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Contents

Perspective Lost?

Nonnaturalism and the Argument from Ethical Phenomenology

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In this paper, I criticize the most prevalent positive argument for ethical nonnaturalism, the *argument from ethical phenomenology*. According to it, nonnatural entities are part of the best explanation of the phenomenology of ethical deliberation; therefore, nonnaturalism is true. The argument blinds out the external, empirically informed perspective on ethical deliberation. I argue that doing so is methodologically unwarranted unless we already knew that external evidence is irrelevant in metaethics. Many nonnaturalists believe in this irrelevance because they take ethics to be "autonomous," "just too different," or the like. To justify this claim, however, they need a *phenomenology-independent* argument—or else they're going in circles. I conclude that solely phenomenology-based arguments for nonnaturalism fail. Consequently, nonnaturalists need to change their strategies and actively embrace the external perspective.

In this paper, I develop a methodological challenge for ethical nonnaturalism. The challenge is methodological because it concerns the way many nonnaturalists argue for their views. I suggest that there is an overlooked problem for a central and prevalent positive argument for nonnaturalism, the *argument from ethical phenomenology*. This problem, I intend to show, ultimately renders nonnaturalism indefensible—at least in so far as the view is solely based on this argument.

Let us start by clarifying the goals of metaethical theorizing. Here is a useful characterization:

> [Metaethics is the] theoretical activity which aims to explain how actual ethical thought and talk—and what (if anything) that thought and talk is distinctively about—fits into reality. (McPherson and Plunkett 2018, 3)

That is, metaethics concerns the nature of moral thought, moral language, moral facts, moral properties, and moral knowledge.[1]

Nonnaturalists believe that ethical thought and talk involves nonnatural entities.[2] What does that mean? Nonnatural entities are thought to be categorically distinct from, or "something over and above," the natural (Enoch 2011, 101).[3] Nonnaturalists typically do not claim that *all* ethical entities are nonnatural. Some ethical entities are "mixed"; they consist in a combination of natural and nonnatural entities. (For example, the fact that Anna's hitting Ben is wrong consists in a natural part—the hitting—and a nonnatural part—the hitting's wrongness.) But, crucially, nonnaturalists claim that the *most fundamental* ethical entities are "purely" nonnatural (cf. Scanlon 2014, 36–37). In this sense, they are categorically distinct from, or something over and above, natural entities.[4]

Why believe that ethical entities are nonnatural? One prevalent nonnaturalist argument—the argument from ethical phenomenology—takes the form of an inference to the best explanation and consists of two steps: First, describe the phenomenology of ethical deliberation. Second, show that the best explanation for it—the best explanation for why *this* is what ethical deliberation is like—involves the existence of nonnatural entities.

The typical naturalist response to the argument from ethical phenomenology is that there are better explanations for the phenomenology of ethical deliberation than the existence of nonnatural entities. However, we will pursue a different path here. Our methodological challenge is logically prior to

1 The characterization is neutral regarding the controversy between naturalism and nonnaturalism. Throughout this paper, I use "ethical" in a wide sense, covering "normative" and "moral."

2 I use "entities" as an umbrella term covering facts, properties, and relations. Proponents of nonnaturalism include Audi, R. (2004); Cuneo (2007a); Dancy (2006); Enoch (2011); FitzPatrick (2008); Halbig (2007); Huemer (2005); McNaughton (1996); Shafer-Landau (2003). Two classic proponents are Price (1787) and Ross (1930). For an introduction, see Stratton-Lake (2020). Enoch (2018) presents a helpful overview of objections to nonnaturalism. For a more detailed discussion of some of the central issues surrounding it, see Wedgwood (2007, 207–220); Enoch (2011, 140–150), Street (2006); Joyce (2006); McPherson (2012, 2013).

3 Maguire (2018) formulates this idea as the "metaphysical autonomy" of ethics. It is the idea that ethical facts cannot be "fully grounded" in non-ethical facts. Pigden (1989) calls the same kind of autonomy "ontological." For the notion of "ground," see Audi, P. (2012); Fine (2012); Rosen (2010).

4 In the following, I will assume that the distinction between the natural and the nonnatural is clear enough. If it wasn't, I think this would cause greater problems for the nonnaturalist than for the naturalist since we are all fairly certain that natural entities exist. For more detailed conceptions of the natural, see Copp (2003, 2007); Cuneo (2007b).

responses of this kind. We will try to show, not that there are better explanations, but that, quite generally, the outlined way of arguing for the existence of nonnatural entities is methodologically problematic. In short, our charge will be that it is methodologically unreasonable to explain or interpret ethical phenomenology by making metaphysical claims without taking into account another, more "external" perspective on ethical thought and talk.

Here is our plan. Section 1 introduces two distinct perspectives on mental processes and argues that both perspectives are important when it comes to understanding how these processes fit into reality. Ethical deliberation is a mental process, and so it will be worth reflecting on how, in general, philosophers should approach these processes. Based on the insights gathered here, section 2 introduces the CHALLENGE FROM LOST PERSPECTIVE in the context of David Enoch's work (Enoch 2011). This section is the heart of the paper. Section 3 discusses two nonnaturalist attempts to meet the challenge (from Enoch 2011; and Parfit 2011). Both attempts involve the so-called "just too different intuition." I show why they cannot succeed. At this point, it will hopefully have become clear that the argument from ethical phenomenology runs into a serious methodological problem. It can only get off the ground by presupposing something opponents of nonnaturalism (whether reductionists, expressivists, or error-theorists) deny, namely, that the external perspective is irrelevant for metaethical theorizing. The argument, in other words, begs the question on a methodological level. The final section sums up our main points and recommends a strategy to future nonnaturalists.

1 Reconciling Two Perspectives

As Mark Timmons (1999) and Terence Cuneo (2007b) have helpfully emphasized, the metaethical project can be described as a twofold endeavor. The first part of it is the "internal accommodation project": developing a theory of ethical thought and talk that fits well with "deeply embedded assumptions" of our ordinary ethical thought and practice (Cuneo 2007b, 854). In other words, the internal accommodation project aims for the theory that best accounts for our internal perspective on ethics, our ethical phenomenology. For example, it is (presumably) a deeply embedded assumption of ethical thought and talk that if an agent has a moral belief, she is pro tanto motivated to act accordingly. So, a plausible metaethical view should account for this feature.

The second part of the metaethical project is the "external accommodation project." Its goal is to come up with a metaethical theory that fits well with

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the "scientific world view." For example, a metaethical view should, at least, not directly contradict scientific insights into human nature as presented by, say, evolutionary biology or empirical psychology. Ideally, a metaethical view would get further evidential support from scientific research such that we, ultimately, get a unified "phenomenological-cum-scientific" theory of ethical thought and talk. However, it might also turn out that the ethical domain is "autonomous," and that scientific insights are simply irrelevant when it comes to the fundamental ethical entities. If so, the external accommodation project would (maybe trivially) be completed, but more about that later.

These two explanatory projects form the basis of our challenge to nonnaturalism.[5] In the following, we will distinguish the *internal* perspective from the *external* perspective. The internal perspective delivers the stuff relevant for the project of internal accommodation; it grants access to some process or practice "from within." The external perspective delivers what is necessary for the project of external accommodation; it provides insights into some process or practice "from without," by means of investigations that are not phenomenological.[6]

Importantly, I take the external accommodation project to cover more than just the methods of the natural sciences. What I mean is the a posteriori investigation of a process or practice that goes beyond phenomenological observations. For example, an anthropological investigation of the practice of monetary transactions counts as *external*. Such an investigation looks at the practice "from without," for instance, by focusing on the societal advantages of trade. It is based on insights gathered from the *external* perspective (and not based on the "phenomenology of money experiences").

Back to nonnaturalism. Is the idea that there are nonnatural entities the result of external or internal accommodation? As we are about to see in the following section, the claim typically results from an *internal* accommodation. Nonnaturalists usually start with ethical phenomenology and then proceed to explain it via metaphysical hypotheses that involve nonnatural

5 Railton (2017, 122–124) also mentions two "explanatory endeavors"; one of which starts with the "internal operations" of a practice, while the other tries to determine "what anchors or constrains it" in the empirical world.

6 There are similarities between our two perspectives and what Sellars has called the "manifest" and the "scientific image of man-in-the-world" (Sellars 1962). One underlying idea of this paper is to present, as Sellars puts it, "two whole ways of seeing the sum of things, two images of man-in-the-world" and attempt to "bring them together in a 'stereoscopic' view" (1962, 55). Thanks to Rico Gutschmidt for bringing Sellars to my attention.

entities.[7] But, importantly, these hypotheses are not directly "revealed" by internal, phenomenological analyses. Instead, they are *interpretations* of our phenomenology. And these interpretations are part of the nonnaturalists' internal accommodation project because they are solely based on phenomenological appearances.

Now, let us illustrate how both perspectives on mental processes can be brought together. Take the example of human disgust. We could either start investigating disgust "from within," that is, with its *what-it-is-like*. This would involve, say, analyzing the stream of thoughts and feelings present in disgust episodes. Or we could assume the external perspective and explain, "from without," what anchors disgust reactions in the empirical world. This would involve, for instance, analyzing (neuro)physiological processes and disgust's evolutionary function.

Start with the internal perspective. What is it like to encounter rotten food? You feel a strong inclination or desire not to get too close to the food. Touching it with your bare skin strikes you as repulsive. You might experience nausea. You want to get rid of the rotten food as quickly as possible. And if you imagine having accidentally put it into your mouth, your reactions further escalate. Yuck, away with it!

Now, trying to come up with a theory of disgust, you might discover that there are many other disgusting things. There are greasy, sticky, or malodorous objects, blood, mutilation, waste, hygiene violations, and even some animals (e.g., rats, cockroaches, worms, or flies). This can seem quite puzzling: Why is it that we react to all these *different* things in the *same* way?[8] Do they have something in common that might explain our reaction to them? Is there more to find out and understand about disgust than we can observe from the internal perspective?

Of course there is. But in order to find out more, we need to assume the external perspective. According to a widely accepted scientific theory, disgust is a behavioral extension of the immune system (Rozin, Haidt and McCauley 2008). It helps us to avoid pathogens. Very roughly: disgust is triggered when we encounter something potentially infectious, which helps us to avoid it.

7 An anonymous referee rightly points out that an external investigation of ethical deliberation might independently require nonnatural entities. I agree; maybe it would. But this won't affect our case against the argument from ethical phenomenology, namely, that it is methodologically unreasonable to construct a moral metaphysics on *solely phenomenological* grounds.

8 It really is the same way. The disgust reaction is one of the six basic emotional reactions (Ekman and Friesen 1971).

doi: 10.48106/dial.v76.i3

So, assuming the external perspective on disgust is quite illuminating. Undoubtedly, our understanding has been enriched by it. On top of the detailed phenomenological descriptions of what it is like to experience disgust, we now also understand what anchors disgust in the world as conceived by the natural sciences. We have a better grasp of its "point"—of why beings like us are disgusted in the first place. We also better understand why there is a whole range of different things that evoke the same disgust reactions. Blood, greasy objects, and rats are all "signs" for the presence of pathogens—and thus to be avoided. In a first and preliminary attempt, we might (partly) characterize disgustingness as something along the lines of *being an indicator of the above-some-threshold likelihood of the presence of pathogens*.[9]

I take it that disgustingness is a good example because of its evaluative or normative dimension.[10] What renders a property evaluative? McDowell (1985, 119–121) distinguishes non-evaluative properties that "merely" causally influence our responses from evaluative properties that *merit* certain responses. His criterion for assigning a property to the evaluative camp is "the possibility of criticism" (1985, 119). Now, I think it is fair to say that a dead rat in one's fridge *merits* disgust. If Fred discovered a dead rat in his fridge and showed no signs of disgust while happily starting to eat the open bowl of yoghurt that has been standing right next to the cadaver, we would ask ourselves what is wrong with him. Thus, I side with McDowell and state that disgustingness has an evaluative dimension. So, even in the case of properties with an evaluative or normative dimension, external insights can be quite resourceful.[11]

9 Cf. McDowell on an "explanation of fear" (1985, 121) that would comprise "fearful-making characteristics" and an account of how the property of fearfulness is related to "more straightforward properties of things."

10 Thanks to David Copp for this observation.

11 Christoph Halbig has objected to my example that the evaluative elements of disgustingness are rather weak and that, therefore, the example provides an insufficient basis for arguing against nonnatural *ethical* properties, which have, supposedly, stronger evaluative elements. (With McDowell, we can understand the strength of the evaluative elements of some property as the degree to which criticism is warranted in case someone aware of the relevant object does not show the respective responses.) In my example, criticizing Fred might seem less warranted than if he, say, showed no signs of resentment upon witnessing a cruel action. In response, I want to say that my point here does not depend on how strong exactly the involved evaluative elements are. My point is supposed to hold for *any* property analyzed from the internal perspective, whether strongly evaluative or not evaluative at all. While disgustingness is the example I use, we could come up with similar stories for fearfulness, admirability (arguably stronger), or tastiness (arguably weaker). So, I don't think the objection threatens my point.

The above considerations set the stage for the main claim of the current section:

> Methodologically speaking, an investigation of the nature of *any* mental process (and the involved entities) should take into account, and try to reconcile, *both* the internal and the external perspective.

Let me elaborate. Suppose Danielle wants to investigate the nature of disgust. She only cares for a phenomenological investigation, and so she never even considers taking into account what the sciences have to say. Scrutinizing disgust phenomenology for a few days, she ultimately concludes that disgustingness is a nonnatural property that human beings can apprehend via a special, intuition-like faculty. Some otherwise seemingly unrelated objects (blood and cockroaches, say) instantiate this property, and somehow the human mind can recognize it. Note that nothing in the phenomenology of disgust speaks against Danielle's disgust nonnaturalism; her view accounts (we may assume) for all the relevant phenomenological data quite well. But now suppose that Danielle's friend Fatima decides to tell her all the scientific insights about human disgust reactions. She tells her that disgust tracks possible sources of infection and that scientists consider this tracking function as its evolutionary point. Now, here is a crucial question: Coming to learn all the external facts about human disgust reactions, should Danielle's confidence in disgust nonnaturalism *change*?

I believe that, upon learning the external facts, it would be rational for Danielle to change her confidence in disgust nonnaturalism. These newly learned facts suggest—and this is a crucial step in my argument—that disgustingness is *closely metaphysically linked* to something quite natural: the likely presence of pathogens. It is due to this suggested metaphysical link that Danielle should take her disgust nonnaturalism to be *less plausible* than before.[12] Coming to know the external evidence, it is rational for Danielle to *decrease* her confidence in the idea that disgustingness is something categorically distinct, something "over and above," the natural. It must now seem *more likely* to her that disgustingness fits into reality by being a natural property. (Note that Danielle now *understands* why blood and cockroaches instantiate

12 Not *im*plausible, but *less* plausible.

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disgustingness.) Consequently, she should decrease her confidence in the idea that disgustingness is a nonnatural property.[13]

Based on these considerations, we may formulate a (not entirely catchy) slogan: *External evidence can shift the plausibility of metaphysical explanations of the phenomenology of mental processes*. As we just saw, the external perspective on human disgust reactions influences the plausibility of Danielle's disgust nonnaturalism. In virtue of plausibility shifts of this kind, it is methodologically unreasonable to draw metaphysical conclusions about the nature of disgustingness on *solely* phenomenological grounds. If we want to find out how any mental process fits into the reality that the empirical sciences have taught us so much about, it would be a bad idea to disregard possibly relevant empirical evidence.

We may put two points on record. Firstly, the internal and the external perspectives on disgust *complement each other*. Reconciling them helps us "anchor" disgust in the natural world. Moreover, adding the external perspective to Danielle's investigation changes the plausibility of her solely phenomenology-based metaphysical account of disgustingness. So, if you want to write a book titled "Disgust: What It Is and How It Fits Into Reality" you should take the external perspective into account. Not doing so would be methodologically unreasonable.

Secondly, our two perspectives deliver characterizations of disgust that look very different but are intimately linked. For example, part of a phenomenological description of disgust is the "yuck"-reaction, a strong inclination to get rid of the disgusting object. There seems to be a large gap between this description and the external story, which includes, besides a list of facts about neurophysiology and muscle twitches, that disgust is an evolutionary tool for tracking and avoiding possibly infectious objects. Despite this gap, there is an intimate connection. Plausibly, the disgustingness of the dead rat in your fridge (partly) consists in the likelihood of its being a source of infection. A

13 Moreover, Danielle might start to entertain the following consideration: If she could explain her disgust phenomenology without positing nonnatural entities, this would make her view more parsimonious and, thus, better. This, of course, presupposes that ontological parsimony is a theoretical virtue of explanations. While I do think it is, my argument in the main text does not depend on it. I say a bit more about parsimony on p. below. For further discussion, see Harman (1977); Huemer (2009); Cowling (2013); Jansson and Tallant (2017).

close metaphysical link between the dead rat's disgustingness and some set of scientifically accessible properties can, at least, *not be ruled out*.[14,15]

These two methodological conclusions, I think, apply to mental processes more generally. The case of disgust suggests that, whenever we investigate a mental process, we should take into account both perspectives on it—*unless* there is reason to believe that one perspective is utterly irrelevant for investigating the respective mental process.[16] As long as we don't know about such a reason, we should be open to all the internal and external evidence we might get hold on—which lets us formulate two methodological guidelines:

1. When you interpret or explain the phenomenology of mental processes (and the involved entities), take into account both the internal and the external perspective on the respective processes.
2. While the internal and the external perspective might describe mental processes (and the involved entities) in very different ways, do not take this to rule out that the entities mentioned in both descriptions are closely metaphysically linked.

In this section, we have argued that an investigation of the nature of any mental process should take into account, and try to reconcile, both the internal and the external perspective. This will serve as a fruitful ground for our objection to the argument from ethical phenomenology. As we are going to claim in the upcoming section, the argument violates our first methodological guideline; it constructs a moral metaphysics on phenomenological grounds *without* taking into account the external perspective.

14 Even though it doesn't involve a mental process, here is another helpful example. Water is a *wet*, *cooling*, and *thirst-quenching* substance. There seems to be a pretty large gap between this description and the scientific story about molecules composed of hydrogen and oxygen. But don't mind the gap; as it turns out, water *is* H_2O.

15 I fully agree with McDowell (1985, 120) when he says that if we *restricted* ourselves to explanations "from a more external point of view," we would deprive ourselves of something crucial. He emphasizes that "merely causal explanations of responses like fear will not be satisfying" (1985, 119). Indeed. My claim is that the "more external point of view" must *also* be taken into account, not that it is the *only* thing that should be taken into account. McDowell would agree, I think. He explicitly states that any satisfying explanation will include the involved causal factors (1985, 127, n.31).

16 But, again, given the success of the empirical sciences in teaching us a lot about reality, such a reason will be hard to come by at the outset of one's metaethical investigation.

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2 The Challenge from Lost Perspective

Ethical nonnaturalists have a rich history of constructing ethical ontologies out of phenomenological analyses of ethical deliberation. They answer the question of how ethical entities fit into reality by stating that reality comprises more than the sciences would have us believe. There are, they claim, nonnatural ethical entities. Depending on what particular view we are dealing with, these entities are truths, facts, properties, or relations. But whatever they are, the crucial idea is that they are something categorically distinct from, something over and above, the natural.[17] Now, let us take a closer look at one version of the argument from ethical phenomenology.

David Enoch advocates the *argument from the moral implications of objectivity* (Enoch 2011, 16–49). It runs as follows: In cases of preference conflicts—say, about where to have dinner tonight—it intuitively seems that we should solve the conflict impartially. It would not be okay to declare that Mark's preference for Italian is more important than Anna's preference for Indian. Intuitively, they should agree that their preferences count the same, and then find a solution from here on out. Clearly, none of their preferences is *mistaken*. On the other hand, in a moral conflict, it intuitively seems that the appropriate response is *not* impartial. For example, if I disagree with someone claiming that not a single refugee from Ukraine should be allowed to cross the German border, she strikes me as *mistaken*. It seems to me that my opinion has some objective backing—and that an impartial treatment of our "moral preferences" would be deeply misguided. So, there is an internal, phenomenological difference between moral disagreements and conflicts of preference. The former ones have (or seem to have) an objectively right answer. The latter ones don't. And this, according to Enoch, is "best explained" by a robust nonnaturalist realism (Enoch 2018, 40; 2011, 16–49).

