priori that the hypothesis is true' (Draper (2016), 49). Swinburne understands the criterion of simplicity to involve a number of different facets, including quantitative and qualitative parsimony, intelligibility, and elegance, and parsimony with regard to laws, the variables they relate, and mathematical terms (see *ibid.*, 50, and Swinburne (1997), 29–32).[4] The coherence of a hypothesis is a matter of how well its parts (i.e. its logical consequences) fit together (see Draper (2016), 53). For example, where all else is equal, the more real uniformity a hypothesis attributes to the world, the more coherent it is (*ibid.*, 53–55).[5] Additionally, in order to determine fully the intrinsic probability of a hypothesis, it is not enough simply to identify the features of a theory that affect its intrinsic probability – such as modesty and coherence (or simplicity). It also matters how modesty and coherence (or simplicity) are weighed against each other, since one hypothesis might be more modest but less coherent (or simple) than another, and we must decide whether one criterion is more important, and, if so, to what degree.[6]

From Draper's account of intrinsic probability it follows that either SP or SI will have a higher intrinsic probability only if one is more modest or more coherent than the other. But, Draper argues that the fact that the two hypotheses are highly symmetrical justifies thinking that they do not differ in either modesty or coherence, and so that they are equally intrinsically probable (see Draper (2017), 72–73). It is clear that SP and SI are in fact highly symmetrical, since both claim that the same things exist, and the only difference seems to be the direction of the dependence relation – for SP, the mental depends on the physical, while for SI, the physical depends on the mental.[7] However, Draper thinks that the difference in dependence does not pose a problem because 'for any position

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that a source physicalist takes on how the mental and physical worlds are related ontologically, there is a parallel, equally modest and equally coherent position that a source idealist might take, and vice versa' (*ibid.*, 71). So, neither hypothesis appears to say any more about the world than the other and the parts of each hypothesis seem to fit together equally well.

Draper does address one challenge to the equal coherence of the two hypotheses. 'Some will claim that, simply by examining the concepts of the physical and the mental, one can discern either that the physical is more likely to be an original cause of the mental or vice versa' (Draper (2013), 71). However, he suggests a Humean response to this objection, saying that we cannot 'simply by examining the noncausal properties of an entity, know unaided by any experience what that entity's effects or causes are likely to be' (*ibid.*). Yet, even if we grant the Humean claim that the difference in dependence does not allow us to favour one hypothesis over the other, there is another important difference between the two hypotheses – a difference in fundamentality. SP does not just state that the physical produces the mental, but that the physical is more fundamental than the mental, while SI holds the opposite.[8] So, in order to determine whether we should accept (D1) we must enquire into whether or not this difference in fundamentality favours either SP or SI. (D1) holds only if the difference in fundamentality does not lead to a difference in modesty or coherence, or if any cost in modesty (or coherence) for one hypothesis is counterbalanced by a benefit in coherence (or modesty) for the other. I will argue that the difference in fundamentality may lead to a difference in modesty and coherence which is not counterbalanced.

I will present two arguments that the difference in fundamentality between SP and SI gives us reason to doubt Draper's claim that these hypotheses are equally intrinsically probable. First, I will argue that the hypothesis that the physical is more fundamental than the mental may involve saying more about the world (i.e. include more content) than the hypothesis that the mental is more fundamental than the physical, and thus may be less modest (and vice versa). Second, I will argue that the hypothesis that the physical is more fundamental than the mental may involve a commitment to more types of fundamental entities than the hypothesis that the mental is more fundamental than the physical, and thus may be less coherent (and vice versa).

Modesty argument

(M1) If theories T_1 and T_2 each hold that all the same things exist and each says as much as the other about those things except that T_1 holds of something (or some type of thing) x that it is fundamental while T_2 is neutral with regard to x's fundamentality, then T_2 is more modest than T_1.[9]

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(M2) SP and SI each hold that all of the same things exist and each says as much as the other about those things except that SP (or SI) may hold of something that it is fundamental while the other is neutral with regard to its fundamentality.[10]

(M3) Therefore, it may be that SI (or SP) is more modest than SP (or SI).[11]

(M4) Therefore, it may be that SI (or SP) has a higher intrinsic probability than SP (or SI).