This argument fits the general pattern of the argument from ethical phenomenology. Starting with phenomenological observations about the differences between moral disagreements and conflicts of preference, it draws a

17 For our purposes, we can ignore the differences between "robust" and "not-so-robust" versions of nonnaturalism. For the former, see McNaughton (1988); Enoch (2011); for the latter, see Scanlon (2014); Parfit (2011). We can ignore these differences because *all* nonnaturalists subscribe to the claim that some normative entities are nonnatural. This is a metaphysical claim. In so far as the claim is defended on solely phenomenological grounds, the respective defenses fall within the scope of my methodological criticism. Whether or not these defenses ultimately lead to robust or not-so-robust versions of nonnaturalism is irrelevant. For a more detailed discussion of Scanlon's and Parfit's metaethical views, see Fischer (2018, 2019).

metaphysical conclusion to explain this difference. So, the argument is a suitable target for our methodological worries.[18]

There are, of course, many other versions of the argument from ethical phenomenology.[19] However, in the following, I will mostly rely on considerations from Enoch (2011) because they strike me as particularly straightforward. I hope it will become clear that my methodological worries can be extrapolated to different versions of the argument from ethical phenomenology proposed by other nonnaturalist authors. Let us turn to these worries now.

Metaethics, we said, is the project of explaining how ethical thought and talk, and what it is about, fits into reality. Now, trivially, reality does not exhaust itself in phenomenology. As the case of disgust served to show, the phenomenology of a mental process might only be one side of the coin. Sometimes, there is another side; a side that is only revealed if we look at the process from the external perspective. Therefore—and in the absence of reasons to the contrary—we should take into account *both* perspectives when trying to understand how a mental process and the involved truths, facts, properties, or relations fit into reality. If you want to write a book titled "Ethical Thought and Talk: What It Is and How It Fits Into Reality" and you are not planning to even look at the subject matter from an external perspective, chances are you are missing something relevant. This would be methodologically unreasonable. We already saw how external evidence can shift the plausibility of metaphysical claims that solely rest on phenomenological observations. Due to the possibility of such shifts, you should at least give the external evidence a shot at informing your metaphysics. And so we may raise the following challenge:

18 To be fair, Enoch (2011) does consider some external evidence at a later point, after having presented his two main arguments for nonnaturalism. We will turn to Enoch's treatment of the external evidence further below.

19 G.E. Moore's (1903) "open question argument" is one. Cuneo and Shafer-Landau (2014) present another one. They claim that there are "moral fixed points," such as the proposition "It is pro tanto wrong to humiliate others simply for pleasure." They understand these moral fixed points as nonnatural, necessary conceptual truths (for beings like us), and claim that "the degree to which these moral fixed points are evident is quite high" (2014, sec. 4). In footnote 31, they go on suggesting that this evidentness consists in a "phenomenological experience that attends propositions of certain types." Referring to Plantinga (1993), they call such propositions "impulsionally evident." And thus their argument fits the structure of the argument from ethical phenomenology; they ultimately conclude that there are (robust) nonnatural moral truths, and they do so on the basis of a *solely* phenomenological investigation of ethical deliberation.

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311 CHALLENGE FROM LOST PERSPECTIVE. Proponents of the argu-
312 ment from ethical phenomenology must tell us why the external
313 perspective on ethical thought and talk does not need to be taken into
314 account before they conclude, on solely phenomenological grounds,
315 that ethical thought and talk is about nonnatural entities.[20]

316 There is a slight chance that nonnaturalists remain unimpressed by this chal-
317 lenge. They might ask: What could the external perspective *possibly* contribute
318 to our understanding of ethics? I have a quick and a not-so-quick reply. Here's
319 the quick one: The question of how ethical thought and talk fit into reality is
320 a descriptive question about the reality we live in. We already know that there
321 are many truths about this reality that cannot be discovered by phenomeno-
322 logical investigations. Therefore, it strikes me as quite commonsensical to at
323 least *entertain the possibility* that the external perspective—which has proven
324 quite resourceful in teaching us about the nature of reality—has *something* to
325 contribute here. But since this answer might be considered too superficial, let
326 me try again and present my not-so-quick reply.

327 Suppose we have two different explanations of the phenomenology of
328 ethical deliberation on the table. One of them is nonnaturalism, accord-
329 ing to which the "currencies" of ethical deliberation—values and reasons—
330 essentially involve nonnatural entities. The other one is a broadly "Humean"
331 explanation, according to which values and reasons are grounded in our cona-
332 tive, desire-like attitudes. They are, as Finlay (2014, 249–250) nicely puts it,
333 "shadow[s] cast by our desires […]." How could the external perspective con-
334 tribute anything to this debate between the nonnaturalist and the Humean?

335 Here is one possibility: It might turn out that, from an external perspective,
336 ethical deliberation is an evolutionarily acquired tool for "conative mind-
337 management," that is, for dealing with conflicts between and hierarchizing
338 our conative attitudes.[21] As human beings with a capacity for imagination,
339 a limitless time horizon, deeply entrenched social needs, and thus a multi-
340 tude of conflicting attitudes, we face an enormous evolutionary challenge:
341 managing our minds in order to be coherent agents, and then coordinating

20 Further below, I will say more about what exactly I mean by "before." But the general idea should be clear enough: It is methodologically problematic to construct a controversial moral metaphysics on phenomenological grounds without taking into account the external perspective. Thus, proponents of the argument must justify why they nevertheless do so.

21 For this general idea, see, e.g., Mackie (1977); Gibbard (1990); Blackburn (1998); Joyce (2006); Fischer (2018).

our actions with our fellow community members. Investigating the human mind from the external perspective of evolutionary anthropology, we *might* encounter the hypothesis that ethical deliberation is an evolutionary, cultural tool for solving this challenge (cf. Tomasello 2016; Henrich 2016).[22] Let me be clear: I do not want to argue for this hypothesis. My main point is conditional, but it suffices to answer the question of what the external perspective could possibly contribute. If the external perspective revealed something along these lines, this would (much like in the case of disgust) shift the plausibility of the nonnaturalist and the Humean explanations. How? Well, the nonnaturalist explanation would lose some plausibility points, whereas the Humean explanation would gain some. Why? Because metaethics is concerned with explaining how ethical thought and talk fit into reality and because, as argued above, we should take into account, and try to reconcile, both perspectives in this process. If the "external point" of ethical deliberation turned out to be conative mind-management, this would fit better with a broadly Humean view, according to which there is a close *metaphysical link* between values and reasons on the one hand, and conative attitudes on the other hand. Since nonnaturalists reject such a link, their explanation would lose some plausibility points. Additionally, combining a Humean view with our stipulated external story would promise a more parsimonious account of how ethical thought and talk fit into reality.[23] This is how the external perspective *could* contribute to the metaethical debate between the nonnaturalist and the Humean.

The outlined external story about the evolutionary point of ethical deliberation is, of course, hypothetical. But our general methodological consideration is not. We argued that external investigations into mental processes can (and often do) shift the plausibility of (metaphysical) interpretations of the re-

22 A note on the side: Jay Wallace's account of the nature of moral obligation as presumptive constraints on agency is a great example for how morality might serve this function (2019). Wallace's moral obligations help us coordinate ourselves with others by making sure that some action alternatives—stealing, killing, etc.—do not even become salient action alternatives in most people's everyday practical deliberations.

23 What if nonnaturalists rejected parsimony as a theoretical virtue in metaethical theorizing? While my argument in the main text does not depend on this, let me say this much about parsimony: Probably, nonnaturalists accept parsimony as a theoretical virtue for explanations in other contexts, like physics or biology. If they beg to differ when it comes to explanations in ethics, they must tell us why the two contexts are so different. (How can they be so sure that biology deals with natural properties while ethics deals with nonnatural ones?) And this is precisely what the challenge from lost perspective is about: *Why* think that ethics is so special that we can abandon theoretical virtues we heavily rely on in other contexts? For more on parsimony, see Huemer (2009); Cowling (2013); Jansson and Tallant (2017).

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spective phenomenologies. Thus, we should take into account the external perspective when developing and assessing these interpretations. Importantly, this holds even if external evidence ultimately turns out to be *ir*relevant for metaethical theorizing. Even in that case, it would still be true that disregarding the external perspective would have been methodologically unreasonable; when we *started* the investigation, we simply didn't know.

This means that proponents of the argument from ethical phenomenology face a problem. They proceed in a methodologically unreasonable way. They construct a controversial moral metaphysics on phenomenological grounds without taking into account the external evidence.

Let us put a concrete example on the table. Enoch's second main argument for nonnaturalism is the *argument from deliberative indispensability*. Like his first argument, it is a version of the argument from ethical phenomenology. When introducing it, Enoch explicitly disregards the external perspective as irrelevant.

> Had we been here in the explanatory business—trying to explain action, or perhaps even deliberation, from a third-person point of view—perhaps desires would have been enough (though I doubt it). But the whole point of the argument of this chapter is the focus on the first-person, deliberative perspective. And from this perspective, desires are not often relevant, and whether they are or are not, the normative commitment is—though perhaps implicit—inescapable. […] [W]e need normative truths even if, viewed from an external perspective, our desires suffice in order to cause our actions and then explain them, because, when deliberating, we know our desires are *merely* our desires. (Enoch 2011, 76, footnotes left out)

Interestingly, Enoch seems to agree that there is an external perspective from which deliberation could be investigated. But then he dismisses the relevance of possible external insights—desires *could* help to explain the nature of deliberation—for the purposes of his chapter because desires play no important *internal* role on the conscious mental stage of deliberation.[24] The whole

24 A note on the side: I do not think that this phenomenological observation is correct. When I ask myself whether I should study philosophy or chemistry, it is quite natural to shift the focus of my deliberation to my desires: "What do I really, ultimately, *want* from life?" (Note how natural it would be for a friend of mine to ask me this very question if I asked him for study advice.) Suppose I answer that I want job security because a well-paying, long-term job will make it easier

point of his chapter, he suggests, is to better understand the nature of normative truths from a *first*-person point of view. And, by the end of the chapter, he concludes that we should best think of these truths as nonnatural. So, according to what we have said, Enoch's approach is methodologically unreasonable; his two main arguments for ethical nonnaturalism construct a moral metaphysics on phenomenological grounds without taking into account the external perspective.

To be fair, however, we should mention that Enoch does consider the external perspective on ethical deliberation later in his book (Enoch 2011, 151–175).[25] There, he discusses Sharon Street's *Darwinian Dilemma* for moral realism (2006) as an epistemological challenge to his view. We won't dive into the details. For our purposes, it suffices to focus on the *way* Enoch replies to Street's dilemma. First, he reminds us that metaethics is about scoring plausibility points. Ultimately, he says, metaethicists offer package deals, and the one with the most plausibility points wins. In this spirit, Enoch preliminarily remarks that his view does not need to do "better than competing metanormative theories *in every respect, with regard to every problem*" (Enoch 2011, 167). And so he sets out to show that his two positive arguments for nonnaturalism scored him more points than he is about to lose due to the epistemological challenge. Ultimately, after having presented his solution to the challenge, he states: "Let me not give the impression that this suggested way of coping with the epistemological challenge is ideal. […] [P]erhaps Robust Realism does lose some plausibility points here. But not, it seems to me, too many, and certainly not as many as you may have thought" (2011, 175). So, Enoch believes that his two main arguments for the existence of nonnatural ethical facts—two different versions of the argument from ethical phenomenology—generate such a significant number of plausibility points that later objections to his view, formulated from an external perspective, can be met via an inferior solution—because he doesn't lose as many points as he previously scored.

I find this rather unconvincing. It will take the rest of this section to explain why.[26] We argued earlier that, when interpreting or explaining mental

to found a family and raise a few children without any financial worries. Pace Enoch, these desires strike me as *relevant* for deciding what to study *in my deliberation*. Prima facie, the fact that I have them strikes me as a consideration that favors chemistry over philosophy. So, contrary to Enoch's analysis, desires are not always "merely our desires" from the first-person perspective.

25 Thanks to Stefan Riedener for pressing me to acknowledge this.

26 Since I am about to present a more fundamental objection to Enoch's distribution of plausibility points, I set aside the worry that it seems a bit arbitrary.

doi: 10.48106/dial.v76.i3

processes, it is methodologically unreasonable to draw metaphysical conclusions on solely phenomenological grounds. Now, start by noting that this is precisely what Enoch does when he develops his positive arguments for nonnaturalism—*even if* it is true that he *later* confronts his metaphysical conclusions with an objection formulated from the external perspective. For all we said above, the external evidence regarding the nature of ethical deliberation may have significantly *decreased* the plausibility of Enoch's metaphysical conclusions—in which case we should never have drawn them in the first place.

But nonnaturalists might want to object: Does it really matter *when* we take into account the external perspective? Enoch clearly does take it into account, so where is the problem? As long as we do take it into account at *some* point, we should be fine, shouldn't we? I don't think so. It actually does matter *when* we take into account the external perspective because as long as we haven't, *we cannot assign plausibility points to our metaphysics*. Without taking into account the external evidence, we simply *cannot know* how plausible our solely phenomenology-based metaphysical explanation is. But this is a complicated thought, so let me elaborate a little.

As we just saw, Enoch is quite confident that, despite his less than ideal solution to the epistemological challenge, he "certainly" does not lose as many points as he previously scored. Let us reconsider his approach in light of our methodological worries. Enoch first explicitly disregards a perspective it is, we argued, methodologically unreasonable to disregard. This allows him to draw his metaphysical conclusions precisely in the way the way we claimed to be methodologically unreasonable. Later, Enoch confronts his metaphysical picture with objections from the perspective that he previously disregarded. Doing so, he finds that his metaphysical picture, which was drawn, again, in a methodologically unreasonable way, gained such a high (!) number of plausibility points that they "certainly" cannot be outweighed by objections generated by the perspective whose taking into account would have stopped his conclusions from being methodologically unreasonable in the first place.

This strikes me as fishy. When we construct a metaphysics on solely phenomenological grounds, we should expect that, once we add the external perspective to our investigation, the plausibility of our metaphysics might *change*. (Recall Danielle's disgust nonnaturalism.) But this means that we *cannot*—and, importantly, *Enoch* cannot—confidently distribute plausibility points to his metaphysics *before* weighing in the external evidence. This, I think, is a crucial implication of our earlier methodological considerations.

If these considerations are correct, if drawing metaphysical conclusions on solely phenomenological grounds is methodologically unreasonable, then the plausibility of these conclusions should be considered *uncertain* as long as we haven't weighed in the external evidence. In other words, our methodological considerations suggest that the number of plausibility points Enoch's moral metaphysics scores itself *depends on* how well it fits with the external evidence. Therefore, Enoch's allocation of *any* particular number of plausibility points to his metaphysics—let alone a *high* number of points—is unwarranted. Enoch simply cannot know how plausible his metaphysics is until he has taken the external evidence into account.[27]

Consider an analogous case. Tim wants to investigate the nature of taste. At the beginning of his investigation, he explicitly disregards the external perspective. His solely phenomenological investigation leads him to the conclusion that tastiness is a complex, nonnatural property. Later, however, a colleague shows Tim all the tastiness insights that science has to offer (e.g., the evolutionary insight that chocolate is tasty because it is a great source of energy). After considering the scientific evidence, Tim replies: "Ok, I may lose *some* plausibility points here, but my original, nonnatural hypothesis has gained me so many plausibility points that this loss poses no threat to my overall theory."

This would clearly be an unsatisfying reply. Why? Well, for the same reason as before. Due to the importance of taking into account both perspectives when investigating how some mental processes (and the involved entities) fit into reality, the plausibility of Tim's "metaphysics of taste" should be considered uncertain *until* we weigh in the external evidence. The plausibility of Tim's view surely depends, among other things, on how well it fits with the best scientific understanding of tastiness. And, thus, Tim cannot reasonably assign a high number of plausibility points to his metaphysics and then compare

27 Based on his phenomenological investigation, Enoch could only claim that his metaphysics is plausible *as far as phenomenology is concerned*. We may grant this. But it doesn't get us very far in our endeavor to determine how ethical deliberation fits into reality because exactly the same could be said about Danielle's disgust nonnaturalism. The crucial point is that the plausibility metaethicists are ultimately interested in is plausibility-given-all-the-evidence. And this kind of plausibility is not the same as plausibility-given-the-phenomenological-evidence. There can be *very* implausible views about how some mental process fits into reality that are, nevertheless, highly plausible-given-the-phenomenological-evidence. But the latter kind of plausibility doesn't simply translate into the former. It only does if we presuppose that the external perspective has nothing relevant to contribute. However, metaethicists cannot *presuppose* this for obvious reasons; they would, at least, have to argue for it.

doi: 10.48106/dial.v76.i3

this number with the number of points he loses in virtue of the scientific facts. Instead, the scientific facts *help to determine* the plausibility of his metaphysics in the first place. Therefore, Tim cannot reach his preferred final score. The same holds for Enoch, and for the same reasons.

One last comment before we recapitulate and move on. Enoch's readiness to distribute a high number of plausibility points to his metaphysical picture before having taken into account the external perspective is a perfect example of what I take to be methodologically problematic about many nonnaturalist views. This readiness, I suspect, results from a mindset that already devaluates the external perspective's bearing on metaethical theorizing. For, without such a devaluation, how could we confidently assign a high number of plausibility points to our nonnaturalist metaphysical picture before having even looked at the external evidence? We could only do so, it seems, if we already presupposed that, *whatever* the external perspective may have to offer, it will be relatively unimportant. I suspect that this presupposition underlies many nonnaturalist approaches. It is a bias that manifests on the methodological level; it manifests in how (some) nonnaturalists approach metaethical theorizing.[28]

Let us recapitulate. Our methodological considerations, if correct, establish the following: When trying to explain how ethical deliberation, and what it is distinctively about, fits into reality, we should take into account and try to reconcile the external and the internal data. The argument from ethical phenomenology violates this methodological guideline by drawing metaphysical conclusions on solely phenomenological grounds. Therefore, the argument fails.

What options are nonnaturalists left with? Well, they could give up the argument from ethical phenomenology. But let us not go there (yet). Alternatively, they could feel inclined to dig in their heels and respond: "The external perspective is simply irrelevant for the context of ethics because the fundamental ethical entities are *non*natural." If true, this response might exculpate the argument from ethical phenomenology. Unfortunately, however, responding in this way is not a real option because it obviously begs the question against

28 An anonymous reviewer points out that the demand to take into account both perspectives may beg the question against the nonnaturalist and, thereby, reveal a bias towards naturalism. This, however, is not so. Metaethics concerns how ethical deliberation fits into *reality*—and we already know that reality is (at least partly) empirical. So, it is pretty straightforward that we shouldn't exclude the relevance of empirical insights without further argument. This shows, I think, that the demand to take the external perspective into account is based on quite general considerations that do not, as far as I am aware, make any unfair or biased presuppositions. Given the goals of metaethics—goals that are *shared* by nonnaturalists—it's a fair and reasonable demand.

naturalism. Metaethical arguments should establish the metaphysical status of ethical entities, not presuppose it.

So, only one option remains for nonnaturalists who want to hold on to the argument from ethical phenomenology. They need an *independent* argument for the irrelevance of the external perspective. If they were to establish, somehow, that the external perspective *couldn't* contribute anything useful regarding the nature of ethical deliberation (and the nature of the involved entities), construing a moral metaphysics on solely phenomenological grounds might turn out legitimate after all. With such an independent argument, nonnaturalists could meet the Challenge from Lost Perspective.

3 The Intuitive Otherness of Ethics

Our previous discussion has shown that if nonnaturalists want to hold on to the argument from ethical phenomenology, they have to independently establish the irrelevance of the external perspective in metaethical theorizing. Their task is, in other words, to establish the "otherness" of ethics. How to do that?

One particularly influential consideration in favor of the otherness of ethics is the so-called *just too different intuition*.

> Just Too Different Intuition (JTD). Intuitively, there is an unbridgeable gap between ethical and natural facts (truths, properties, relations).

JTD is wide-spread across the nonnaturalist literature.[29] Due to this prevalence, it is worth taking a closer look at two exemplary "applications."

Start with Enoch. When he develops his argument from deliberative indispensability, he claims—in what I take to be the quintessential paragraph of his book—that the normative truths we are committed to qua deliberators must be nonnatural.

> Because only normative truths can answer the normative questions I ask myself in deliberation, nothing less than a normative

29 Enoch says he has no positive argument for nonnaturalism "up his sleeve" that is not based on JTD (2011, 105). See also, e.g., Murdoch (1992, 508); Parfit (1997, 121); Huemer (2005, 94); Dancy (2006, 136); Enoch (2011, 4, 80–81, 100, 108); Parfit (2011, 324–327). Thanks to Laskowski (2019) for the list.

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> truth suffices for deliberation. And because the kind of normative facts that are indispensable for deliberation are *just so different* from naturalist, not-obviously-normative facts and truths, the chances of a naturalist reduction seem rather grim. […] The gap between the normative and the natural, considered from the point of view of a deliberating agent, seems unbridgeable. (Enoch 2011, 80, my emphasis)[30]

Enoch's point is straightforward: From the first-person perspective of deliberating agents, the normative truths we are looking for *seem so different* from natural truths that they couldn't possibly be natural. Thus, we get the otherness of ethics.

The second exemplary application of JTD is Derek Parfit's *normativity objection* against normative naturalism (2011, 324–327).[31] To get his objection started, Parfit compares the following two statements:

(B) You ought to jump.
(C) Jumping would do most to fulfill your present, fully informed desires […].

Parfit observes that appeals to normative facts like (B) strike us to be very different from appeals to natural facts like (C). In his own words: "Given the difference between the meanings of claims like (B) and (C), such claims could not, I believe, state the same fact" (2011, 326).[32]

Again, the argument is straightforward: Since appeals to normative facts *seem so different* from appeals to natural facts, normative facts couldn't be natural. Thus, we get the otherness of ethics.[33]

30 See also: Enoch (2011, 4, 100, 108). By "naturalist reduction," Enoch means the endeavor to show that the normative is "nothing over and above" the natural (2011, 101).

31 More precisely, the argument is directed against "non-analytical naturalism." Like Enoch, Parfit believes that ethical facts are nonnatural, mind-independent, and not in "overlapping categories" with natural ones (2011, 324). We may ignore the differences between Enoch's and Parfit's views for our purposes.

32 Parfit's formulation is strikingly reminiscent of Enoch's. He also writes: "[…] normative and natural facts *differ too deeply* for any form of Normative Naturalism to succeed" (Enoch 2011, 326, my emphasis).

33 Howard and Laskowski (2021) have recently presented a new and interesting interpretation of Parfit's normativity objection, according to which Parfit presses (non-analytic) naturalists to explain how some normative truths are knowable *a priori*. This interpretation aims to specify the difference between normative and natural facts that Parfit supposedly has in mind. Some normative facts are knowable *a priori*, but no natural fact is; thus, there are some normative facts

Now, does this work? Could JTD-based arguments be used as independent arguments for the irrelevance of the external perspective in metaethical theorizing? I don't think so for the following two reasons: Firstly, Enoch's and Parfit's considerations are themselves instances of the argument from ethical phenomenology. According to both authors, *phenomenology* reveals that ethical facts are very different from natural ones; JTD is a phenomenological datum, after all. Thus, using the intuition to establish the (metaphysical) otherness of ethical entities is just another instance of the argument from ethical phenomenology. Appeals to JTD are not independent. They merely move the bump in the rug.

Secondly, relying on JTD in order to establish the otherness of ethics violates our second methodological guideline (see 2. above). Recall: When investigating any mental process, we should expect that the internal data will look very different from the external data. I am inclined to speculate that this is due to the nature of human consciousness (whatever it is). We inhabit a subjective perspective from which experiences come with a "something it is like." They come with a, well, phenomenology. So, it is not surprising at all that these experiences, as had "from within," are described very differently from the "external story" about what is going on when we're having them. This suggests the following: For any property *P* that presents itself as part of your phenomenology, the differences between, on the one hand, your phenomenological impression of the nature of *P* and, on the other hand, the best external story about the nature of *P*, provide *no reason whatsoever* to think that *P* is a nonnatural property. We find the same "unbridgeable gap" in the case of water and H_2O (see footnote 14 above). For these two reasons, JTD cannot help nonnaturalists to meet the CHALLENGE FROM LOST PERSPECTIVE.[34]

that are not natural. Importantly, on this interpretation, the normativity objection *remains* an instance of the argument from ethical phenomenology. It starts from the first-person insight that, apparently, some normative truths are knowable *a priori* and then proceeds to draw a metaphysical conclusion ("some normative facts are nonnatural").

34 There is yet another problem of JTD-based arguments that I quickly want to mention here. As some metaethicists have pointed out, the fact that ethical *thoughts* seem so different from nonethical *thoughts* establishes, first of all, a difference in the *concepts* expressed in these thoughts; and not a difference in the *facts* these thoughts refer to. If we can explain the just too different intuition in terms of semantics, as many metaethicists think we can, we simply don't need to jump to any metaphysical conclusions. See, e.g., Railton (2003); Copp (2020); Laskowski (2019) and, for an especially concise formulation of the basic idea, Yetter-Chappell and Chappell (2013, 874).

doi: 10.48106/dial.v76.i3

We are back at square one. We haven't met the CHALLENGE FROM LOST PERSPECTIVE yet; we haven't established the otherness of ethics. And without the otherness of ethics, the argument from ethical phenomenology does not even get off the ground. Now, there are probably more ways to try to meet the CHALLENGE FROM LOST PERSPECTIVE. Nonnaturalists will have more to offer than appeals to JTD. But we won't turn to these alternative attempts here. Instead, let me point out an interesting big-picture conclusion that follows from our discussion.

It has become clear that there are two general strategies for nonnaturalists. Either they (1) solely rely on the phenomenological perspective, or (2) they take into account, and try to reconcile, both perspectives. The first strategy falls prey to the CHALLENGE FROM LOST PERSPECTIVE. Disregarding the external perspective in one's (metaphysical) interpretations of ethical deliberation is methodologically unreasonable. Moreover, any *purely* phenomenology-based attempt to warrant the exclusion of external evidence just moves the bump in the rug. So, here is the big-picture conclusion: If nonnaturalists want to go with the first strategy, they *first* have to justify the legitimacy of this strategy—but this can only be done by taking the second strategy. Thus, nonnaturalists must move beyond a purely phenomenology-based strategy in any case. They must, on pain of methodological unreasonableness, embrace the external perspective.

However, embracing the external perspective constitutes something close to a paradigm shift for nonnaturalists. As far as I am aware, the most prominent positive arguments for nonnaturalism are versions of the argument from ethical phenomenology. They all maintain, in one way or another, that some part of ethical phenomenology is best explained by the existence of nonnatural ethical entities. This raises what I take to be the million-dollar question for nonnaturalists: Is there a way to legitimize the argument from ethical phenomenology that takes into account *both* perspectives?

Let me say this much here: I believe there is good reason why nonnaturalists traditionally fend off the relevance of the external perspective in metaethics. If this dam broke, an entire ocean of external, empirical evidence concerning, say, the evolutionary function of deliberation or the origins of ethical intuitions would suddenly have to be weighed in. All of this poses an obvious threat to the nonnaturalist project: It may seem rather unlikely that the existence of nonnatural entities will turn out to remain a *better explanation* of ethical phenomenology than *some* externally *and* internally informed account devoid

of such entities.[35] This partly explains, I think, the typical nonnaturalist reluctance to acknowledge the external perspective as relevant for metaethical theorizing. But if our considerations are correct, nonnaturalists do not have much choice; they must overcome this reluctance.

4 Conclusion

Nonnaturalists believe that ethical thought and talk involve (robust or not-so-robust) nonnatural ethical entities. In this paper, we have focused on the most prevalent positive argument for this view, the argument from ethical phenomenology. According to it, the claim that some ethical entities are nonnatural is part of the best explanation of why ethical phenomenology is the way it is. Our main conclusion is that the argument is methodologically unreasonable.

We started by stating the goals of metaethical investigations. These investigations try to explain how ethical deliberation—and what, if anything, it is distinctively about—fits into reality. We then argued, quite generally, that investigations of mental processes should take into account, and try to reconcile, both the internal (phenomenological) and the external (broadly: scientific) perspectives. This, we claimed, is where the argument from ethical phenomenology fails: It draws metaphysical conclusions that are *solely* based on internal, phenomenological observations. The argument, in other words, blinds out the external perspective. Hence our main challenge:

> Challenge from Lost Perspective. Proponents of the argument from ethical phenomenology must tell us why the external perspective on ethical thought and talk does not need to be taken into account before they conclude, on solely phenomenological grounds, that ethical thought and talk are about nonnatural entities.

In order to meet this challenge, we said, nonnaturalists must provide an independent argument for the irrelevance of the external perspective. We discussed one strategy to this effect that involves the just too different intuition. We rejected this strategy for two reasons. The (maybe) more important one was that the just too different intuition cannot provide us with an *independent*

35 This conjecture gets even more pressing once we acknowledge that a purely *semantic* explanation of the "phenomenological otherness" of our ethical thoughts might be available, as many metaethicists have suggested. See footnote 34.

doi: 10.48106/dial.v76.i3

argument for the irrelevance of the external perspective because any argument based on it would just be another instance of the argument from ethical phenomenology.

Our big-picture conclusion was that nonnaturalists must move away from a purely phenomenology-based strategy. Such strategies are methodologically unreasonable because they do not take into account the external perspective; they are unreasonable, that is, *unless* we already knew that the external perspective is irrelevant for metaethical theorizing. However, to establish *that*, nonnaturalists would have to, well, move beyond a purely phenomenology-based strategy. Otherwise, they would be arguing in circles, begging the question against those who believe that the external perspective *is* relevant for metaethical theorizing.[36]

The big-picture conclusion is especially interesting once we acknowledge that most of nonnaturalism's supportive considerations are entirely phenomenology-based.[37] What exactly this means for the prospects of nonnaturalism is a topic for another occasion. I do think, however, that the loss of the argument from ethical phenomenology leads to a significant decrease in plausibility points—at least as long as nonnaturalists do not defend their approach in a way that isn't question-begging on the methodological level.

One final question: Could nonnaturalists reject the CHALLENGE FROM LOST PERSPECTIVE as illegitimate? I don't think so. The challenge represents a hard-to-doubt methodological idea: When starting to investigate how *any* mental process—and what this mental process is distinctively about—fits into reality, we should be open to all kinds of evidence, external and internal. We should not prematurely, that is, without further argument,[38] blind out or devaluate a whole perspective on the mental process we are interested in—especially so if this perspective has proven highly resourceful in the context of other mental processes. Ultimately, the best account of the nature of ethical deliberation will be one that hasn't lost perspective.*

36 Notably, there is no such threat in the other direction. Naturalists do not beg the question against nonnaturalists by asking them to take the external perspective into account. See footnote 28.

37 At least as far as I am aware, they are. Cf. Enoch's concession that he has no arguments for nonnaturalism "up his sleeve" that are not based on the just too different intuition (Enoch 2011, 105). We also mentioned that Moore's open question argument, Parfit's normativity objection, and Cuneo's and Shafer-Landau's argument concerning the "moral fixed points" (Cuneo and Shafer-Landau 2014) are versions of the argument from ethical phenomenology.

38 It can't be a solely phenomenology-based argument, though.

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Color Constancy Illuminated

Vivian Mizrahi

The phenomenon of color constancy has often been appealed to in philosophical discussions of the nature and perception of colors. In these discussions, two ways of interpreting the role of illumination and illuminants in color vision are prominent. Color realists and objectivists argue that colors are illumination-independent properties because they are perceived and recognized despite changes in illumination. Color relationalists and subjectivists, on the other hand, deny that colors remain constant across changes in illumination and conclude that colors are relative and illumination-dependent properties. I offer an alternative to these opposing views and argue that colors are illumination-dependent but also objective and intrinsic properties of surfaces. The result is an entirely original approach to the role of illumination and illuminants in color perception.

Les soleils couchants
Revêtent les champs,
Les canaux, la ville entière,
D'hyacinthe et d'or;
Le monde s'endort
Dans une chaude lumière.
—Baudelaire, "L'invitation au voyage"

1 Color Constancy and Color Ontology

Although the light that is reflected by any particular object and reaches the observer constantly changes throughout the day, most of our surrounding objects seem to retain their color appearances[1] despite these variations. Grass

1 As it will become clear later, I do not understand "appearances" or "color appearances" as referring to subjective or mental features of our experiential states, but rather as objective properties accessible through perceptual experiences. The way an object appears can vary according to our perceptual experiences, but its appearances are neither subjective nor mental. They are mind-independent features of the object that are singled out in our perceptual experiences.

is green, lemons are yellow, and tomatoes are red, whether it is morning, noon, or sunset.

Color constancy, which is the phenomenon of unchanging color appearance across changes in illumination, plays a central role in discussions of the nature of colors. Roughly, it is argued that if perceived colors remain unchanged across changes in illumination, colors must be identified with stable properties of objects that are illumination-independent and can be perceived and identified across different circumstances. If this were not the case, that is, if colors varied according to circumstances and especially the nature of the illumination, perceived colors would be better identified with transient properties whose identification would be tied to the way they are experienced in particular situations.

According to Allen, for example, color constancy supports the claim that colors are mind-independent properties:

> The view that colours are mind-independent properties of things in our environment best explains a number of aspects of the phenomenology of colour experience related to the phenomenon of colour constancy: roughly speaking, the phenomenon whereby the colours of objects are typically perceived to remain constant throughout variations in the conditions under which they are perceived. This suggests that in the order of philosophical explanation, colours enjoy a distinctive priority over colour experiences: our colour experiences are experiences of independent properties of things in our environment. (Allen 2016, 1)

And it is for similar reasons that reflectance physicalism, a major trend in color physicalism, claims that colors are illumination-independent properties of surfaces. Byrne and Hilbert write:

> Although the causal chain extends from the illuminant to the stimulus via the object, it is of course the object that looks colored (more strictly, its surface), and so the relevant physical property must be a property of objects (more strictly, surfaces). We can narrow the field further by noting that the color vision of human beings and many other organisms exhibits approximate color constancy [...]; for instance, tomatoes do not seem to change color when they are taken from a sunny vegetable patch into a kitchen

> illuminated with incandescent light. Assuming that our perceptions of color are often veridical, we therefore need a physical property of objects that is largely illumination-independent—a physical property that an object can retain through changes in illumination. (Byrne and Hilbert 2003, 9)

Whereas color objectivists and physicalists often maintain that color constancy supports a subject- and illumination-independent view of colors, their opponents adduce the fact that in most of the cases in which color constancy is supposed to occur, variations in illumination are accompanied by changes in perceived colors. Color constancy therefore appears as a dual phenomenon involving the simultaneous experience of a constant color and of some chromatic variations. As superbly illustrated by Claude Monet's *Haystacks* series, colors change according to weather conditions and the time of day. And it is only through changes in the colors of objects that these atmospheric and illumination changes are noticed. Seasonal differences and differences in the time of day are manifested, for example, through the continuous and gradual changes in the colors of Monet's haystacks, which vary from shades of yellow in the morning to oranges and reds at sunset.

Cohen summarizes this complex situation as follows:

> On the one hand, normally sighted subjects find that the two (successively presented) regions of interest are, in some sense to be explained, alike in apparent colour. And on the other hand, normally sighted subjects find that the two (successively presented) regions of interest are, in some sense to be explained, easily, obviously, and quickly visually discriminable in apparent colour. (Cohen 2008, 63)

In other words, if one grants that the same color is perceived across shifts in illumination, one must admit that perceiving shifts in illumination involves the perception of some change in colors.

The phenomenon of color constancy has had some influence on the philosophical discussion of the nature of colors by contrasting two ways of interpreting the role of illumination and illuminants in color vision. Whereas color realists and objectivists argue that colors are illumination-independent properties because they are perceived and recognized *despite* changes in illumination, color relationalists and subjectivists conclude that this cannot be

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the case because variations in illumination are accompanied by chromatic variations.

I offer an alternative to these opposing views by defending one claim made by relationalists and subjectivists and one claim made by objectivists and physicalists. Like relationalists and subjectivists, I deny that color constancy demonstrates that perceived colors are constant across changes in illumination. But I also defend an illumination-dependent and intrinsic view of colors that is compatible with an objectivist and physicalist approach.

After presenting the philosophical challenge that color constancy poses for different color theories in section 2, I offer a defense of reflectance physicalism in section 3. I then argue, in section 4, against the most influential theory of reflectance physicalism and show that its account of color constancy is unsatisfactory. In section 5, I propose a new approach to reflectance physicalism according to which *colors are both illumination-dependent and intrinsic properties of surfaces*. This approach provides a new explanation of color constancy. In section 6, I further develop this view, distinguishing two kinds of color variations and explaining the role of illuminants as color selectors. In section 7, I discuss the possibility of perceiving illumination without perceiving light itself and propose an original account of the special epistemic role of natural daylight in color perception.

2 The Color Constancy Challenge

I believe color constancy is a challenge for color theories because it reveals two fundamental and yet apparently incompatible facts about colors:

(1) Colors are intrinsic properties of surfaces.
(2) Color appearances are essentially determined by the properties of the illuminant.

(1) expresses the commonsense idea, endorsed by color realism and color objectivism, according to which bananas are yellow by virtue of the color of their skin and not in virtue of properties of the eye of the observer or of the composition of light. (2) is motivated by the fact that changes in the nature of the illuminant affect our chromatic experiences through changes in color appearances. Yet, the nature of the illuminant can cause our color experiences to change because either

(2.1) the nature of the illuminant affects the colors we perceive

or

(2.2) the nature of the illuminant affects our perception of colors.

Now, both suggestions (2.1) and (2.2) seem to conflict with the objectivist proposal contained in (1). (2.1) implies, it seems, that colors can't be intrinsic properties of surfaces because, contrary to the objectivist's claim, color variations can occur without any variation in the surface's intrinsic properties. (2.2) seems to show that color variations are subjective because illuminant changes affect the way we perceive colors without affecting the objective properties of objects.

Apparently, there is then no way to reconcile (1) the fact that colors are intrinsic properties of surfaces as required by the objectivist view with (2) the fact that colors are essentially determined by the properties of the illuminant. Yet, I believe (1) and (2) capture some fundamental characteristics of color experiences, namely, the fact that color experiences give us access to properties that are mostly stable and unchanging and that this stability is given through chromatic experiences that vary and change constantly according to the nature of the illuminant and the lighting conditions. Given this difficulty, should we renounce the idea that the manifold of color appearances revealed by variations in the illuminant is constitutive of the nature of colors and endorse a view that this manifold is mostly illusory or only apparent (e.g., Allen 2010)? Or should we rather renounce the idea that color experiences give us access to objective and intrinsic features of surfaces and embrace a subjectivist or relationalist view of the nature of colors (e.g., Cohen 2008)?

I argue that we should not renounce either of these ideas, because contrary to what (2.2) seems to suggest, the fact that illuminant variations change our perception of colors doesn't force us to abandon color objectivism and the idea that colors are intrinsic properties of surfaces. To understand how color experiences vary with lighting conditions while presenting stable and intrinsic physical properties of surfaces, we must start by understanding the nature of the relation between light and colors and its consequences for color vision. As I will show in the next section, reflectance physicalism provides the best approach to this question.

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3 Reflectance Physicalism

Reflectance physicalism offers a compelling account of the relations between colors, surfaces, and light. This account identifies colors with reflectance properties or sets of reflectance properties (Hilbert 1987; Byrne and Hilbert 1997; Tye 2000). Reflectances are metaphysically interesting entities because they are dispositional properties of surfaces to reflect a determinate amount of incident light.

Such properties precisely explain

(a) why colors are perceived at the surface of the objects,
(b) how colors are related to light, and
(c) why colors are the proper objects of sight.

(a) Unlike other sensible qualities, such as odors, sounds, tastes, density, elasticity, etc., colors are perceived at the surface of objects.[2] They are superficial or surface qualities. Surfaces are depthless spatial regions that structure the visual space into different units and ultimately into objects.[3] By identifying colors with physical properties of surfaces that change the properties of the incident light, reflectance physicalism explains the central role played by colored surfaces in visual perception. In particular, it explains why the visual field is segmented into surfaces (Albright and Stoner 1995; Nakayama, Shimojo and Silverman 1989; Gibson 1986) and also why vision cannot penetrate colored surfaces that are "solid to vision as well as to touch" (Gibson 1986, 368).

(b) Most other ontological theories of color seem unable to explain the simple fact that colors cannot be perceived without light. For such approaches, it is as if light were only accidentally responsible for perceiving colors or merely one among the many circumstantial variables—like distance, angle, and simultaneously seen objects, etc.—that explain chromatic perceptual variations. Reflectance physicalism, by contrast, offers a very different picture of the relation between light and colors because it explicitly states that colors

2 Following Katz (1911), philosophers often distinguish between different "modes of appearance of colors." They argue that "colors come in several flavors: *surface* colors, *volume* colors, and *illuminant* colors" (Byrne and Hilbert 2003, 11). The approach proposed in this paper is restricted to surface and illuminant colors, but I have argued in Mizrahi (2010) that transparent objects are not colored and that there are no volume colors.

3 It doesn't mean that surface perception is the only mechanism, or even the primordial one, that underlies object detection.

and light are united by an essential relation. According to reflectance physicalism, colors depend ontologically upon light because colors are reducible to just the disposition of a surface to interact with light in a particular way. Unlike transparent media, like glass or water, which transmit light from the perceived object to the perceiver without obstruction, colored surfaces interfere with light by scattering and partially absorbing the incoming light rays. What distinguishes colored surfaces from colorless surfaces is therefore the former's capacity to change the properties of the incident light in a specific way. Objects and materials that lack this property, like transparent materials and mirrors, are, in effect, colorless (Mizrahi 2010, 2018).

(c) Reflectances are objective (i.e., mind-independent) properties because the proportion of the incident light a given surface is disposed to reflect is not dependent on the existence of an observer. But being an objective property is not enough to capture our intuitive conception of colors. Colors are indeed sensible properties anchored in our perceptual experiences. Accessed only through vision, they are distinct from what is perceived in other sensory modalities. Any ontological theory of color must therefore account for the sensible nature of colors along with their objectivity.