Premise (M1) follows from Draper's definition of modesty. If the antecedent of (M1) is true for two theories, T_1 and T_2, then facts about *x*'s fundamentality may falsify T_1, but not T_2. So, T_1 says more than may be false, and is thus less modest, than T_2. The only way to deny (M1) on Draper's theory of modesty would be to hold that the advantage T_2 gains in modesty over T_1 by saying less that could be false about fundamentality in one part of the theory forces it to say more than T_1 in some other part of the theory. The inference from (M3) to (M4) follows from Draper's theory of intrinsic probability, but recall that an asymmetry in modesty will result in an asymmetry in intrinsic probability only if there is no counterbalancing asymmetry in coherence. So, if SI is more modest than SP, it will be more intrinsically probable only if SP does not have a counterbalancing edge in coherence.[12] The first part of (M2) – that SP and SI each hold that the same things exist and (fundamentality aside) each says as much as the other – follows from Draper's definitions of SP and SI and his Humean response to the difference in dependence. Regarding the second part of (M2) – that they may differ in how much they say about fundamentality – while SP's commitment to the fundamentality of the physical is counterbalanced by SI's commitment to the fundamentality of the mental, it may be that SP's commitment will entail that something else is fundamental towards which SI is neutral. I will provide an illustration of the second part of (M2) in a later section. 'May' in (M2–4) is intended to capture an epistemic possibility – determining whether one should hold that SI and SP are equally modest depends on an analysis of the mental and the physical which brings out their fundamental commitments. However, my goal is only to show that it is not the case that there *must* be counterbalancing factors; I am not claiming that $P(SI) \neq P(SP)$, but rather that more work needs to be done to show that $P(SI) = P(SP)$.

Coherence argument

(C1) If T_1 and T_2 are committed to the existence of all the same types of things, but T_1 holds that more of those are fundamental than does T_2, then T_2 is more qualitatively parsimonious than T_1.

(C2) If T_2 is more qualitatively parsimonious than T_1, then, *ceteris paribus*, T_2 is more coherent than T_1.

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(C3) If T_2 is more coherent than T_1, then, *ceteris paribus*, T_2 has a higher intrinsic probability than T_1.

(C4) Therefore, if T_1 and T_2 are committed to the existence of all the same types of things, but T_1 holds that more of those are fundamental than does T_2, then, *ceteris paribus*, T_2 has a higher intrinsic probability than T_1.

(C5) SI and SP are committed to the existence of all the same types of entities, but SI may hold that more of those are fundamental than SP (or vice versa).

(C6) Therefore, SP may have a higher intrinsic probability than SI (or vice versa).

Premise (C3) follows from Draper's theory of intrinsic probability. As with (M2), the first part of (C5) follows from Draper's definitions of SI and SP, while the second part will be illustrated in the final section. In the rest of this section I will give a defence of (C1) before briefly considering (C2).

In his discussion of Ockham's Razor, Jonathan Schaffer has argued that an acceptable theory of parsimony must take fundamentality into account. On the traditional view of parsimony, which Schaffer rejects, 'The Razor' comes in two forms: the Ontological Razor, which states 'Do not multiply entities without necessity!' (this can be understood in terms of quantitative or qualitative parsimony), and the Conceptual Razor, which states 'Do not invoke concepts without necessity!' (Schaffer (2015), 645, 649). However, Schaffer thinks that our concern with parsimony should only extend to fundamental types of entities and to primitive concepts, and so the Razor should be replaced with 'The Laser', which states, in the ontological case, 'Do not multiply fundamental entities without necessity!' and, in the conceptual case, 'Do not invoke primitive concepts without necessity!' (*ibid.*, 647, 649). Schaffer argues for the Laser by saying that it is clearly preferable to the Razor in the conceptual case, and so, by analogy, we should accept the Laser in the ontological case. Just as we should, *ceteris paribus*, prefer a theory which defines five useful concepts from one primitive concept to a theory which takes those five concepts to be primitive, so we should, *ceteris paribus*, prefer a theory which grounds five types of useful entities in one type of fundamental entity to a theory that takes those five types of entities as fundamental (*ibid.*, 648–651). I think these considerations should similarly lead us, when all else is equal, to prefer a theory with one type of entity bringing about five types over a theory with five types of entity bringing about one type.[13]

On Schaffer's full account, only the fundamental entities are relevant for determining the parsimoniousness of a theory. However, for the sake of my argument, I need only take from Schaffer the weaker point that what a theory takes to be fundamental is relevant to its parsimoniousness (see *ibid.*, 649–651).[14] So, if parsimony is relevant to intrinsic probability, then accepting Schaffer's replacement

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of the Razor with the Laser as the proper way to understand parsimony introduces considerations of fundamentality into our discussion of intrinsic probability. (C1), then, is simply a weakened version of Schaffer's point.[15]

Let's move on to (C2). Consider an argument for (D1) similar in all respects to Draper's except that it employs Swinburne's account of intrinsic probability. Such an argument would be forced to deal with considerations of fundamentality, and thus accept (C2), since parsimony is one facet of simplicity on Swinburne's account of simplicity.[16] What about on Draper's theory of intrinsic probability? What is the relationship between parsimony and coherence for Draper? It seems that the same result would hold since Draper says that Swinburne's facet of qualitative parsimony 'follows from the criterion of coherence, because the more kinds of entities a hypothesis postulates, the more variety it attributes to the world' (Draper (2016), 56).