One of the numerous merits of the reflectance theory of colors is that it provides a very straightforward way of explaining why colors are the proper objects of sight and why they are therefore essentially distinct from entities accessible by other sense modalities, such as smells, tastes, sounds, etc. If colors are identified with the dispositional property of surfaces to interact with light in a determinate way, detecting this property indeed requires a perceptual system sensitive to light variations. Identifying colors with reflectance thus explains not only why colors are attributed to external objects but also why there are, in Aristotle's terms, the proper objects of sight. Unlike subjectivist and primitivist theories, which claim that truths about colors are phenomenological in essence, reflectance physicalism can explain without circularity what all colors have in common and why they are essentially different from the sensible qualities perceived in other sensory modalities. Therefore, reflectance physicalism identifies not only the best physical candidates for explaining color experiences but also candidates that can explain how aspects of the external world can be directly accessed by the sense of sight, that is, the sensory modality responsive to optical phenomena.

Although identifying colors with reflectance properties deepens our understanding of colors by providing a compelling picture of the physical and objective nature of colors as the proper objects of the sense of sight, I believe

doi: 10.48106/dial.v76.i3

that most philosophical accounts of this identification have been misleading and wrongheaded. Rather than stressing the intimate ties between colors, light, and the sense of sight, most reflectance physicalists have, in one way or another, separated them in order to guarantee to colors an immutable and objective status. Thus consider the view expressed by Byrne and Hilbert:

> Assuming that our perceptions of color are often veridical, we therefore need a physical property of objects that is largely illumination-independent—a physical property that an object can retain through changes in illumination. This last constraint rules out properties an object has only if it is actually reflecting light of a specific character—for instance, light with a certain wavelength-energy distribution (spectral power distribution), or wavelength composition. (Byrne and Hilbert 2003, 7)

Byrne and Hilbert's assumption seems to be that if colors are identified with physical properties related to the nature of the illuminant, those properties will vary with changes in illumination and therefore fail to exhibit the intrinsic and mind-independent features compatible with color physicalism. In other words, they assume that colors can be perceived as stable and intrinsic properties of objects only because they are illumination-independent.

The central goal of this paper is to show that reflectance physicalism does not require colors to be illumination-independent properties and that the versions of reflectance physicalism that neglect the intimate relation between color and illumination fail to properly account for color constancy and other phenomena related to variations in illumination. In the next section, I focus my attention on Byrne and Hilbert's version of reflectance physicalism, and I consider in more detail how color constancy is characterized in this important framework.

4 Byrne and Hilbert's Approach to Reflectance Physicalism

As stressed above, reflectance properties are consistent with our conception of colors. It is therefore unsurprising that colors have been identified with reflectances and that reflectance realism, developed first by Hilbert (1987), has become a major philosophical approach to the nature of colors. Although Hilbert's view has been deeply influential, it has encountered some important challenges. My aim in this section is to show that most difficulties faced by

reflectance realism originate from a misconception of the theoretical commitments of reflectance realism from its inception and that a fresh approach is needed.

Since its first formulation, reflectance realism has been presented in terms of *spectral surface reflectances (SSR)*. Yet SSRs are only one kind of many different surface-reflectance properties. They correspond to the way a surface reflects each wavelength of visible light. But as recognized by Hilbert himself, this property is inaccessible to humans because the human visual system cannot discriminate between the wavelengths constituting full-spectrum light:

> Human color vision involves three types of receptors, each of which has its own characteristic sensitivity. The sensors responsible for human color vision are all sensitive to a broad range of wavelengths and their ranges of sensitivity overlap considerably. These receptors are sensitive only to the total amount of light they receive in the range of wavelengths to which they are sensitive. They do not give any information about the distribution of energy within their range of sensitivity. As a consequence any pair of objects that reflect the same amount of light within each of the three wavebands will produce the same response from the sensors. (Hilbert 1987, 131)

The solution to this problem proposed by Byrne and Hilbert is that the colors perceived by humans are not specific SSRs but rather types or sets of reflectances. They maintain that although human color vision cannot differentiate between specific SSRs, there is a disjunction or a set of SSRs that can be identified with each perceived color. But, as I will show, this approach is unpersuasive for many reasons.

First, on the metaphysical level, what does it mean to say that we perceive sets or types of reflectances? Identifying colors with reflectances seems to capture the fact that perception of a colored object is a relation between particulars—a perceiving subject and a colored object. Identifying colors with *types* or *sets* of reflectances seems to move away from this plausible view and introduce many difficulties. What does it mean to perceive types? Surely perception is of particulars.[4] And in what sense can a subject be in a relation to a type or set without being in a relation with the elements of this set?

4 For the defense that perception is of particulars only, see Mulligan (1999).

doi: 10.48106/dial.v76.i3

It is unclear how our perceptual relation to colored objects can be mediated by some perception of types if the chromatic features of our visual experiences are explained by the colors in the environment. One plausible view of color is indeed that colors are individual properties of the surfaces on which they are perceived. In particular, this view explains how we distinguish and individualize surfaces according to their colors. It also accounts for the fact that colors allow us to recognize and classify objects according to their appearance. By introducing types or sets into their ontology of colors, Byrne and Hilbert seem to reject the validity of these intuitions and to deprive perception of its most basic characteristic, that is, to be in direct contact with the objects and their particular qualities.[5]

Identifying colors with types of SSRs encounters many difficulties inaddition to the general ontological problems discussed so far. Consider first the problem of metamers, which is Byrne and Hilbert's primary motivation for identifying colors with types of SSRs. Surfaces with different SSRs can match visually under a given illuminant and for a given observer. Such surfaces are said to be metamers for that illuminant and that observer. But because metamers demonstrate that there is no one-to-one correspondence between SSRs and perceived colors, it has been argued that metamerism undermines the identification of colors with SSRs. Byrne and Hilbert reply to this objection (1997, 2003) by identifying colors perceived by humans with reflectance types rather than with particular SSRs. Although they acknowledge that the set of reflectances selected in this way is "quite uninteresting from the point of view of physics or any other branch of science unconcerned with the reactions of human perceivers," they stress that it nonetheless captures only objective and physical properties of surfaces and therefore avoids identifying colors with "unreal or somehow subjective" (2003, 11) categories.

But perceived colors cannot be identified with sets of SSRs unless one specifies the illuminant. In effect, given their different spectral reflectances, metamers under a given illuminant will not appear to match under some other illuminant. Consider the particular shade of yellow exhibited by a ripe banana perceived in daylight. In this condition, the yellowness of the banana will match in color with surfaces with identical SSRs (SSR_1) but also with

5 For a similar view, see Armstrong (1987, 42): "When we perceive the sensible qualities of physical things the quality must presumably play a causal role in bringing the perception to be. But now consider a disjunctive property. It cannot be thought that the disjunctive property itself plays any causal role. Only the disjuncts do that. So if sensible qualities are disjunctive, how can they be perceived?"

surfaces with very different SSRs. Yet, according to Byrne and Hilbert, it is possible to identify the perceived color of the banana in daylight with a set $S1 = \{SSR_1, SSR_2, \ldots\}$ of reflectances, including SSR_1, SSR_2, and reflectances of other metameric surfaces. But metamerism is relative to the illuminant, and perceiving a banana under a different illuminant would therefore result in the identification of the banana's colors with a different set $S2 = \{SSR_1, SSR_3, \ldots\}$ of reflectances, including SSR_1 and SSR_3 but not SSR_2, for example. The problem is that by definition, metameric surfaces differ according to the illuminant and that reflectance types cannot therefore satisfy Byrne and Hilbert's own view of the nature of color, which is that a color is "largely illumination-independent—a physical property of objects that an object can retain through changes in illumination" (2003, 9).

Another problem for physicalists who identify colors with SSRs, or with types of SSRs, is that they must assume that only an entire-spectrum illuminant can be used to perceive an object's color. Because SSR is the proportion of incident light a surface is disposed to reflect *at each wavelength in the visible spectrum*, they sensibly argue that entire-spectrum illuminants are required to discriminate between SSRs and therefore to perceive colors. However, this approach is misleading. If reflectance physicalists are unwilling to arbitrarily restrict the capacity to perceive colors to humans, and because many species can see frequencies of light that cannot be detected by human color receptors, reflectance physicalists have to extend the visible spectrum to wavelengths invisible to the human eye. Yet extending the notion of "visible light" to frequencies that cannot be perceived by humans has several important consequences. First, if SSR is defined as the proportion of light that a surface reflects at each wavelength in the visible spectrum of any species, and because colors are in this case identified with physical properties that cannot be detected by the human visual system, human observers can strictly speaking *never* perceive colors. Moreover, it would not help to identify colors with reflectance types instead of SSRs, as proposed by Byrne and Hilbert (2003). We do, in fact, know that many nonhuman animals, unlike humans, have color receptors sensitive to UV light (Knuth 1891). The capacity to perceive reflectance relative to UV light can make a huge difference in terms of the colors perceived. In fact, what the UV color vision reveals is that there is no nonarbitrary way to choose between illuminants.

For most observers and activities, color comparisons are done in some form of "white" light (daylight or artificial light). However, for certain laboratory or industrial purposes, the relevant illuminant may be composed of different

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bands of wavelengths or even a unique wavelength. For example, metameric inks, which match in "normal" light conditions, can be used in security applications. Using this technique, a printer can conceal a word, message, or image that is invisible to the human eye until the lighting conditions change. The same technique is used in banknote printing to prevent counterfeiting. Reflectance physicalists, who single out entire-spectrum illuminants as revealing the real colors of things, have to deny that chromatic discontinuities perceived under narrow-band light sources are real. They must therefore conclude, against common sense, that visual experiences in which pieces of evidence or hidden messages are detected by using particular light sources are illusory because the colors perceived under such illuminants are only apparent. But this odd conclusion has no obvious justification, except perhaps a practical preference for entire-spectrum illuminants. The use of narrow-band light sources does, in fact, reduce our discriminatory capacities in everyday life because differences in reflectance relative to a few wavelengths are much less numerous than differences in reflectance relative to many wavelengths. This simple fact is sufficient to explain why forms of white light are usually preferred for color perception and object recognition. But from an ontological point of view, there is no reason to favor white light over narrow-band or single-wavelength illuminants.[6]

But why should one assume that systematic chromatic changes due to illuminant variations are only apparent? Are reflectance physicalists really willing to set aside all color variations due to illuminant variations as illusory because they do not involve SSR variations? Is the greenness of a banana under a "blue" light not as fundamental for understanding colors as its yellow appearance in daylight? Is the pink shade of snow at dusk not a real chromatic phenomenon worth explaining? More generally, would our knowledge of colors be the same if all these variations were absent from our experience? I doubt it. Color variations are diverse. We can assess the maturity of a piece of fruit by noticing a change in the color of its skin, but we can also observe changes in atmospheric properties by noticing a transient change in a meadow's color. Those color variations are different in nature, but why should we not consider them equally real? In the next section, I propose a new approach to reflectance physicalism which takes all color variations seriously and considers that the nature of the illuminants is at the core of a proper account of colors.

6 The preference for natural daylight and its epistemic role are discussed in section 7.

5 Reflectance Physicalism Revisited

Reflectance physicalism supports the view that colors exist independently of our perception of them and that they are identical to reflectances—the physical dispositions of surfaces to reflect a certain proportion of the incident light. Because reflectances are specific ways of interacting with light, reflectance physicalism seems to involve the claim that colors are dependent on light. Colors depend on light in the same way weight depends on gravity or solubility depends on a solvent. Yet, most reflectance physicalists insist that this is not the case. For example, Byrne and Hilbert write:

> Assuming that our perceptions of color are often veridical, we therefore need a physical property of objects that is largely illumination-independent—a physical property that an object can retain through changes in illumination. This last constraint rules out properties an object has only if it is actually reflecting light of a specific character—for instance, light with a certain wavelength-energy distribution (spectral power distribution), or wavelength composition. (Byrne and Hilbert 2003, 9)

It seems that Byrne and Hilbert conflate distinct and crucial notions. First, reflectances, as dispositional properties, are intrinsic properties of their bearers. Their manifestation is possible but not necessarily actual. The fact that color must be "a physical property that an object can retain through changes in illumination" therefore has nothing to do with the fact that reflectances are *illumination-independent*; rather, it is related to the fact that reflectances are *dispositional* and *intrinsic* rather than *categorical* and *relational* properties of surfaces.[7] Colors do not change with changes in illumination because they remain "in" their bearers whether or not they are manifested. As with any other dispositional property, changes in the conditions—here, changes in illumination—can bring about or fail to bring about the manifestation of a dispositional property. Similarly, weight is not gravity-independent because an object retains its weight across changes in gravity. Weight is a gravity-dependent property that is both dispositional and intrinsic to an object with a mass. For example, an object is six times lighter on the moon than it is on earth. And the fact that an object is located on earth doesn't change its lunar weight; it just prevents its lunar weight from being manifested.

7 For a good defense that dispositions are actual and non-relational properties, see Mumford (2003, sec. 4.5).

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The idea that reflectances are illumination-independent is very misleading and has fueled many misconceptions. The main unfortunate consequence of this mistake is the unsatisfying account of the phenomenon of color constancy given by most philosophers who endorse an objectivist view of colors. As Cohen correctly points out, color objectivists have described color constancy as a kind of invariance by neglecting the color variation caused by illumination:

> And this has led to a more or less standard understanding of colour constancy as a kind of invariance. In particular, on this view (henceforth, invariantism), colour constancy is an invariance of apparent colour across changes in illumination. Invariantism has become the de facto standard understanding of colour constancy in both philosophical and scientific work on colour. (Cohen 2008, 64)

As Cohen and many other authors have stressed, the readiness of subjects to acknowledge that some surfaces look chromatically the same despite differences in illumination does not exclude their awareness of the chromatic changes caused by variations in illumination. For example, it is through the changes in the colors of Monet's haystacks themselves that we become aware of the season and the time of day represented by Monet's paintings. Although illumination doesn't appear to change the physical properties of the haystacks, there is a clear sense in which the sunset light can actually turn our perceptual experiences of haystacks from yellow to vivid red.

Cohen's own response to color variations caused by changes in illumination is to defend a relationist view of colors, according to which colors are relations not only between objects and subjects but also between objects and circumstances. The fact that the same surface can appear to have different colors across changes in illumination is what a relationalist would expect, because colors are, in this approach, constituted by their relations to viewing conditions: changing the illumination changes the viewing condition and therefore changes the color. For a relationalist, the difficulty is rather to account for color constancy, that is, the fact that a surface seems, in a certain sense, to retain its color despite variations in illumination. To accommodate his relationalism to color constancy, Cohen proposes a counterfactualist account of the apparent unity presented by a surface across differences in illumination. Unlike invariantism, the counterfactualist account does not explain the apparent chromatic unity exhibited by a surface across differences in illumination

by appealing to the fact that a surface exhibits the same occurrent color across such differences, but rather by appealing to the fact that a surface would exhibit the same color properties in the same counterfactual situations. As Cohen explains,

> [Counterfactualism] does not say that such regions are alike in that they share an apparent colour. Rather, it says that the two regions are alike in that they would share an apparent colour if, contrary to fact, both regions were presented under the same illumination. (Cohen 2008, 81)

Cohen's view provides two important insights: illumination cannot be excluded from an account of the nature of color, and color variations across changes in illumination are at the heart of the phenomenon of color constancy itself. In the remainder of this section, I will show that objectivism regarding colors and reflectance physicalism, contrary to what is usually assumed, can endorse Cohen's insights into color constancy. In particular, they can both acknowledge the simple phenomenological observation that the colors we experience vary as lighting changes and reject the invariantist conception of color constancy used to support ontological theories of color and especially color objectivism. However, the view I will defend differs from Cohen's in many ways. For example, rather than arguing for a relational and subjectivist view of colors, I maintain that colors are objective and intrinsic properties of surfaces. And in contrast to Cohen's counterfactualist approach to color constancy, my view explains the unity put forward in the phenomenon of color constancy by appealing to the phenomenological stability provided by a selectionist view of color experiences.

To understand how reflectance physicalism can explain the phenomenological observation that color experiences vary with changes in illumination, it suffices to notice that reflectance is both a disposition to interact with light and a disposition that varies according to the nature of the light. The approach taken by most reflectance physicalists centers on the notion of SSRs, that is, the dispositional properties of surfaces to reflect a determinate amount of the incident light at each wavelength in the visible spectrum. Yet, as section 4 shows, SSRs cannot be the physical properties detected by the human visual system because it cannot discriminate between all the wavelengths constituting full-spectrum light. Moreover, if colors were SSRs, color vision would be restricted to perception in full-spectrum light, which could be the case only if

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we arbitrarily restricted the notions of visible light and veridical perception.[8] But SSRs are not the only reflectance properties of surfaces. A surface's reflectance property corresponds to the way a surface reflects the incident light, but its reaction to the light depends on the wavelengths entering into the composition of the incident light. This is why a blue surface on a white background that reflects a large proportion of short wavelengths included in white light (i.e., a light source that approximates a uniform spectral power distribution) will reflect almost no light and appear almost black when illuminated with filtered light composed exclusively of long wavelengths.

There is no unique way for a surface to interact with light because light is not a simple and unique phenomenon. By decomposing light into rays of different wavelengths, Newton demonstrated that white light, though apparently simple, is, in fact, complex. Although light is not visible,[9] the complexity of light is directly related to the variety of the colors we perceive. To grasp the importance of this relation, consider what our perception of colors would be like if light were simple and could vary only in intensity. If light were uniform, each point of a surface would reflect a determined proportion of the illuminant, but there would be no differences related to wavelengths. Provided that they reflect the same proportion of light, red, green, blue, and yellow surfaces would therefore be indiscriminable. Without the complexity of light, all phenomenological properties associated with color perception would vanish, because it is only through the interaction of surfaces with various wavelengths that the diversity of the intrinsic properties of surfaces can be accessed.

Unlike most objectivist and physicalist accounts of colors, my proposal does not favor one illuminant, or one type of illuminant, over others. In particular, it does not assume that natural daylight or any other entire-spectrum light source is preferable for determining an object's real color.[10] It can certainly be argued that entire-spectrum light is superior for some tasks,[11] but it cannot be concluded from this fact alone that illuminants that do not emit light continuously across the entire visible spectrum cannot give us access to an object's real color. According to this account, numerous colors can then be perceived in the absence of most wavelengths constituting the visible spectrum. In fact, as it appears, light composed of any combination of wavelengths projected onto a

8 In section 7, I discuss the ontological and epistemic reasons to favor a particular illuminant.
9 This claim will be explained and argued in detail in section 7.
10 For a defense of natural daylight as determining the real colors of objects, see Allen (2010).
11 The epistemic advantage of daylight is discussed in section 7.

white surface will give rise to characteristic color experiences.[12] None of those colors can be identified with SSR because a surface's disposition to reflect a characteristic proportion of light at each wavelength cannot be accessed in the absence of those wavelengths. Although SSR cannot be perceived in the absence of entire-spectrum light, all colored surfaces have stable dispositions to reflect different lights. In fact, for any illuminant and any particular surface, there is a characteristic proportion of the incident light that a surface is disposed to reflect.

Traditional reflectance physicalism rightly identifies colors with dispositional properties of surfaces to interact with light, but it neglects two basic facts: light is not a single and uniform phenomenon, and each surface has as many reflectance properties as there are illuminants of different natures. Although all reflectance properties are intrinsic and mostly stable properties of surfaces, they are accessible only under particular illuminants.

Perceived colors vary across illuminants not because colors are relational or transient properties, but rather because the nature of the illuminant selects which reflectance properties are visually accessible to an observer. This is also why invariantism, according to which "colour constancy is an invariance of apparent color across changes in illumination" (Cohen 2008, 64), is wrong.

There is no invariance of perceived color across changes in illumination because each different illuminant gives access to different reflectance properties. However, the kind of color changes caused by variations of illuminants is very different in nature from the kind of color changes that can be traced to changes in the properties of the colored surfaces. The color changes involved in perceiving a surface across different illuminations are different from color transformations involving a chemical or physical change to the surface of a material object, because color changes due to illumination result not from changes on the surface of colored objects but rather from the way lighting selects which color is perceived. Unlike chromatic discontinuities due to physical discontinuities of a surface—like the different colors of a multicolored beach ball, which correspond to differences in the physical properties of its surface—the differences in color resulting from the projection of light of different wavelengths on a wall are not due to any physical discontinuities of the wall's surface. Those color differences correspond to colors made visible

12 Notice that the colors perceived in the absence of most wavelengths are typically the colors used in colorimetry to quantify and physically describe human color perception. Cf. CIE (1932). *Commission internationale de l'Eclairage proceedings, 1931*. (Cambridge: Cambridge University Press).

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by using light of different wavelengths. The surface of a wall can then appear to be of different colors without any discontinuities in the surface's physical properties.

6 Counterfactualism Revisited

The account of colors proposed here distinguishes between two kinds of *experiences* of color variations. When we experience the color of a surface as changing under fixed illumination, we witness a change in the dispositions of the surfaces to interact with light. We therefore witness a change *in the intrinsic properties of the surface*. In contrast, when we perceive a change in color caused by a change in lighting, the color of the surface is replaced by another color of the same surface *in the subject's experience*. Although a new color appears in the subject's experience after a change in lighting has occurred, this color has been present in the surface all along. In the latter case, none of the colors of the surface have changed, but our awareness of them has changed according to the circumstances. I believe this approach captures the contrast between transient and stable colors used by some philosophers to describe color constancy. Armstrong offers the following argument:

> When considering the phenomenology of colours in particular, it is useful to draw a distinction between *standing* and *transient* colours. This is intended as a distinction in the coloured object, and is not perceiver-relative [...].
>
> Now consider a coloured surface such as a piece of cloth with fast dye which is subjected to different sorts of illumination. We often say that it presents a different *appearance* under the different illuminations. This seems misleading. In a standing sense the colour does not change. But in a transient sense it really does change colour. The mix of light-waves that leaves the surface is different. A standing colour is thus a disposition to have that transient colour in normal lighting conditions. (Armstrong 1987, 45, n.6)

As this quote exemplifies, the constancy phenomenon is often viewed as implying a dichotomy between different kinds of colors or color appearances. In my view, this dichotomy is empty because all colors perceived are of the same nature; what is transient or stable is our access to them. If colors are

dispositions of surfaces to reflect any illuminant or any combination of illuminants, this disposition doesn't change unless there is a change in the physical properties of the surface. But changes can occur in the perception we have of those colors. According to the view of colors defended here, color perception is always partial because our color experiences give us access to only a fraction of the plurality of the colors there are. This form of color pluralism[13] indeed involves color selectionism,[14] that is, the idea that interpersonal and intrapersonal color variations can be explained by the selective role of the visual system and the environmental conditions. In short, the spectral sensitivities of a given observer's color receptors determine which colors this observer can perceive. According to this view, most intersubjective color variations can be explained as differences arising from which set of colors is accessible to individual perceivers given their particular visual systems. Although colors are mind-independent and color experiences are veridical, the selectionist approach to color perception explains how different subjects endowed with different visual systems experience different colors. A similar explanation is available for variations in lighting. Which colors a particular observer can perceive in a particular situation depends on both the spectral sensitivity of the observer's color receptors and the spectral properties of the illuminant.

Consider a ripe banana perceived in daylight. It appears yellow to a normal trichromat, because a trichromat's visual system has the capacity to detect colors that correspond to color variations along three wavebands S, M, and L. But the same banana also reflects a determinate ratio of each wavelength or each arbitrary waveband included in the visible spectrum. It reflects, for instance, a determinate ratio of light at 650 nm. Yet, when a banana is seen under a red monochromatic light at 650 nm, the visible light is limited to the spectral range of the L receptor, causing the banana to appear red.

Visual systems and illuminants are causal intermediaries in the perceptual process that transmit information about a surface's dispositions to interact with light in a particular way. But like all perceptual media, they also select the kind of information that is available to the perceiver (see Mizrahi 2018). Perceiving different colors in different lighting conditions must therefore be distinguished from perceiving intrinsic color variations. When perceived across varying illuminants, the colors of surfaces remain unchanged and stable; what changes is the subject's perspective. When changes in illumination

13 Color pluralism is the view that objects have simultaneously different colors. It has been defended in Matthen (1999), Mizrahi (2006), Kalderon (2007), and Allen (2009).

14 For the relation between color pluralism and selectionism, see Kalderon (2007).

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occur, it is therefore not colors that are transient, but rather the subject's access to them. Changes in illumination, or wearing "colored" glasses, modify color experiences in a way similar to the use of optical instruments. Periscopes, telescopes, and microscopes give rise to visual experiences very different from those delivered by the naked eye. All these experiences are, however, veridical and enrich our knowledge by expanding our visual capacities to spatial and even temporal regions inaccessible to our visual system. Perceiving through optical instruments changes the subject's visual experiences by changing what is accessible to the perceiver. Moreover, it would be misleading to say that what is perceived through a microscope or a telescope appears different. For example, perceiving objects through a microscope doesn't make them appear larger because the kind of information delivered in this case is different and, in a certain sense, incommensurate with what is perceived by the naked eye. Similarly, perceiving colors under different illuminants or through color filters changes our chromatic perception by changing the chromatic portions of the world we can access. By traveling across different chromatic portions of the world, we come into contact with different "families of colors." Each family of colors is united by relations of similarity, difference, and exclusion, but such relations do not hold between members of different families.[15] The use of telescopes has been fundamental for scientific progress because they make possible the observation of distant objects and allow unexpected realities to be discovered. This is what happens with chromatic realities as well. This is the case, for example, when one discovers that two garments that match perfectly under artificial light in the store appear different when one emerges into daylight, or when a forensic officer discovers a stain after projecting a black light onto a uniform and apparently immaculate carpet.

Although phenomenological differences arise from perceiving the same object through different optical instruments, we would not describe these differences as arising from the perceived object itself. Rather, the object appears to remain unchanged, whereas our perception of it changes. Similarly, some phenomenological differences emerge when we perceive a given surface across different lighting conditions, but we don't conclude that these differences correspond to differences in the intrinsic colors of the perceived surface. If the present account of color variation across differences in illumination is correct, we don't really perceive the same color across different illuminants,

15 For the idea that visual systems and viewing circumstances determine unique color families, see Kalderon (2007).

but we can nonetheless conclude that no intrinsic chromatic property changes while we look at a surface.

To account for the constancy of colors under different illuminants without subscribing to the invariantist approach, Cohen suggests that colors are visually represented by counterfactuals.

According to this view, two surfaces under different illuminations are perceived to be alike if, contrary to fact, they would share the same color under the same illuminant. Therefore, Cohen's counterfactualism regarding the constancy of colors under different illuminants neither denies, like color invariantism, that color perception varies with illumination nor affirms that veridical color appearances should be restricted to perception occurring under certain forms of illumination only (e.g., daylight); rather, it explains "the capacity of the visual system to discern similarity in counterfactual apparent colour across differences in occurrent apparent colour" (Cohen 2008, 80).

Cohen's counterfactualism is problematic for several reasons, but it shares some important ideas with the account proposed in this paper. First, according to counterfactualism, the fact that an object retains the same color across illuminants is determined by its different color appearances under different illuminants and not by an invariable appearance. Counterfactualism, therefore, does not support the claim that color constancy motivates a light-independent view of colors. Second, counterfactualism explains color constancy by a constancy or an invariance about some phenomenological variability. We perceive stability in chromatic appearances across illuminants because they manifest some invariance that can be expressed by counterfactuals like "two regions are alike in that they would share an apparent colour if, contrary to fact, both regions were presented under the same illumination (namely, under I_1 or under I_2)" (Cohen 2008, 81).

However, one concern about a counterfactual analysis of color constancy is that it is difficult to understand what it means to perceive or experience colors that are not present but are only counterfactual. A plausible view of color perception is indeed that the phenomenology of our color experiences is explained by our direct acquaintance with colors. Yet, it is difficult to understand what a direct acquaintance would be in the case of colors that are potentially but not actually present. A similar reservation about Cohen's view on color constancy is expressed by Tye:

> If [...] the perceptually distinguishable regions [...] manifest different colors, then, on Cohen's account of color, they actually

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> look different colors. According to Cohen, then, there isn't color constancy (in the relevant sense). This seems wrong to me and to miss the point. I take color constancy for the purposes of this objection to be constancy in how things look color-wise through different lighting conditions. It isn't constancy, period. Cohen fixes up something that gets the latter but he doesn't get the former. (Tye 2012, 303)

Tye's objection is that color constancy is a perceptual phenomenon and that an adequate account of color constancy must refer to how surfaces appear in experience, not how they would look if they were viewed with a different illuminant. But one can doubt that color constancy is a purely perceptual phenomenon because color constancy appears to involve a judgment about colors' stability, which requires the actualization of the subject's conceptual capacities and is not limited to the subject's sensory mode of awareness. What color experiences must exhibit in order to explain that color constancy is not identities of colors but awareness of colors that justify some judgments about the surfaces in which they inhere. For example, perceiving that the color of the snow is pink at sunset justifies my belief that snow would appear white at noon. According to this view, color constancy judgments are not justified because two colors look alike in experience but because the colors perceived in experience make the perceiving subject justified in believing that snow at noon will look white if the properties of the snow remain constant.

What is problematic in Cohen's view or any subjectivist view is not therefore that color constancy is expressed by counterfactuals, but that those counterfactuals must be somewhat accessible through perception. As Cohen puts it: "Putting all this together, counterfactualism understands colour constancy as the capacity of the visual system to discern similarity in counterfactual apparent colour across differences in occurrent apparent colour" (2008, 80).

The situation is very different for the color realist who takes colors to inhere in objects. If colors are nonrelational and mind-independent, they exist without being perceived. Yet, to be perceived, different conditions must be met. Colors are indeed perceived only if the perceiver's visual system has some definite characteristics and only if that perception takes place under particular circumstances, including a restricted set of illuminants. For the realist, the role of counterfactuals is therefore to express what the particular colors of a given object are and in what particular conditions they can be perceived. Unlike in Cohen's approach, counterfactuals do not enter perceptual experience,

but they capture which dispositional properties characterize a given surface and what the surface's colors are, provided there is no alteration of the colored surface. According to the realist, the list of counterfactuals proposed by Cohen does not therefore provide a reductive analysis of what remains constant in color experiences under different illuminants, but it captures an important truth regarding colors. The counterfactuals proposed by Cohen do express the fact that colors, despite their dispositional nature, are actual, intrinsic, and stable properties of surfaces that ground the characteristic invariance of appearances manifested by surfaces across different illuminations. The invariance associated with color constancy is not an invariance regarding the color appearances themselves or, in other words, the phenomenal character of these experiences, but an invariance regarding the kind of variability exhibited by a colored surface under different illuminants and the systematic relationships between its color appearances and the nature of the illuminants.

As Cohen emphasizes, the experimental results regarding the extent of color constancy are very different according to whether subjects are asked to match different pieces of paper "to look as if it were 'cut from the same piece of paper' " or whether they are asked to "adjust the test patch to match its hue and saturation to those of the standard patch" (2008, 66). I believe this discrepancy is what is expected if what motivates a subject to conclude that two surfaces look alike under different illuminations is not the colors the subject immediately perceives, but rather his/her expectation regarding the series of simultaneous or successive color appearances presented according to his/her beliefs regarding the dispositional properties of the perceived surface. We could say that color constancy corresponds to the experience of a constant and specific variability rather than to an experience of a constant color.

7 Invisible Light Versus Visible Lighting

I have criticized the invariantist approach because it fails to take into account the chromatic variations that are experienced when illumination varies. In his (2005) paper, Hilbert acknowledges this difficulty and tries to resolve it by suggesting that the visual system tracks illumination as well as reflectances:

> All of the issues with computational theories can be resolved by supposing that in addition to delivering information about the reflecting properties of objects the visual system also delivers information about the way in which those objects are illuminated.

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> When we look at the printed page under indoor illumination we see not only that some parts of it are white and others are black but that the whole of it is dimly lit. (Hilbert 2005, 150)

It seems indisputable that our chromatic experiences are not limited to the awareness of the colors of opaque surfaces and that we also perceive, in a way explained below, variations in illumination. As we have noted, Monet captured such variations through a series of paintings of single subjects, such as the famous *Rouen Cathedral* and *Haystacks*, for which he studied and painted the continuous atmospheric and light changes throughout the day and the year.

What exactly did Monet capture in these series? What explains the difference between the illumination of the Rouen Cathedral at dusk and its illumination at noon? What is the relationship between perceiving the cathedral and perceiving its illumination?

A simple answer to these questions is that when perceiving the cathedral and its illumination, we perceive two distinct elements, both of which contribute to the visual experience of the scene. This is the approach articulated, for instance, by Brown (2014), who argues that a color experience involves two colored layers and that both contribute to the explanation of color constancy. On this account, the perceived object exhibits a constant color that can be supplemented by the color of the light through which perception takes place. "Standard" perception is therefore modeled after perception through transparent objects, in which the chromatic experience is supposed to be determined by the color of an object perceived through a transparent object and the color of the transparent object itself.[16]

I detect many problems in Brown's account of color constancy, but I will focus my criticism on the idea that light is colored and can contribute to chromatic perception by adding its chromatic properties to the color of the perceived objects. I will argue that characterizing light as one of the elements of what we perceive distorts the phenomenology and ontology of visual perception and that explaining color constancy therefore requires a very different strategy. Brown's proposal is phenomenologically suspicious because we never perceive light, at least not directly.[17] As Gibson notes, light "is never seen

16 This approach is not available if transparent objects are colorless, as I argued in Mizrahi (2010, 2018).

17 For the defense that we perceive light independently on our seeing objects, see O'Shaughnessy (1985), Matthen (2018).

as such. It follows that seeing the environment cannot be based on seeing light as such" (1950, 55).[18] In fact, in the absence of reflective surfaces, light is invisible. When it travels through outer space, light is invisible until it can bounce off something. And as Hilbert rightly points out, we never perceive beams of light, but only the reflectance properties of the dust particles they illuminate (Hilbert 1987, 162).

Arguing, like Brown, that chromatic experiences result from a combination of the colors of objects with the color of the light through which they are perceived gets the phenomenology wrong, but more significantly, it dissolves a distinction which is important for understanding colors and visual perception in general. Although the presence of light is a necessary condition for seeing, this is the case only because light contains information about visible things. As Gibson notes, light is informative insofar as it is structured by the environment.[19] Therefore, light plays an essential role in vision not by virtue of its own phenomenological and physical characteristics but rather because it can be structured by the environment. Similarly, Heider explains why the information conveyed *by* light cannot be *about* light itself. From an ontological point of view, light does not possess the characteristics it conveys because light is composed of a manifold of independent light rays that vary independently. When a particular structure emerges from this manifold, it does not therefore characterize the manifold but rather the event or the object that imposes its structure on it. Heider explains:

> The mediator processes which meet our sense organs are spurious units; they have unitary form not because they are coordinated to objects. If one does not refer them to their unitary cause, they are unexplainable. A manifold of light rays which has been produced by a source of light cannot be compared to an event, such as the fall of a stone, which also had its causes but which it stands, so to speak, by itself. The light rays have no "reality" without their cause. They contain a strict order which cannot be attributed to

18 This view is shared by many authors; see Chisholm (1957), Heider (1959), Smart (1963), Hilbert (1987).

19 Gibson writes: "In the case of unstructured ambient light, an environment is not specified and no information about an environment is available. Since the light is undifferentiated, it cannot be discriminated, and there is no information in any meaning of that term. The ambient light in this respect is no different from ambient darkness. An environment could exist behind the fog or the darkness, or nothing could exist; either alternative is possible" (1986, 52).

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> the waves themselves since they are independent of each other. (Heider 1959, 7)

This understanding of the role of light in vision is in perfect accordance with reflectance physicalism, which identifies colors with dispositional properties of surfaces to interact with light. According to this view, then, attributing color properties to light is incoherent because it would involve the capacity of light to be transformed by itself.

If light is invisible, how then does simply looking out a window inform us of the time of day, the weather conditions (Jameson and Hurvich 1989; Endler 1993; Zaidi 1998), and even the geographical location (Judd et al. 1964) of what we perceive?

If we take seriously the phenomenology of the perception of colors under changing illuminants but deny that the color variations due to different illuminants can be partially attributed to the color of those illuminants, we must conclude that the colors we see across changes of illuminants are the colors of the surfaces themselves. Therefore, according to this approach, if we can perceive the illumination of a scene, this perception is nothing over and above perceiving the colors of the objects within a particular scene. The challenge is then to explain how perceiving colors of objects across variations in illumination gives access to the illumination itself. In other words, what does it mean to say that we perceive the illumination of a perceived scene?

To answer this complex question, I propose that we consider the special relationships between colors under a given illumination and colors under different illuminations. If colors C_i under a given illuminant *I* are identified with dispositions to reflect a certain proportion of *I*, a uniform colored surface has only one C_i at a time. A given uniform colored surface has, however, a plurality of colors, because there is at least one color for each different illuminant. Now, the colors we can perceive only under a particular illuminant *I* constitute a distinctive family of colors united by particular relations of similarity and exclusion. Unlike colors perceived across different illuminants, colors perceived under the same illuminant are indeed exclusive. This is why a green surface under *I* cannot simultaneously be yellow, blue, or magenta and, more generally, why being a particular color under *I* excludes being any other color under *I*. Note that the exclusion relations characterizing colors perceived under a particular illuminant *I* follow from the fact that colors are a disposition to reflect a certain proportion of a particular illluminant. For any given illuminant, a surface cannot have more than one of those dispositions at

the same time. As we have seen, the situation is different with colors perceived across different illuminants. Colors perceived across different illuminants belong to different families and are therefore not exclusive. A surface can be white in I_1 but blue in I_2 or red in I_3, because the surface reflects a distinct proportion of each given illuminant I_1, I_2, and I_3. Thus, the light-dependent reflectivist view defended here does not deny the possibility of perceiving different colors across different illuminations, but it does deny the possibility of perceiving different colors at the same place under the same conditions.

It seems we are now in a better position to answer our initial question: What does it mean to perceive illumination? Although we don't directly perceive the light that enables color perception, we can access illumination through the unique family of colors revealed to us by each individual illuminant. Colors perceived under the same illuminant are indeed united by similarity and exclusion relations unique to them. Thus, because similarity and exclusion relations hold only within a family, for each given subject, there is a one-to-one correspondence between color families and illuminants. Perceiving a particular illuminant is therefore perceiving colors belonging to a particular family.

Although very minimal, this approach to illumination is enlightening. Consider our preference for natural daylight. Average daylight or sunlight is often taken as the standard for color vision, and we seem to assume that natural daylight gives us access to the true colors of objects. But as we have seen, if colors are illumination-dependent properties, this cannot be the case, because whatever the illuminant, for each colored surface, there is a true color corresponding to the way this surface interacts with a given illuminant. So why do we prefer daylight? Are we forced to conclude, with Michaelson and Cohen (2021), that our appeal to natural daylight is unmotivated and that our preference is ontologically or epistemologically unjustified? I don't think so. The account of illumination defended above provides a very different interpretation of differences between illuminants. Although all illuminants, as argued above, are equal with respect to the veridicality of the color experiences they select, the color families they determine are different. For instance, they can be of different sizes. Yet, the size of a family of colors is important for color perception because the more colors we can discriminate under a given illumination, the more chromatic nuances and contrasts we can perceive. Consider Akins' contrasting example of a case of perception under monochromatic light:

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> For the trichromat, under a red illuminant, everything that is visible appears in shades of red from bright red to red-black. But what is visible against a bright red wall? A magenta figure (e.g., the fox) will reflect a large percentage of red light. A red fox does not contrast with a red wall. The same holds true for all of the magenta figures. Paradoxically, under the red illuminant, figures rendered in the blue ink will be the most visible. A blue figure reflects very little red light under any lighting conditions, hence it will now reflect very little light at all. The blue alligator thus appears as a black figure against a red wall. (Akins 2014, 181–182)

Under monochromatic light, the colors perceived are restricted to a relatively small set of colors. If the light source emits only short wavelengths, all surfaces will look bluish, but if the same scene is perceived under an illuminant including only long wavelengths, everything will appear reddish. In both cases, the richness and the vividness that characterize our perception in standard daylight are lost. So the size of the color family that characterizes an illuminant matters. It matters because it corresponds to a more or less extended palette of colors. Our preference for daylight is not justified because it reveals an object's real color, as argued by Allen, nor is it merely arbitrary, as argued by Cohen. Natural daylight is generally preferred because it provides a rich palette of colors that allows us to easily discriminate between surfaces and identify objects.

Although I have argued that daylight, or any other entire-spectrum light, doesn't provide better access than other illuminants to the real colors of objects, I think it is possible to explain the epistemological advantage of certain illuminants over others by appealing to the complexity of the network of relationships they allow. The same explanation provides an answer to Michaelson and Cohen's criticism of Allen's defense of natural daylight. They indeed argue that there is no basis for choosing between different types of daylight and that, despite daylight's intuitive appeal, our preference for it is unmotivated. Although not all illuminants are equal with respect to the size of their corresponding color families, in some cases, the sizes of such families are more or less equivalent. This happens, in particular, when sources emit light continuously across the entire visible spectrum. I agree with Michaelson and Cohen's point that, in this case, there seems to be no basis for choosing one illuminant over others from an epistemological point of view.

8 Conclusion

I have argued that conceiving colors as objective light-dependent properties explains not only why entire-spectrum illuminants are preferred but also how it frees us from arbitrarily choosing certain color appearances over others—what Russell refers to as "color favoritism" (Russell 1912).