However, there seem to be cases in which the more qualitatively parsimonious theory will not be the more coherent. Consider a theory N (perhaps a sort of quasi-Neoplatonism) in which, beginning from some point in time, God produces a world with ever increasing complexity continuing infinitely into the future. Compare N with a similar theory N* according to which this production of increasing complexity continues up to a certain point in time, and then stops. N* is more qualitatively parsimonious than N, but it does not follow that it is more coherent. Each theory scores better with a different type of uniformity – N* is more qualitatively parsimonious, while N is more diachronically uniform – and it is not clear that either type of uniformity is reducible to the other. So, more qualitative parsimony does not entail better coherence, but it is one way for a theory to be more coherent and thus I think we should understand the relationship between qualitative parsimony and coherence on Draper's view as requiring a *ceteris paribus* condition, as stated in (C2).

In addition to (C2), a few premises of the coherence argument contain *ceteris paribus* clauses allowing for counterbalancing factors. In (C2) all else will be equal as long as no other aspect of coherence favours T_1 so as to outweigh T_2's advantage in qualitative parsimony, and all else will be equal in (C3) as long as T_1 is not more modest than T_2 in a way that outweighs T_2's advantage in coherence. The *ceteris paribus* clause in (C4) incorporates those in both (C2) and (C3). Whether considerations of fundamentality may lead to genuine asymmetries between SI and SP or whether any apparent asymmetry *must* be counterbalanced will be addressed in the next two sections.

By giving the Coherence Argument, I have attempted to show that considerations of fundamentality are relevant to parsimony, which is in turn relevant to coherence. Thus, within Draper's theory of intrinsic probability, fundamentality must be taken into account in assessing (D1). However, an alternative approach would be simply to claim that an adequate theory of intrinsic probability must include qualitative parsimony as a determinant, and so if it turns out that Draper's theory does not do this, his theory should be amended to include

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qualitative parsimoniousness alongside modesty and coherence as determinants of intrinsic probability. The coherence and modesty arguments, however, achieve my intended conclusion while requiring minimal amendment to Draper's theory.

Are dependence and fundamentality distinct?

Before giving the promised illustration of (M2) and (C5), I will address the potential objection that considerations of fundamentality are not in fact independent from considerations of dependence, since the claim that the physical depends on the mental entails that the mental is more fundamental than the physical (and the claim that the mental depends on the physical entails the reverse). For this reason, the objection goes, claims about dependence and fundamentality do not come apart in a way that could make SI and SP probabilistically asymmetrical. In other words, if Draper's Humean argument successfully shows that (D1) faces no problem from the difference in dependence between SI and SP, then in doing so it also shows that there is no problem from the difference in fundamentality.

In response, I think I may give an alternative formulation of my argument according to which fundamentality is not separate from dependence. Rather, we may take fundamentality to be one facet of dependence along with productive power – which is just how likely one type of thing is to be the original cause of another. Then, to say that x depends on y (in the sense that y is the original cause of x) is to say that y is more fundamental than x and that y brings about the existence of x. I think that it can be shown that fundamentality and productive power are genuinely separate facets of dependence so that both must be taken into account when we consider how the difference in dependence impacts the comparative intrinsic probabilities of SP and SI.

Considerations of fundamentality force us to consider the very nature of physical things and of mental things in order to determine how likely it is that a physical thing (or a mental thing) exists as the fundamental type of thing that there is. Doing this requires an analysis of the concepts of 'physical thing' and 'mental thing' to determine whether the hypothesis that a physical thing exists fundamentally is more or less modest or coherent than the hypothesis that a mental thing exists fundamentally. However, considerations of productive power force us to enquire just into the productive capacities of physical things and of mental things. For instance, to enquire about the productive power of the physical is to ask, given that the physical exists, how modest and coherent is it to suppose that the physical will be an original cause of the mental. It may turn out, for example, that the hypothesis that a physical thing exists is more coherent than the hypothesis that a mental thing exists, but that the hypothesis that a mental thing produces a physical thing is more coherent than the reverse. In such a case, considerations of fundamentality would favour SP, while consideration of productive power

would favour SI. Thus, considerations of fundamentality and considerations of productive power are distinct, even if both are components of dependence.