Color constancy has been a challenge for psychologists and philosophers since Helmholtz published his work in the mid-nineteenth century, and its formulation has not changed much since that time. The Helmholtzian idea was to explain the constancy of the colors perceived across different illuminations by "discounting the illuminant" (von Helmholtz 1924, 287) from the information carried by the light reaching the observer's eyes. I have argued that this approach is fundamentally wrong, not only because invariantism favors a faulty view of the phenomenology of color vision but above all because it fails to offer a full account of the significance of the color constancy phenomenon for color vision and theories of the ontology of colors.

I have argued that the chromatic variations resulting from changes in illumination demonstrate that colors are light-dependent properties and that the constancy of the colored objects across these variations is grounded in the dispositional and intrinsic character of color properties. Rather than "discounting the illuminant," I have shown that observers have access to the plurality of illuminants through the palettes of colors these illuminants disclose. To quote Laforgue's nicely expressed insight into the innovations introduced by impressionism, it is not by "painting the light" that impressionists have grasped the nuances of the atmosphere and the complete range of variations in illumination, but rather by capturing the polyphony of colors these variations reveal:

> In a landscape flooded with light, in which beings are outlined as if in colored grisaille, where the academic painter sees nothing but a broad expanse of whiteness, the Impressionist sees light as bathing everything not with a dead whiteness but rather with a thousand vibrant struggling colors of rich prismatic decomposition [...].
>
> The Impressionist sees and renders nature as it is—that is, wholly in the vibration of color. No line, light, relief, perspective, or chiaroscuro, none of those childish classifications: all these are in reality converted into the vibration of color and must be obtained

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on canvas solely by the vibration of color. (As cited in Harrison, Wood and Gaiger 1998, 937–938)

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Categorial Metaphysics and the Reality of the Inference Problem

On Flying Pigs and Fundamental Lawhood

Ralf Busse

Strong accounts of laws of nature have been challenged by an inference problem: how, for example, should it be possible to infer from the fact that a possible regularity has a metaphysically fundamental status called "lawhood" that the regularity in fact obtains? J. Schaffer has argued that such alleged inference problems never threaten assumptions in foundational metaphysics because they have a simple axiomatic solution: simply make it part of the metaphysical theory that the fundamental posit in question exhibits the desired inferential behaviour; no metaphysical problem arises, all that remains is the epistemic task of providing evidence in favour of the suggested posit. I argue that quite the opposite is true: problems in the vicinity of the inference problem are real and serious and haunt foundational metaphysics at many points. The form of a fundamental posit is not "fundamental item that does φ," but "fundamental item of category C that does φ," where possible metaphysical categories such as entity or predicable mirror linguistic categories such as singular term or predicate. The assumption of a fundamental C and the assumption that this item is capable of performing role φ can conflict. When they do, the assumption of a fundamental C that φs faces a Conjunction Problem. The general kind of reason is that fundamental items exhibit a category-specific simplicity or structurelessness, while performing metaphysical jobs often requires a characteristic structure. Thus, at the fundamental level fundamental entities are mereologically simple, hence they cannot do a work requiring mereological complexity; and fundamental predicables are logically simple, hence they cannot do a work requiring logical complexity. This reveals the importance of distinguishing between different metaphysical, and not only ontological, categories. I will illustrate the notion of a Conjunction Problem by the main examples of Ontic Monism, Dispositional Essentialism, and Fundamental Lawhood.

1 The Inference Problem for Fundamental Lawhood as a Conjunction Problem

Example 1, Fundamental Lawhood: According to fundamentalism about laws of nature (cf. Maudlin 2007, chap. 1), a law is aptly formulated in the form "It is a law that all Fs are Gs," with a sentential operator "It is a law that…" for a metaphysically fundamental status of lawhood of the regularity described. Sceptics about fundamentalism confront the view with a variant of D. Lewis's (1983, 366) and B. van Fraasen's (1989, 96) inference problem for D.M. Armstrong's necessitation account of laws:[1] its being a law that all Fs are Gs must, by strict metaphysical necessity, entail the actual regularity that all Fs are Gs (at least *ceteris paribus*, under standard conditions and if intervening factors are excluded); but the fundamentalist about lawhood has done nothing to show whether and how the assumed fundamental status can do this job; the inference from its being a law that Fs are Gs, fundamentally, to Fs in fact being Gs has not been explained.

Jonathan Schaffer (2016) argues that there is no such problem of whether and how Fundamental Lawhood does its job of explaining the inference. According to him, the sceptic's challenge has a simple "Axiomatic Solution" (2016, 577, 579–581): the fundamentalist about lawhood only needs to make it an axiom of her theory that Law(p) entails p; no factual, specifically metaphysical problem arises; all that remains is the "Epistemic Bulge" (2016, 577, 581, 582–585), i.e., the challenge to provide sufficient evidence for a metaphysics of Fundamental Lawhood.

Schaffer claims that the Axiomatic Solution applies universally (2016, 577, 586–587): when a fundamental metaphysical posit is assumed to do a certain job, there never is a factual problem about whether and how it does its job. The posit can be equipped with the ability to do the job from the start by including a suitable axiom in the metaphysical assumption. All that remains is the epistemic problem of providing sufficient evidence for the assumption.

I will argue that *contra* Schaffer genuinely factual problems constantly do arise with posits in foundational metaphysics. On closer investigation, fundamentality posits have the more complex, conjunctive form *fundamental item of category* C *which does job* φ. A genuinely factual Conjunction Problem arises whenever the two conjuncts—being a fundamental C and doing φ—are

1 The catchy name is van Fraassen's. I will not go into details concerning possible difference between his and Lewis's objection.

prima facie in conflict. The inference problem for strong laws is a special case of a Conjunction Problem. I will illustrate this notion by three main examples, Ontic Monism with respect to entities, Dispositional Essentialism with respect to predicative aspects or predicables (*vulgo* properties and relations), and Fundamental Lawhood with respect to statuses of potential truths expressed by sentential operators.

Section 2 clarifies the dialectical structure of a Conjunction Problem by the two toy examples of Flying Pigs and Visible Numbers. Section 3 introduces the idea of fundamentalia as structureless or simple and of a Conjunction Problem, beginning with the best-known metaphysical category of an entity or object in a very broad sense; more specifically, it explains how in Ontic Monism the assumption of a single fundamental and hence mereologically simple particular conflicts with the particular's assumed job of rendering true all the many contingent facts about the world. Since Fundamental Lawhood would hardly be a fundamental entity but a fundamental status of possible truths, thus more like a fundamental predicative aspect, Section 4 introduces the program of a Categorial Metaphysics that distinguishes categories such as entity, truth and predicable. Section 5 elucidates the importance of non-ontological categories such as monadic and relational predicative aspects or predicables. A posited status of Fundamental Lawhood would have to work somewhat like a fundamental global power or dispositionality, with actual regularities being the manifestations; section 6 therefore begins a discussion of Dispositional Essentialism and urges that assumed metaphysical entailments between different fundamental predicables cause a Conjunction Problem because qua fundamental, such predicables lack a logical structure that could sustain inferences. Section 7 explains the underlying notion of metaphysical fundamentality and dismisses Th. Sider's conception of a logical structure of fundamental reality. On that basis, section 8 corroborates the notion of fundamental predicables as logically structureless, in analogy to the paradigmatic mereological structurelessness of fundamental entities. Section 9 distinguishes a fundamental item's *ex officio* metaphysical role that flows from its metaphysical category from potentially assumed additional roles; by the example of relational predicables, it is argued that the *ex officio* roles cause no Conjunction Problems, while assumed additional roles do when they are not in accord with the *ex officio* roles. Section 10 elucidates the paradigmatic status of logic with regard to entailment and inference and adumbrates the scope of acceptable entailments concerning fundamental predicables. Section 11 argues that inference problems cannot be solved by ap-

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pealing to neo-Aristotelian conceptions of essence because essence is a notion of metaphysical priority, so that no fundamental item can have a non-trivial essence that could underlie entailments. Section 12 revisits Fundamental Lawhood and argues, in analogy to the corresponding point against fundamental dispositions, that qua fundamental, the assumed status of lawhood lacks the kind of complexity required in order to sustain the inference from Law(p) to p. Section 13 concludes.

2 Flying Pigs and Visible Numbers

Example 2, Flying Pigs: Imagine someone suggesting that pigs can fly and sometimes do. You object that pigs simply are not the kind of animals that can fly. Birds can fly, because they have wings, hollow bones and so on, but pigs cannot, because they lack this equipment. Your dialogue partner replies that she has an answer to this challenge, the Axiomatic Solution: it is an axiom of her theory of pigs that pigs fly (sometimes); no factual problem arises, given this axiom; all that remains is the Epistemic Bulge: admittedly, more evidence is needed in order to render the assumption of Flying Pigs acceptable, preferably the observation of pigs taking off by themselves.

Example 3, Visible Numbers: Imagine a philosopher of mathematics committing herself to Platonism, the view that numbers are abstract entities existing beyond space and time. She contends that no problems of mathematical knowledge arise because Platonic numbers are visible. You object that abstract entities simply are not the kind of entities that can be seen. Flowers can be seen, because they have coloured surfaces with a reflectance spectrum due to which they reflect visible light. Numbers cannot, because they lack the properties required for causal interaction with light waves. The Platonist puts forward the Axiomatic Solution: it is an axiom of her theory of numbers as abstract entities that numbers are visible; no factual problem arises, given the axiom; all that remains is the Epistemic Bulge: admittedly, more evidence is needed in order to render the assumption of visible abstract numbers acceptable, preferably the discovery of a numbers structure by strong telescopes or microscopes.

Clearly the Axiomatic Solutions propounded in the two cases do not solve the factual problems of Flying Pigs and visible abstracta, leaving nothing more than an epistemic challenge. The dialectics in the two examples share a characteristic structure. *Conjunctive assumption*: The target assumption has a conjunctive form: what is assumed is the existence of entities that are

both of kind K and φ. *Sceptical challenge*: The assumption is challenged by a sceptical intervention to the effect that things of kind K cannot φ. The intervention is sceptical not in the epistemic sense, but in the sense of a Nozickian "how possible?"-question (1981): the sceptic utters doubts about the very possibility of Ks that φ. This sceptical doubt is not ungrounded or arbitrary, but is motivated by a two-step reasoning: *Positive model*: the sceptic first refers to things of other kinds than K which can and do φ and elaborates on what it is about those things that enables them to φ; birds can fly because they have wings and hollow bones, flowers are visible because they have light-reflecting surfaces. *Missing equipment*: She then points out that things of kind K lack the sort of equipment that enables those other things to φ and are by all indications necessary in order to φ; pigs have no wings, numbers have no coloured surfaces. *Theoretical task*: Plausibly, in the two examples the sceptic's challenge constitutes a definite refutation. But in principle, one could begin to develop a theory about how it could be possible for pigs to fly and for abstracta to be visible. *No easy reply*: However, it is no step towards such a theory to merely insist that the assumption is that pigs simply do fly and that numbers simply can be seen. For this would be nothing more than to repeat the claim that there are Ks that φ. The sceptical challenge, which is well-grounded by *Positive model* and *Missing equipment*, is precisely to contest that the two conjuncts K and φ go together.

Whenever an assumption is the conjunctive one of an *item of such-and-such a sort which does so-and-so* and the sceptic can wonder, on the basis of a reasoning of the positive model/missing equipment structure, how that can go together, the assumption faces a *Conjunction Problem*. I will argue that typical problems in foundational metaphysics are Conjunction Problems, among them the inference problem for strong laws.

3 Ontic Monism

In the two toy examples, we considered certain kinds of things, pigs and numbers. In foundational metaphysics, the role of kinds is played by different metaphysical categories, such as those of an entity, a property or relation (more accurately, predicative aspects or predicables, as I will call them), or a complete possible truth or fact. Arguably, a status of Fundamental Lawhood would not be a particular entity, but more like a property or status of potential truths. The most acknowledged and best studied metaphysical category, however, is that of an entity and of concrete objects in particular. Let us therefore

doi: 10.48106/dial.v76.i3

start with a metaphysical thesis concerning the (sub-)category of concrete particulars. This paradigm case will allow us to introduce the crucial idea of the fundamental as structureless and to understand how positive model/missing equipment considerations work in metaphysics.

Example 4, Ontic Monism: This is the position that there exists exactly one single fundamental concrete particular, the cosmos, which by itself renders true all contingent truths. I mainly have in mind J. Schaffer's priority monism (2010b), but the following considerations are intended to also cover existence monism. *Conjunctive assumption*: Just as the assumption of Flying Pigs and Visible Numbers, the fundamental cosmos is a conjunctive posit. What is assumed is the existence of an item that is both a fundamental exemplar of category C, the category of concrete particulars, and by itself does job φ, the job of rendering true all the different contingent truths about the world.[2] *Sceptical challenge*: The sceptic wonders how one single fundamental particular could be capable of rending true all the significantly different truths apparently pertaining to many different particulars, such as this table's being white and that chair's being brown and the table and the chair standing next to each other. *Positive model*: The sceptic puts forward a positive model of something that evidently can render true such significantly different truths. If fundamental concrete reality features (at least) two concrete things *a* and *b*, instead of consisting in only one undivided particular, *a* can render true *a*'s being a white table, *b* can render true *b*'s being a brown chair, and *a* and *b* together can render true that *a* and *b* stand next to each other. On this pluralist ontology, concrete reality renders true significantly different truths in part by consisting of a manifold of distinct concrete things, i.e., by being mereologically structured. *Missing equipment*: It is precisely this equipment of a mereological structure which is lacking in the case of the postulated cosmos. True, the priority

2 Clearly the position that only one particular exists at all is compatible with the thesis that only one fundamental particular exists. See Schaffer (2010a) for the role of the cosmos of being the universal truthmaker. I will speak of *rendering true* a possible truth-bearer (a meaningful sentence or a proposition) and of things *determining the truth* of a truth-bearer in an intuitive, unregimented way. I thereby seek to avoid the entrenched notion of truthmaking with its contested principles of Truthmaker Necessitarianism and Truthmaker Maximalism (see Armstrong 2004). Note that even weaker truthmaker principles that require some kind of existing truthmaking entities at the fundamental level for contingent truths exclude foundational nihilism, the view that no entities exist at all at the fundamental level (see below for some essentials). However, if nihilism is to be rejected, then because severe difficulties arise with the view (Busse 2020) and not because it violates a dogmatic principle of truthmaking. In principle, a nihilist fundament can still render sentences and propositions true in a broader sense than that of truthmaking by suitable entities.

monist maintains that the cosmos has many different particulars as parts at a derivative ontological level (Schaffer 2010b, 33–46). But by claiming that the cosmos is the only fundamental particular, she is committed to the view that the cosmos has no mereological structure at the fundamental level. Neither is there a plurality of "smaller" fundamental particulars of which the cosmos consists. Nor does it then make sense that it is a fundamental truth about the cosmos that it has parts with properties and relations. For an observer with fundamentality glasses, the cosmos is partless. This is what counts if the claim is that this unique fundamental thing alone renders true all the different contingent truths. If the cosmos is to have derivative parts, then this fact must be explained by what and how the cosmos is, *fundamentally*; and if the monistic thesis is to have any content, having parts is not among what or how the cosmos is, fundamentally.

Theoretical task: The Monist's task is to explain in virtue of what fundamental equipment the cosmos can play its role of being the universal determiner of truth nevertheless. The priority monist's assumption that the cosmos has many derivative entities as parts is of no immediate help, because the question arises in virtue of what fundamental equipment the cosmos furnishes the world with all those parts, given that it does not consist of parts fundamentally. One attempted proposal has been to say that the grounded parts are "already latent within" the one substance and that those derivative aspects "are implicitly present from the start" (Schaffer 2009, 378). This amounts to the position that the cosmos is prior to its parts but not quite so; it is hardly tenable or helpful. (Alternatively, it may amount to the blanket claim that the cosmos simply does ground derivative parts; see the elaboration below.) Quite plausibly then, if the cosmos has no fundamental ontic, mereological structure, no fundamental subdivision into other objects, the monist must seek to give it an appropriate qualitative structure. In spite of its ontic simplicity, the cosmos would have to exhibit a rich qualitative pattern (see Schaffer 2010b, 58–60, on distributional properties). Part of the pattern, the monist could argue, can be depicted as *white-table-next-to-brown-chair*, and it is in virtue of exhibiting this qualitative structure that the cosmos renders it true that there is a white table next to a brown chair.

No easy reply: The sceptic is likely to intervene when it comes to the details of accounting for such a rich qualitative structure of a mereologically simple particular. She will suggest that ontic pluralism, the view that fundamental reality comprises a vast plurality of particulars, remains the much more con-

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vincing account of the manifold and diversity of truths about the world.[3] However, the thesis here is not that Monism faces an unsurmountable problem, but that it faces a genuinely metaphysical rather than merely epistemic problem. The main point is that it would be no step towards an answer to the sceptical challenge of how the cosmos can render true all the diverse truths to insist that *it simply does*. For the sceptic's challenge is precisely that the cosmos *cannot* perform this task because it lacks the required equipment, an equipment fundamental reality has on the pluralist view: a mereological build-up out of many simpler particulars.

(Let me include two paragraphs of elaboration. It is no step towards an answer to claim that the cosmos simply does ground the many derivative parts with their properties and interconnections. For we may ask, is the relation of grounding between the cosmos and the parts external or internal, in the sense of a relation that holds in virtue of what the relata are and how they are in themselves?[4] If grounding is assumed to be external, it is hard to explain why grounding facts should hold necessarily, as a majority of theorists assume them to do. It is equally hard to explain why grounding should be necessitating. One would face an inference problem to the effect that from the fact that x grounds y it cannot be inferred that if x exists or obtains or occurs, so does y. External grounding would be among the metaphysical trouble makers and not part of a solution. If grounding is internal, as I take it to be,[5] this means that there must be something about the fundamental cosmos and the parts in virtue of which the relation holds. What could this be on the side of the cosmos? We are back to the task of accounting for some kind of fundamental structure of the cosmos other than a mereological structure that could sustain the many different truths about the world.

3 Foundational atomists face their own challenge of explaining how truths about ordinary things are rendered true by what they deem fundamental. But they can base their answers on a view of ordinary objects as essentially consisting of fundamental atoms, in the ultimate analysis at least. For example, when three charged ontic atoms are spatially related in a triangular pattern, the relevant atomic facts that Qa, Qb, Qc, Rab, Rbc, Rca render true the fact that there is a triangular object with three charged edges, because to be such an object is to be a composite out of three charged things related in a triangular form. For the monist, by contrast, middle-sized objects do not consist of anything in the fundament, as they certainly do no consist of the cosmos.

4 Cf. Armstrong (1989, 43). Not all internal relations need to hold necessarily, as the relata need not necessarily be the intrinsic ways they actually are. But relations such as identity and parthood are internal according to the characterisation given, which is not the case on Lewis's definition of an internal relations as one that supervenes on the intrinsic natures of the relata (1986, 62).

5 See Bliss and Trogdon (2014, sec. 7) on different accounts of how grounding could be grounded.

There is nothing wrong with taking as a starting point a role description to the effect that there must be *something* to the cosmos due to which it can ground its many parts and their properties and relations. But the problem remains what this something is. In certain cases, it is legitimate to characterise things as being certain ways by saying how they behave in virtue of being those ways. For example, the foundational nominalist can formulate her view by saying that particulars are by themselves or fundamentally such that they sort themselves in certain similarity circles (to use Carnap's term). Such a resemblance-nominalist view can be proved to be equivalent to saying that particular things are characterised by repeatable fundamental predicables (Busse 2018). Maybe it also makes sense to assume that there are fundamental predicables such as the vectorial quantities of electric and magnetic field strength in virtue of which things belong into more complicated, multi-dimensional resemblance spaces (Busse 2009). But the more complicated those assumed spaces become, the more pressing the question recurs of what exactly it is about the things in virtue of which they stand in those complicated relations of resemblance. And the required quality structure of the cosmos would be complicated indeed (see Schaffer 2010b, 60; and Sider 2008 on configuration spaces for possible cosmoi). This is a genuinely metaphysical, not an epistemic problem.)

Three general lessons can be drawn from this short case study. First, in such a problem case of foundational metaphysics, *Conjunctive assumption* takes a specific form. The first conjunct is the postulation of a fundamental item of a certain metaphysical category C, in the case at hand of a (single) fundamental concrete particular. The second conjunct adds the claim that this fundamental C by itself does job φ. The metaphysical assumptions is the conjunctive one of a *fundamental* C *which by itself does* φ, or of a *fundamental* C *that* φ*s* for short. Secondly, the reason for the sceptic to worry about the assumed item's capability to perform role φ is precisely the kind of simplicity or structurelesness that results from its being a fundamental item of category C—in the case at hand a fundamental and therefore, at the fundamental level, mereologically simple particular. Thirdly, the sceptic has no reason to be so radical as to deny that the single fundamental particular can play any metaphysical role. After all, the metaphysical *ex officio* role of the cosmos *qua* fundamental entity would comprise its capability of having some fundamental qualitative character or other. The sceptic can and should admit that the cosmos would not merely exist, but also be this or that way, fundamentally. The challenge for the monist rather is to account for the specific kind of

doi: 10.48106/dial.v76.i3

qualitative character of the cosmos required for its sustaining the variety of truths about the world; it is to account for a rich qualitative pattern the cosmos exhibits as a structureless whole rather than by consisting of many parts.

4 Categorial Metaphysics: Entities, Truths, and Predicables

The mereological structurelessness of fundamental entities—and the associated difficulty or incapability of playing certain metaphysical roles, such as rendering true a variety of truths—is only the paradigmatic example of a general construal of fundamentalia as structurelessness. Structurelessness, however, means different things for different metaphysical categories. In order to deal with an alleged fundamental non-entity such as lawhood, it is therefore crucial to understand the importance and the particularities of other categories than that of an entity. We begin with a distinction between important categories in this section. In the section that follows, I will illustrate the importance of non-entities by a selection from existing metaphysical positions. After that, we will start to consider Dispositional Essentialism, construed as an ambitious metaphysics of fundamental predicables.

It is common to distinguish between different ontological categories, such as that of concrete and abstract particular, properties and relations as universals, properties and relations as tropes, kinds, facts, etc. (see, for example, Lowe 2006). This, however, is still a subdivision within a single broader category, that of an entity or (possible) existent, in the sense of a potential target of first-order reference. In order to get to the bottom of the structure of metaphysical problems, we must go beyond mere ontological categories or kinds. There may be arguments, perhaps strong truthmaker arguments, for *ontologism*, as we may call the view that all there is to fundamental reality is the existence of certain entities. But in principled metaphysical considerations as well as in meta-metaphysics we must make room for positions that dismiss ontologism and assume that reality is a certain way, fundamentally, without this consisting in nothing more than the occurrence of certain entities. We must broaden our perspective from ontological categories to metaphysical categories in general.

With respect to Fundamental Lawhood, for example, it is quite implausible to construe the fundamentalist as postulating entities or an entity at the world's fundamental level. Clearly it is Schaffer's view that the fundamentalist's point is not to postulate a manifold of fundamental things called "laws," but one fundamental status of lawhood. However, her locution for that assumed fundamental status is not a singular term but the sentential operator

"It is a law that…" The point seems to be that lawhood is an irreducible aspect or trait of fundamental reality, a fundamental status of certain potential truths, not that it occurs as a peculiar entity.

In general, it seems wise to assume that there are as many different (possibly empty) metaphysical categories as there are syntactico-semantic categories in a language for the perspicuous description of metaphysical affairs. A research program following this policy may be called *categorial metaphysics*. Basically I am following Th. Sider's insight that what he calls "Structure […] is not to be restricted to any particular grammatical category" (Sider 2011, 85), though I will argue in section 10 that he went too far by embracing "structural" aspects corresponding to logical constants.

The most radical break with ontologism is the ontological nihilist's position that at the fundamental level there exist no entities whatsoever, neither particulars nor properties, relations or facts. As Hawthorne and Cortens (1995) have pointed out, the nihilist's crucial task is to design a metaphysically perspicuous, ontologically innocent language for the description of fundamental reality. A plausible starting point are feature-placing sentences such as "It is charging" and "It is massing" in the place of "This particle is charged" and "This particle is massy." Since the semantic job of complete sentences is to state truths, we can say that the nihilist thereby embraces the metaphysical category of a possible *truth*. The nihilist's fundamental truths are not entities even in the broadest possible sense, not even propositions or facts. The nihilist's contention is not that there exist fundamental facts not composed of particulars and properties or relations. She rejects the complete broad category of entities as adequate for the fundamental level, facts included. Just to have a maximally neutral term, we may say that the nihilist assumes ontologically innocent truths as *items* in fundamental reality. Since "truth" and "item" are nouns seemingly applying to entities, this is nothing more than a way of hinting at the fact that for the nihilist, fundamental reality is perspicuously described by a linguistic complex formed out of feature-placing sentences free from any kind of singular terms that license first-order existential generalisation.

A much less radical but still ontologically reserved position is the nominalist denial that at the fundamental level there exist properties and relations. The (strict, austere) foundational nominalist's position is that at the fundamental level the only existents are concrete particulars. Still, she insists that these particulars do not merely exist, but are certain ways and are related in certain ways, fundamentally (Busse 2018). What she denies is that the particulars' ways to be and to be related are specific entities occurring at the fundamental

doi: 10.48106/dial.v76.i3

level, such as universals or tropes. The nominalist prefers a metaphysically perspicuous language in which ways to be and to be related are not expressed by singular terms such as "charge," "mass" and "distance" for abstract entities but by predicates such as "is charged," "is massy" and "is spatially apart from."

In order to avoid the ontologically loaded terminology of properties and relations, we may say that while the nominalist denies that properties and relations occur at the fundamental level, she holds that the *n*-adic predicates in her preferred metaphysically perspicuous language capture monadic and relational *predicables* attributable to the particulars that constitute fundamental reality and that she embraces fundamental predicables not as entities but as *items* in fundamental reality (see Fine 2015, 298, for the terminological contrast between entity and predicable). As everything, predicables are targets of quantification, but of second-order quantification into predicate positions, not of first-order quantification over entities. A both non-substitutional and non-extensional reading of second-order quantification is defended by Williamson (2013, 254–261); see Bacon's (2020), Jones's (2018) and Trueman's (2021) recent higher-order accounts of (what they call) properties and relations, see Skiba (2021) for an overview. On the irreducibility and intelligibility of this kind of quantification, see Williamson (2013, 258): "Talk, like life as a whole, is an inherently risky business. We must go ahead as best as we can [...] In that spirit, we may continue to use [...] higher-order quantifiers without attempting to reduce them to first-order terms."

To sum up, in addition to the broad category of an *entity* we can distinguish the metaphysical category of a possible *truth* (in a purely categorial sense of "possible," so that it is even a possible truth that it is raining and not raining) and that of a monadic or relational *predicable*, corresponding to the syntactico-semantic categories of singular term, sentence and *n*-adic predicate. The aim here is not to advance one particular scheme of metaphysical categories, although I clearly prefer an entity-predicable scheme. Nor is the proposal that we can read off metaphysical structure from the structure of our language, much less that the fundamental structure of reality is language-dependent. The point rather is that the clearest way to spell out what the fundamental level is like according to a given metaphysical position is to flesh out a language for the perspicuous description of that level. Thus, a typical universals theorist embraces singular terms for particulars as well as singular terms for *n*-adic universals plus some means to express instantiation; the nominalist combines singular terms for particulars with *n*-adic predicates expressing predicables; the nihilist prefers a linguistic construction out of feature-placing sentences,

discarding both the ontological category of an entity and the non-ontological category of a predicable in favour of that of a fundamental truth.

It is at this highly abstract level that we ought to distinguish between possible metaphysical categories. We must avoid the presupposition that all posits in foundational metaphysics are basically of the same sort in that they are all posits of entities of various kinds, such as particulars, properties, relations or facts. To believe in possible *truths* is tantamount to believing that sentences succeed in their semantic job of representing reality either correctly or falsely. To believe in *predicables* is tantamount to believing that predicates can do their semantic job of complementing singular terms for entities to form true or false sentences. To believe in *fundamental* truths and predicables is tantamount to believing that certain sentences in the one and certain predicates in the other case must be part of a perspicuous depiction of fundamental reality.

A non-ontological item of fundamental reality may well re-occur reified at a derivative level. The foundational nihilist can admit that to the assumed fundamental truth that it is charging there corresponds at a derivative level the proposition or fact that it is charging. (She can even accept that at a derivative level there exist charged entities.) Similarly, the foundational nominalist can admit that to the fundamental predicables of things being charged and things existing spatially apart from each other there correspond at a derivative level two abstract entities, the property of charge and the relation of spatial distance. Yet for the foundational nihilist and the nominalist these abstract entities are not constitutive of fundamental reality (to borrow Fine's locution, 2001, 26, n.37).[6]

In the following, my sympathies for a foundational nominalism embracing a plurality of particulars plus monadic and relational fundamental predicables, but no extra fundamental entities such as universals or tropes will become evident enough. But this is not the point of this paper. The goal rather is to defend the importance of distinguishing between different metaphysical categories, in analogy to different possible syntactico-semantic types, and to demarcate the area of acceptable metaphysical posits in contrast to posits generating difficulties such as the inference problem for strong laws.

6 The possibility of embracing both genuinely predicative items and properties and relations as abstract entities—in fact, my personal choice, as long as the latter are construed as derivative—is one reason for calling the former predicables and reserving the traditional terms for the entities; similarly for (possible) truths and propositions or facts.

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5 The Importance of Non-ontological Categories in Foundational Metaphysics

Some accounts in foundational metaphysics, most prominently higher-order views such as Bacon (2020), explicitly acknowledge fundamental non-entities. In fact, however, fundamental non-entities pervade metaphysics, even where this is not officially acknowledged. One problem is the usual ontology/ideology distinction, which may suggest that posits beyond ontology are metaphysically less serious. My proposal is to call the fundamental non-ontological commitments *typological*, in order to explicitly distinguish them from the adoption of mere "ideas" or concepts. Another problem is that positing fundamental non-entities often gives rise to serious inference problems, which are not diagnosed unless the metaphysical fundamentality of those non-entities is clearly seen. In this section, I will therefore detect crucial typological assumptions in some important metaphysical views and highlight looming inference problems, substantiating my initial claim that such problems pervade foundational metaphysics.

As indicated in section 3, the ontological monist must say something more about the cosmos in order to reveal how this assumed unique undivided particular is capable of doing its supposed job of rendering true all the different contingent truths about the world. Very plausibly, this addition to the sheer existence of the cosmos must consist in a qualitative pattern the cosmos exhibits. In a strictly monistic ontology this pattern cannot consist in an additional entity, such as a complex universal or trope. So in addition to their assumed unique fundamental entity, monists ought to embrace a fundamental non-entity, viz., a qualitative way for the cosmos to be. The challenge is to conceive of this fundamental qualitative predicable in such a way that in virtue of it the cosmos can render true the diversity of contingent truths.

More or less Armstrongian theorists of universals assume two broad kinds of basic entities, monadic and relational universals, on the one hand, and "thin" particulars as bearers of universals and relata of relations, on the other.[7] However, as Armstrong (1989, 88) has emphasised, the sheer existence of universals and particulars cannot account for the truth of predications such as "*a* is F" and "*a* is R to *b*." Universals must somehow be connected to par-

7 Sometimes Armstrong downgrades universals as not things but ways for particulars to be and to stand to each other (1989, 96–98; 1997, 30–31), a step towards nominalism in my view. Nor will I discuss the related view in (1997, 28–29) of universals, and perhaps also of "thin" particulars (see also 1989, 96), as mere abstractions from states of affairs.

ticulars in order for predications to be rendered true. A "fundamental tie" of instantiation must be assumed. Strong arguments reveal that this tie cannot be but another relational universal. So plausibly the tie must be embraced as a fundamental non-entity, as a fundamental way for universals and particulars to be connected that does not amount to the occurrence of a specific entity. Armstrong himself assumes a third kind of entities, states of affairs, in which universals and particulars are joint together. He is well aware that the way universals and particulars form states of affairs cannot be unproblematic, classical mereological fusion, but must be a "non-mereological mode of composition" (1989, 93). So plausibly, when he states that "the fundamental tie, or nexus, [...] is nothing but the bringing together of particulars and universals in states of affairs" (1989, 110), he is committing himself to a fundamental non-ontological posit in addition to the ontological posits of universals, particulars, and states of affairs: he is embracing a metaphysically fundamental way for universals and particulars to be connected into states of affairs that does not consist in the occurrence of a further entity. Up to this point, this is not a critique, but a diagnosis. However, as Lewis (1999) has emphasised, states of affairs give rise to an inference problem: why should the existence of an entity called "the state of affairs of *a*'s being F" entail the existence of the distinct entities *a* and F as well as that *a* has F?

A similar point can be made concerning accounts of concrete particulars as bundles of tropes. Classical mereology cannot explain the formation of particulars out of tropes, since it guarantees a mereological sum for any arbitrary plurality of tropes. So a fundamental bond of compresence must be embraced that links tropes to form a concrete particular (see Maurin 2018, sec. 3.2 for an overview of positions on the bundling of tropes). Strong arguments reveal that this bond of compresence cannot be but a further entity. It must be assumed as a metaphysically fundamental non-entity, a fundamental way for tropes to be tied up. This assumption cannot be avoided by insisting that tropes *f* and *g* by themselves are necessitating truthmakers for the statement that *f* is compresent with *g*. For we must ask in virtue of what *f* and *g* render the statement true. The natural answer is that they do so by being related in a certain way, viz., by being compresent. Maybe it can be assumed that their being so related is essential or in a certain sense internal (Simons 2010, 203) to the two tropes. Yet this does not change the fact that they must *be* so related, fundamentally, and that compresence must be embraced as a non-ontological fundamental way for tropes to be linked.

doi: 10.48106/dial.v76.i3

Schaffer rightly insists that "everyone," i.e., every foundational metaphysician, "needs their fundamental posits" (2016, 579, 586, 587), and he carefully distinguishes between mere conceptual irreducibility and metaphysical fundamentality (2016, 580). This distinction deserves special emphasis with respect to non-ontological categories. It is one thing for a metaphysician to adopt a predicate as undefined but still meaningful. In order to be able to state her views in the first place, every metaphysician must use some terms such as "entity," "universal," "trope," or "resembles" as meaningful without explicit or implicit definition. She should elucidate her conceptual primitives by examples, analogies, formal constraints and the like, but she cannot define all her notions in terms of other concepts.

It is quite another thing, however, to postulate items as metaphysically fundamental, whether these are assumed fundamental entities or non-entities. To postulate a metaphysically fundamental monadic or relational predicable is not (merely) to adopt a predicate as conceptually or semantically primitive. It is to assume an item in fundamental reality, even though the item is not an entity. Quine calls *ideology* the range of primitive "ideas," meanings or concepts a theoretician relies on. Since fundamental predicables pertain to what basic types one assumes for the things at the fundamental level (*massy* things, *charged* things, *spatiotemporally related* things, etc.), one may call the range of postulated fundamental non-entities the *typology* assumed by a metaphysician (Busse 2018). For example, when Simons writes that "the term 'relationship' […] could be understood to mean a relation when there is one, or merely refer back to true relational predications otherwise" (2010, 201), he means a relational trope by "relation." Yet in addition to postulating a fundamental relational *entity*, be it a universal or a trope, and to merely accepting a relational predication as somehow rendered true by reality there is the third option of assuming a fundamental relational *non-entity*, a relational predicable as part of one's typology.

Thus, I disagree with Sider's view, or terminological policy, that "ideology […] is a bad word for a great concept," that the term "misleadingly suggests that ideology is about ideas" and that a "theory's ideology is as much a part of its worldly content as its ontology" (2011, 13). We ought to side with Williamson:

> Why should the only alternative to ontology be ideology? […] Ontology is part of metaphysics. […] By contrast, ideology is defined as a semantic matter: what ideas can a language express? An ideological commitment is not a truth or falsehood about the mostly

> non-linguistic world. […] the dichotomy between ontology and ideology insinuates the presupposition that metaphysical questions are first-order. […] But not all metaphysical commitment is ontological commitment. (2013, 260)

Ideology is about concepts. The non-ontological part of a theory's worldly content is its typology, not its ideology; or this is the terminology I suggest, since fundamental types (predicables) are the most prominent candidates for fundamental non-entities. The distinction must be made, under whatever names.[8]

The entity/non-entity distinction is also important because it reveals that monistic ontologies fail to be monistic in the full metaphysical sense. One example is the need of a fundamental way to be for Schaffer's cosmos. Other recent monistic ontologies require fundamental non-entities in ways that give rise to inference problems. Paul (2017) advances a one-category ontology, according to which only monadic and relational repeatable qualities exist at the fundamental level—universals, to use the standard term. The complex world of objects is expected to result from those qualities mereologically, by the qualities forming sums. We may raise an Armstrong-style problem: what is it about the fundamental level that renders true the proposition, say, that there is an object that is both F and G? The sheer existence of qualities F and G does not suffice. According to Paul, F and G (plus some more qualities) must compose to form a sum: "I take composition to be the basic building relation of the world" (2017, 38). However, this assumed composition cannot be unrestricted, as in classical mereology, nor is it restricted by some specifiable criterion, such as spatiotemporal closeness. Instead, it is "brute" (2017, 39). Yet a brute fact of composition at the fundamental level cannot occur due to a primitive concept, an element of ideology. It must instead be due to an element of typology; a metaphysically fundamental relation or operation called "composition" must be embraced. Paul's theory may be a one-category ontology, just like traditional bundle theories (universals only, tropes only) and nominalism (particulars only). But it is not a one-category metaphysics.

8 In my view, important other non-ontological categories are sufficiently types-like in order to cover them all under the label of typology. Higher-order predicables may be construed as types of predicables of lower orders. Fundamental truths, such as that it is charging, are often called features that can be placed here or there. Items expressed by sentential operators are aptly described as capturing certain kinds or types of possible truths, such as those that are laws of nature. Operations may be re-categorised as certain kinds of relations, i.e., relational types, holding between the input and the output entities.

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In addition to a realm of qualities as fundamental entities, it is committed to a metaphysically fundamental non-entity, a fundamental operation of so-called composition.

A sophisticated universals-only ontology is Sh. Dasgupta's (2009) algebraic generalism. He starts with a realm of simple monadic and relational universals and offers a set of algebraic operations by which complex universals patterns can be constructed, some of which are states of affairs. Finally, he assumes a status of obtaining for states of affairs. The proposal is that the world's fundamental level consists in the obtaining of a single extremely complex state of affairs ultimately formed out of simple universals by the assumed operations. We may ask an Armstrong-style question: what is it about fundamental reality that renders true the proposition that something is both F and G? To simplify, this could be the obtaining of a state of affairs to the effect that F occurs conjoined with G. But then both the conjoining operation for universals and the status of obtaining must belong to the fundamental level. Hence, though generalism may be one-category ontology, it is not a one-category metaphysics. In addition to universals as entities, it postulates fundamental non-entities: a typology consisting of operations such as (so-called) conjoining of universals and a property of obtaining for complex states of affairs.

Those diagnoses of typological rather than ideological elements reveal that ontologically monistic theories may not be quite as monistic as advertised. What is more, such typological elements are prone to inference problems. Regarding Paul, sums generated by brute fundamental composition can hardly be construed as nothing more than the parts taken as one and hence as ontologically innocent, as Lewis claims classical fusions are. Brute composition appears to be more akin to Armstrong's states of affairs-forming "non-mereological mode of composition." This generates an inference problem comparable to the one diagnosed by Lewis concerning states of affairs. Plausibly, an object deserves to be called a sum only if its existence necessitates certain facts concerning the existence of its alleged parts. Most straightforwardly, the existence of the so-called sum of F and G would need to metaphysically entail the existence of F and of G (at the very least, it ought to entail the existence of *some* suitable constituents of the sum). So far, however, the theory merely states that the brutal sum is an extra object that, *as a matter of fact*, stands in the fundamental composition relation to F and G. To be sure, when that extra object is referred to as the sum of F and G, this description supports the entailment that F and G exist, just as the description of Joe Biden as the husband of Jill Biden supports the entailment that Jill Biden exists.

What is required instead is a *de re* necessity. Yet it is hard to see how, in the *de re* sense, the existence of the extra object called the sum could necessitate that of its alleged parts F and G.

An inference problem also looms for Dasgupta's apparatus of algebraic constructions of universals patterns and a status of obtaining. If the conjoined occurrence of F and G obtains, then it should certainly also be the case that occurring of F obtains and that occurring of G obtains. Otherwise conjoining and obtaining would hardly do their jobs properly. In particular, the intended conjunctive character of conjoining would not be distinguished from, say, a disjunctive character. But it has not been explained how the typological elements of conjoining of universals and obtaining of states of affairs manage to guarantee the entailment from the obtaining of conjoined F and G to that of occurring F and that of occurring G. It is of no help to insist that conjoining of universals is a kind of conjunction. First show how the required entailments are secured, only then call the operation "conjunction." (See Busse 2020 for a more detailed argument.)