However, Draper's Humean response only deals with productive power. Suppose we were in fact in the situation envisioned by Draper's Humean argument, in which we have no a priori reason to think that it is easier for the physical to produce the mental than for the mental to produce the physical. In this case, in which considerations of productive power do not favour either hypothesis over the other, we cannot yet conclude that the intrinsic probabilities of SP and SI are equal, since we must still ask whether physical things are, in their own right, more likely to exist fundamentally than are mental things. So, even if dependence and fundamentality are not distinct, this does not pose a problem for my argument since, if we take dependence to have fundamentality and productive power as separate facets, then Draper's Humean argument would not address the difference in dependence, but rather only one facet of dependence, productive power, leaving fundamentality unaddressed.

An illustration

Finally, to illustrate (M2) and (C_5) I will consider the Spatial Location Account (SLA) of the nature of physical objects according to which, to be a physical object is to be an object with spatial location (Markosian (2000), 375). On SLA, the claim that physical things exist will entail a commitment to the existence of another type of thing – space.[17] This, however, would mean that SP has an additional ontological commitment to something at least as fundamental as physical objects, and so SP incurs a cost in parsimony. Now, it is true that, on SLA, SI also inherits the ontological commitment to space since it too is committed to physical objects, but, if we accept Schaffer's point that fundamentality is important for parsimony, then the loss of qualitative parsimony is not shared equally by the two theories. On SLA, SP must hold that the layer(s) of reality more fundamental than the mental cannot include fewer than two types of entity, while, on SI, that which is more fundamental than the physical need only include one type of entity, since it may be that the mental produces both space and physical objects. Thus, if on SLA there are no counterbalancing problems for SI, then SI would be intrinsically more probable than SP. I see no good reason to think that there *must* be any counterbalancing problems, but I will proceed to present and respond to one argument to the contrary.

On SLA, SI would be required to hold that the mental must have the productive power to give rise to both space and physical objects, while SP would only be required to hold that the physical is able to produce one type of thing, the mental. So, one may object that while SI appears to gain an advantage over SP in fundamental parsimony, that apparent advantage is necessarily counterbalanced by SI's requiring more productive powers of its fundamental type of

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entity than does SP. Thus, it seems that gains in fundamentality will always be offset by losses in productive power and that these factors will cancel each other out.

I have two responses to this objection. First, it seems to require that distinct causal powers are necessary for bringing about distinct types of entity, but it is not clear why we should think that a single productive power cannot give rise to different types of entity. Such a claim about causal powers would require further defence. Second, even if there is a trade-off between fundamentality and productive power, it does not follow that they are necessarily counterbalancing because this depends on how we weigh considerations of fundamentality against productive power. This is analogous to the requirement that a full account of the criteria for determining intrinsic probability depends on how we weigh modesty against coherence (or simplicity).

It should be clear how this illustration also applies to the Modesty Argument, specifically the second part of (M2). On SLA, both SI and SP are committed to the existence of space, but SP claims that space is at least as fundamental as the physical, while SI is not committed to any claims about the fundamentality of space. So, on SLA, SP says more about the world that may be false, and thus is less modest than SI. Since, as with the Coherence Argument, there is no reason to think that anything in this account requires there to be some counterbalancing immodesty in SI, it follows that, on SLA, SI has less content than SP, and is thus more modest.

My intention in using SLA as an illustration is not to endorse the view, but I think that it is epistemically possible that SLA is an acceptable account of the physical. I have tried to show that one who takes SLA to be a live option should accept (M2) and (C_5). Furthermore, since other accounts of the physical and of the mental may similarly show asymmetries in fundamentality between SP and SI, everyone should accept (M2) and (C_5).

Conclusion

Draper's argument provides a promising method for dividing up the prior probability space on the Bayesian approach to Theism. However, I have argued that the importance of fundamentality to intrinsic probability shows that more work must be done to establish (D_1). My goal in this article has not been to show that (D_1) is false, but rather that it requires further defence. Nor have I tried to show that Theism is more intrinsically probable than Draper thinks, since it may be that SI involves more fundamental commitments than does SP. However, this judgement depends on how a more complete analysis of the mental and the physical turns out.[18]

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Notes

1. The intrinsic probability of a hypothesis is its probability given only tautological and a priori information as background knowledge. Since, as Swinburne points out, the only background knowledge available when assessing the prior probability of Theism is tautological and a priori information, the prior probability of Theism is its intrinsic probability. Evidence such as the existence of a physical universe and the existence of evil do not factor into the priors See Swinburne (2004), 67–68, 93.
2. Competitors he considers include naturalism, polytheism, and limited theism (see *ibid*., 339–340).
3. I assume the impossibility of backward causation.
4. For Swinburne, these facets alone determine simplicity only of highest-level explanatory hypotheses, such as Theism. See Swinburne (2011).
5. Draper gives the following account of *real* uniformity: 'an instance of uniformity (or variety) is real only if its being an instance of uniformity (or variety) instead of an instance of variety (or uniformity) does not depend on the linguistic machinery or conceptual scheme used to describe or apprehend it' (*ibid*., 55).
6. For Swinburne, simplicity is given more weight than modesty (see Swinburne (1997), 19). Draper considers the implications for Swinburne's natural theology of giving coherence much greater weight than modesty and of not giving coherence much greater weight, but he does not commit himself to either position (see Draper (2016), 61–63).
7. It is important to note that the dependence involved here is causal, not metaphysical, and our concern is with the *original* cause of the physical or the mental, not the causal dependence of each physical or mental thing. 'Source physicalists need not claim that mental entities never cause physical entities or other mental entities, but they must claim that there would be no mental entities were it not for the prior existence (and causal powers) of one or more physical entities' (*ibid*., 68).
8. If there is only the physical and the mental, then SP holds that the physical is the fundamental type of thing, while SI holds the reverse. In much of the discussion that follows I will assume the truth of the antecedent.
9. This premise could also be stated more generally to allow for degrees of fundamentality, and the other stages of the argument adjusted accordingly. The same holds for the Coherence Argument.
10. SP and SI say different things about dependence, but if Draper's Humean argument is right, each says *as much* as the other about dependence.
11. The argument from (M1)-(M3) can be stated more formally, where the modality involved is epistemic:

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(1) $\Box(T_1)(T_2)(\,(T_1$ & T_2 hold that all the same things exist) & (T_1&T_2 each says as much as the other about those things (except about fundamentality)) & (T_1 says more about fundamentality than T_2)) $\rightarrow$ T_2 is more modest than T_1).

(2) $\Box(T_1$ & T_2 hold that all the same things exist) & $\Box(T_1$&T_2 each says as much as the other about those things (except about fundamentality)) & $\Diamond(T_1$ says more about fundamentality than T_2).

(3) Therefore, $\Diamond(T_2$ is more modest than T_1).

12. In order to not be redundant, I let 'may' in (M4) incorporate this *ceteris paribus* clause.
13. Schaffer himself thinks there is a very close analogy between metaphysical and causal dependence. See Schaffer (2016).
14. I think this approach has the advantages of being able to avoid problems for Schaffer (Baron & Tallant (forthcoming), 3–5) and of being able to handle inter-level parsimony considerations (see *ibid*., 7–8).
15. Qualitative parsimony at the fundamental level is part of the motivation of Dougherty's criticism of Draper (although in their exchange the arguments are stated in terms of simplicity rather than coherence, and naturalism and theism rather than SP and SI). (Dougherty (2013), 80–81.) Dougherty argues that naturalism is less simple than theism, because naturalism is committed to all the fundamental types of particles in the standard model in particle physics, while theism is committed to just one type of fundamental being, and a very simple type of being at that. However, Dougherty's argument is not about *intrinsic* probability, since it relies on *a posteriori* information from the standard model. Defenders of naturalism (or SP) may reply to Dougherty by denying that they are committed to the 16 types of particles of the standard model as being causally fundamental.
16. In earlier work, Draper states his argument in terms of simplicity:

> On many theories of simplicity (especially theories that equate simplicity with ontological parsimony or with elegance), Naturalism and Supernaturalism will turn out to be equally simple, because they have exactly the same ontological commitments, they employ exactly the same concepts, and neither can be formulated more concisely than the other. (Draper (2013), 71; see also *Idem* (2001))

17. I assume here that SLA presupposes a substantivalist view of space. Perhaps a non-substantivalist version of SLA could be constructed, but substantivalism is the most natural view of space to pair with SLA. Also, one may object that although space is physical, it is not a physical *object*, and that if space is physical and gives rise to physical objects, then SP would be committed to only one type of fundamental entity on SLA. However, Markosian is using 'object' here in a way that covers all entities, and so does not allow for such a response. 'Given this way of understanding the word "object", our investigation into the nature of physical objects will be an enquiry into the nature of physicality' (*ibid*., 376). (However, see also Markosian's (2015) later ontology of 'things' and 'stuff'.)
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