6 Dispositional Essentialism

Fundamental Lawhood is a non-ontological assumption of a fundamental operation applied to possible regularities, as in *It is a law that* F*s are* G*s*. The best explored non-ontological kind of fundamental posits, however, are not operations but predicables. Lawhood may be aligned to this category by understanding it as a status or type of possible truths, if for a moment we blur the distinction between truths proper, which are non-entities, and propositions. We may therefore approach Fundamental Lawhood by considering more ordinary fundamental predicables that are assumed to have modal force built in. So consider *Example 4, Dispositional Essentialism*, the metaphysical position that fundamental physical properties such as electric charge are essentially and inherently dispositional, as it has been defended by Bird (2007) in particular. Indeed, its being a law that *p* could be understood as a holistic disposition of the world with the manifestation of being such that *p* is the case. Dispositional Essentialism maintains that in virtue of the essential dispositionality of the fundamental property of charge, a charged particle in an electric field must, by strict metaphysical necessity, experience a corresponding electric force (at least *ceteris paribus*, under standard conditions and if intervening factors are excluded; I will bracket this complication in the following; see Bird 2007, 18–40). The idea of an inherent dispositionality of, say, charge is

doi: 10.48106/dial.v76.i3

by itself neutral as regards the question of whether charge is a property in the sense of an abstract entity or a monadic predicable in the non-ontological sense introduced in section 4. Bird tends to embrace fundamental properties as universals for two main reasons: first, in order to distinguish (fundamental) natural properties as part of "the basic stuff of the universe" from non-natural ones such as being grue, and, secondly, because "when considering the laws of nature, the unity provided by universals [as opposed to tropes] seems most plausible" (2007, 41). Both requirements are satisfied by fundamental predicables though they are not abstract entities: they belong to "the basic stuff" in the sense that they are constitutive of fundamental reality, and they are repeatable in that they can characterise many different things in the same way. I will therefore discuss Dispositional Essentialism as a thesis concerning fundamental predicables.

Conjunctive assumption: As the assumption of Flying Pigs, Visible Numbers, and a fundamental One that is the universal determiner of truth, Dispositional Essentialism is a conjunctive posit. What is posited is something that is both a fundamental item of category C, the category of monadic predicables, and by itself does job φ: a particular a's being characterised by that fundamental predicable of being charged all by itself, without the extra help of laws of nature, metaphysically entails the conditional truth that if a occurs in an electric field, then a experiences a certain force (cf. statement (I) in Bird 2007, 46).[9] *Sceptical challenge*: The sceptic wonders how a fundamental predicable such as charge could be capable of necessitating a conditional built up from two other fundamental predicables, field strength and electric force. Charge could necessitate the conditional together with a law of nature to the effect that charged things are such that whenever they occur in a field, they experience a force. But the essentialist's contention is that charge necessitates the conditional all by itself and that "laws flow from the essences of potencies" by this kind of necessitation (Bird 2007, 5, 46).

Positive model: The sceptic confronts the assumption of fundamental dispositional charge with an alternative model, according to which charge is not

9 In his (I) and elsewhere, Bird uses the counterfactual conditional in order to capture the essential dispositional character of a potency. For simplicity, I will focus on the material conditional, which is entailed by the counterfactual. The exact kind of conditional is irrelevant for Bird's derivation of necessitarian laws in (2007, 46); the argument merely requires modus ponens. The modal force of the conclusion stems completely from the assumed metaphysical necessity in premise (I), which captures the assumed essentiality of the dispositional profile to the potency in question. An up-to-date essentialist would want to say that a particle's being charged does not only necessitate but completely ground the conditional. I will mainly focus on the modal connection.

a fundamental predicable, but a logical construct out of field strength and force: being charged would be the conditional out of the former and the latter. In lambda-notation, this conditional predicable is written as $\lambda x[\text{Field}(x) \rightarrow \text{Force}(x)]$. Arguably, if charge just is this logically complex, conditional predicable of experiencing a force when in an electric field, *a*'s being characterised by the predicable does necessitate the conditional that particle *a* experiences a force if *a* occurs in a field. The necessitation is nothing more than an instance of lambda-conversion: from $\lambda x[\text{Field}(x) \rightarrow \text{Force}(x)](a)$ infer $\text{Field}(a) \rightarrow \text{Force}(a)$.[10]

Missing equipment: However, the essentialist insists on charge being a fundamental and therefore logically simple predicable, a predicable not logically built up from more basic predicables and hence without an inner logical structure (cf. Bacon 2020, sec. 4). *Theoretical task*: The essentialist's task therefore is to explain in virtue of what fundamental equipment charge could play its role of necessitating the field-force conditional nevertheless. *No easy reply*: The main point is that it is no step towards an answer to the sceptical challenge of how fundamental charge can by itself necessitate a field-force conditional to insist that *it simply does*. For the challenge is precisely that a fundamental predicable *cannot* perform this task because it lacks the required equipment of a logical structure.[11]

This example of Dispositional Essentialism is in important respects similar to that of Ontic Monism. First, the essentialist's posit has the incriminated conjunctive form *fundamental* C *that* φs: what is postulated is a fundamental predicable that by itself necessitates field-force conditionals. Secondly, the sceptic worries that *qua* fundamental the predicable lacks the structural equipment by which alone—see the positive model—it could play the assumed role. However, the structure in question is of a different sort than in the case of Ontic Monism. There, what the sceptic complained about was the lack of an ontic, mereological structure of the cosmos; here, she finds fundamental charge lacking in logical structure. This difference in relevant structure is not only due to the difference in the assumed jobs φ, but already due to the different metaphysical categories of entity vs predicable: the paradigmatic kind

10 See section 8 on why it is not a good idea to identify electric charge with a conditional property.

11 It may be the necessitated item instead of the necessitator that is complex, as when *a*'s being F entails *a*'s being F or G. In the following, we can focus on the required complexity of the necessitating item.

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of complexity of entities is mereological composition,[12] that of predicables seems to be logical complexity.

7 Fundamentality: The Fundamentality Operator and the "Book of the World"

My aim in this and the next section is to further support and elaborate on the observation that the characteristic simplicity or structurelesness of predicables (*vulgo* properties and relations) is the lack of logical structure. As a basis, I will in this section be a bit more explicit about metaphysical fundamentality. In section 8, I will take up the issue of fundamental predicables as logically unstructured.

In this paper, I am engaged in a debate *among* foundational metaphysicians of diverging camps: pluralists, monists, nihilists, nominalists, Humeans, es-

12 Does this mean that there are no fundamental things if the world is gunky (cf. Lewis 1991, 19–21), so that everything has proper parts without end? My actual view is more complex. I accept Lewis's ontologically innocent classical mereology (1991, chap. 3), according to which the fusion of a plurality is just the same chunk of reality as the plurality, except for the predefined breakdown into members of the plurality. Since on that view the fusion just is the parts taken as one, there is little point in distinguishing between calling each part fundamental and calling either the plurality or the fusion fundamental; those latter locutions are just ways of calling all the parts fundamental at one stroke. So I would be willing to call a portion of gunk and with it all its parts fundamental. The portion would still metaphysically contrast with non-fundamental entities that are either constituted on the basis of fundamentalia (such as, maybe, hylomorphic substances) or constructed from scratch (such as mathematical objects, on certain anti-realist views). If the world is not gunky but atomistic, we may call the atoms strongly fundamental, i.e., fundamental and simple in Lewis's sense. In addition, however, I accept a constitutive notion of composition. According to that notion, an ontic complex is constituted by the given parts and therefore derivative and not fundamental. Complementarily, I accept a constitutive notion of decomposition of a given complex into abstracted parts. Plausibly, constitutive composition and decomposition as two different specific "small-g" (Wilson 2014) grounding relations generating hierarchies of relative fundamentality. On my view, the abstracted parts outputted by decomposition are never strictly identical with the original constitutive parts of the complex, so that the non-circularity of generic grounding is maintained. (Set-formation may be another complexes-generating operation concerning entities. Here I remain neutral on the question whether sets ought to be called complexes of their members at all and, if so, whether set-formation is best understood as a (non-transitive) variant of mereological composition or as a non-mereological, sui generis form of building complexes.) Fine (2017, 635–640) appears to be endorsing a logical or quasi-logical complexity of entities by admitting Boolean operations with respect to singular terms, a proposal pointing to a greater trans-categorial unity. Here I do not wish to take a stand on whether mereology and ordinary logical operations (plus set-formation?) form a unified class of logical operations in a broader sense (see Dorr 2005, 280, for Lewis's view that innocent mereology may well be called a part of logic).

sentialists, fundamental-lawhood-ists and the like. I therefore need not defend the very idea of metaphysically fundamental reality. I will assume that we foundational metaphysicians share some idea of reality exhibiting a metaphysical hierarchy of more and less basic phenomena and of this hierarchy resting on an ultimate level of the metaphysically fundamental. Moreover, in order to spell out what fundamental reality is like on a particular metaphysical view, one uses complete sentences. I will therefore assume that foundationalists all understand a fundamentality operator "FUND:" that, when attached to a sentence σ allegedly describing fundamental reality, yields a sentence "FUND: σ."[13] In this wider sense, foundationalists of the various camps can agree that what is fundamental about reality is fundamental truths, i.e., what can be stated by a sentence in the scopus of the fundamentality operator.

Note that thereby two different notions of fundamentality are in play, which may be dubbed *item-fundamentality* and *truth-fundamentality*. "FUND:" expresses truth-fundamentality: it combines with a sentence allegedly depicting fundamental reality. Yet for most metaphysicians such a sentence is constructed out of more basic vocabulary, such as singular terms and predicates, which are assumed to stand for the truly fundamental items in reality. Those are the items Sider calls "structural." A metaphysician who holds that it is a fundamental truth that, say, a is F only maintains that this truth is truth-fundamental, not that it is item-fundamental. It is only the nihilist who insists that for certain feature-placing propositions that p it is item-fundamental that p, because according to her such a basic truth that p is not built up from sub-propositional items. We can embrace both notions of fundamentality and need not settle the issue of their relation. There may be a chance to define FUND: p, roughly, as p being the case and consisting only of item-fundamental constituents. Conversely, the item-fundamentality of monadic predicables F^1 cannot be defined as $\exists x$FUND: F^1x, since among the values of variable F^1 there may be complexes such as being R to b, for item-fundamental R and b.[14]

The foundational nominalist (such as Busse 2018), for example, maintains that the proper instances of σ in "FUND: σ" are atomic sentences of various adicities "a is F," "a is R to b," ... about concrete particulars being certain ways, fundamentally, and particulars being related in certain ways, fundamentally. However, such a philosopher need not claim to know *which* particulars and *which* ways to be and ways to be related pertain to the fundamental level in

13 "FUND:" is meant to capture what Fine (2001, 28) calls the "fundamentally real."

14 I use "F," "G," "R," etc. without upper indices as predicate letters, with the adicity being clear from the context, and "F^1," "R^2," with upper indices specifying an adicity, as second-order variables.

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order to express her metaphysical stance. She can take this to be an empirical question hopefully to be answered by a future best science. She can nevertheless articulate her metaphysical view now by quantifying in, claiming that there is an entity x and a way to be F^1 (to focus on the monadic case) such that FUND: F^1x. More accurately, she can state that there is nothing more to fundamental reality than things being certain ways and things being related certain ways roughly as follows, with "$\forall p$" expressing non-substitutional quantification into sentence positions:

$$\forall p\text{: FUND: } p \rightarrow \exists x \exists F^1\text{: } \Box(p \leftrightarrow \text{FUND: } F^1x) \vee \exists x \exists y \exists R^2\text{: } \Box(p \leftrightarrow R^2xy) \vee \ldots,$$

where the existential quantifiers are restricted to item-fundamental entities and predicables. In words: Every fundamental truth is strictly equivalent to some fundamental object being a certain fundamental way or two fundamental objects being related in a certain fundamental way or… (with additional disjuncts for all adicities permitted). Instead of necessary equivalence, a relation $\equiv$ of generalised identity could be used to state that every fundamental truth *just is* a predicative truth (cf. sections 10, 11).

Note first that in this formulation the quantifiers occur *de re*, outside the fundamentality operator. This is as it should be. The view under consideration involves that there are no fundamental general truths, neither universal nor existential. All basic truths are atomic. The quantifiers are used not in order to state that certain general truths are fundamental, but in order to say in general what the fundamental truths are like. It may well be right that we cannot help but use quantifiers and other logical expressions in our human theory about the fundamental level. This, however, does not entail that we are committed to fundamental logically structured truths and to metaphysically fundamental logical items such as *and*-ness, *all*-ness, existence, etc. The logical expressions can all occur outside the fundamentality operator. In this way, we avoid Sider's problematic assumption of "logical structure" as part of the fundamental structure of the world; see below. Secondly, the quantifiers "$\exists F^1$" and "$\exists R^2$" do not express first-order quantification over properties and relations as entities, but genuine second-order quantification into predicate positions. This corresponds to the nominalist's informal statement that at the fundamental level things are certain ways and are related in certain ways, without abstract entities such as properties and relations being constitutive of that level. As indicated earlier, the foundational nominalist could even

admit that second-order quantifiers are not strictly ontologically innocent. Maybe using them commits one to the existence of properties and relations after all; yet not, the nominalist insists, at the fundamental level, but only at a derivative level grounded in how things are and how things are related, fundamentally.

When taking up our shared idea of a fundamental level by a fundamentality operator, I do not mean to provide a universal and easy means for postulating as fundamental whatever one likes. Quite the contrary. The very point of this paper is to explain why certain fundamentality assumptions are inherently problematic, because they face a Conjunction Problem of the form *fundamental* C *that φs*, such as the inference problem for strong laws. This does not prevent us from appealing to a shared general understanding of the fundamentality of truths.

The fundamentality operator provides a material mode manner of expressing one's metaphysical position, which complements the formal mode style of designing a metaphysically perspicuous language introduced in section 4. Sider (2011) has suggested that the question of foundational metaphysics is tantamount to the search for an adequate language for "the book of the world," which perspicuously describes fundamental reality. I am principally sympathetic to this general approach, which may be called methodological linguisticism: the structure of reality is fruitfully studied in the formal mode, by means of the structure of its adequate linguistic representation. But that formal-mode methodology must be deployed critically and with great caution.

First, Bacon (2020, 544) seems to go too far when he calls reality itself "God's language," though only metaphorically. There is no guarantee, and in fact no evidence, that the representation of fundamental reality by a fundamentalese text must be a kind of isomorphism. For example, it is a plausible view that "R*ab*" and "R**ba*," where "*" represents forming the converse of a given relational predicable, stand for one and the same fundamental truth. Linguistic representation of a familiar, linear kind appears to over-structure reality by reading a particular order of relata into it (cf. Dorr 2016, 68). We must expect such over-structuralisation to occur more regularly: language may represent the same fundamental fact or item in different but equally legitimate formats, suggesting a multiplicity of fundamental though interdependent items where there really is none. A perfectly perspicuous representation of fundamental reality would appear to have to be more like a picture, map or model strictly

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isomorphic to reality rather than a text.[15] This is why the linguistic approach to foundational metaphysics ought to be methodological and critical, rather than dogmatic. (See also section 10.)

Secondly, it cannot be the business of a philosopher to really write the book of the world in detail. There is the epistemic reason already mentioned that it is not the metaphysician's job to specify in detail what fundamental entities there are and what they are like, fundamentally. There is also the more basic semantic reason that as a finite human being neither a metaphysician nor a scientist can know every basic particular in the world by name. The metaphysician's job rather is to specify in general what categorial structure she assumes fundamental reality to have by characterising the grammar of a language that would be capable of adequately describing that level, *modulo* the kind of linguistic over-structuralisation mentioned above. To take the author's own view as an example, the foundational nominalist holds that this language would contain nothing more than singular terms "*a*," "*b*," ... for basic particulars and *n*-adic predicates "F," "G," "R," ... for monadic and relational ways for things to be that form atomic sentences "F*a*," "G*b*," "R*ab*," ... The fundamental ways of things to be—the fundamental predicables—are assumed to be expressed by predicates. The nominalist's proposed adequate language for fundamental reality contains no abstract singular terms denoting properties and relations.

Thirdly, Sider has advanced an indispensability argument for the conclusion that elementary logic is "structural," i.e., that it belongs to the fundamental level: "we [sic!] cannot get by without logical notions in our fundamental theories" (2011, 216; cf. 2009). This argument rests on the assumption that the guide to the fundamental structure of reality is the indispensable linguistic structure of our human best possible theory about the world. Yet it is implausible to expect that the world cares about what proves representationally indispensable from our severely limited human perspective (cf. Melia 1995 with respect to ontology). Our critical linguisticist methodology ought not to

15 Wolfgang Schwarz felicitously summarising my view by the slogan that *the world is not a book*. See Bacon (2020, 563–565, 568–570) for arguments concerning converse relations, which in my view suffer from the expectation that a linear text can be perfectly adequate to fundamental reality; see also Trueman (2021, 141–147). Bacon (2020, 549, n.20, 569–570) qualifies his view by saying that reality is "more like a vector space," allowing for alternative non-redundant fundamental bases. This view still assumes that what is truly fundamental is a member of those bases, while in fact those bases may only contain linguistically over-structured versions of the true fundamentalia. A step towards a "picturing" representation of reality was made by W. Sellars's (1968, chap. V) "jumblese."

be anthropocentric in this way. If there is a linguistic gauge for metaphysical structure, it is the syntactico-semantic functioning of the metaphysically perspicuous language of an imaginable ideal being who directly, completely and adequately accesses every bit of fundamental reality (cf. the Demon in Busse 2018, 446–447). Surely our best theory of what the adequate fundamental language is like inevitably involves a logical apparatus, such as quantification into positions of certain syntactic categories. But this does not entail that the fundamental language itself does. Accordingly, on the nominalist metaphysics preferred by the author, the assumed metaphysically perspicuous description of fundamental reality contains not even elementary logical vocabulary, such as truth-functions and first-order quantifiers. It consists in nothing more than a long list of atomic sentences. This lack of logical words in fundamentalese corresponds to logical words not occurring within the scope of "FUND:" in the material mode formulations of the nominalist view above. To be sure, this version of fundamentalese is a severely impoverished language. It is completely unsuited for stating general theories and studying logical relations. But this is not its job. Its job is to mirror the fundamental build-up of reality as perspicuously as a linguistic format permits. Also, atomistic fundamentalese may well be defined as a fragment of a richer language, as long as it is kept in mind that the additional vocabulary stands for non-fundamental contents and that the additional sentences express non-fundamental truths.

(Let me address, within parentheses, two potential worries about the metaphysical scheme of entities and predicables without a fundamental logical structure. First, according to Russell, the very same term can play a predicative role in a proposition and be referred to by an abstract singular term, so that it counts as an entity or object (see paras. 48–49 of Russell 1937, 44–46). This may suggest that the categorial contrast between entities and predicables is less deep than I am claiming. In (2012, 70), Fine takes a more Russellian than Fregean stance by distinguishing between a property occurring "as a property (or predicatively)" and the very same property occurring "as an object (or nominally)." (Fine's self-criticism in 2015, 298, may perhaps be read as a dismissal of that Russellianism.) According to Fine an entity is real, or exists, just in case it features as the subject in a truth that is constitutive of reality (2009). By replacing his reality by our fundamentality operator, we gain the definition: x is a fundamental entity $:=$ $\exists F^1$: FUND: F^1x, where "$\exists F^1$" expresses second-order quantification into predicate positions. Assume that it is metaphysically fundamental that Fa. Then a is a fundamental entity, since there is something F^1, viz., F, which a is, fundamentally. But even if

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F is fundamental, say, because it is an ultimate constituent of F*a*, F itself is not thereby established as a fundamental *entity*, because from the fact that F*a* one cannot infer that there is something F^1 that F is, fundamentally; "F" is a predicate letter and "F^1" a second-order variable, so "F^1(F)" is not even well-formed. Are we then to say that F is an entity, because it can also occur as an object in a proposition, and that F is fundamental, because it features (although predicatively) as an ultimate constituent in the fundamental truth that F*a*, but that F is not a fundamental entity? We ought to avoid such an awkward position by maintaining the strict, Fregean categorial contrast between entities and predicables. A property occurring predicatively and a property occurring nominally are not related by identity, a view that would commit one to questionable trans-categorial identities such as "F = F-ness," with a predicate letter on the left and an abstract singular term on the right. Instead, properties in the predicative sense, i.e., monadic predicables, and properties in the nominal sense are related by grounding: that *a* is F grounds that *a* has F-ness. Property F-ness is a non-fundamental, derivative entity grounded by the fact that predicable F characterises certain things in fundamental reality. Predicable F and entity F-ness are closely related by an operation of property abstraction but not identical.[16]

A second worry may be that even in nominalism one logical structure survives at the fundamental level, namely, predication. However, the nominalist may adopt the Fregean view that in "*a* is F" there are not three semantically active elements, "*a*," "is F," and the form of predication $\alpha^\frown\Phi$, but only two, the singular term and a predicate with a genuinely predicative syntactico-sematic role. I take this to be the correct view. In current formal semantics, it is reflected by the assignment of a function from entities to truth-values to (monadic) predicates, which combines directly by a rule of Functional Application with the semantic value of a singular term to yield a truth-value, without the help of an extra syntactico-semantic element called a form of predication (Heim and Kratzer 1998, chap. 2). It may further be worried that the nominalist is committed to a dubious constitution of a complex fundamental item, the truth that *a* is F, out of two fundamental items, entity *a* and predicable F. However, the truth that *a* is F is only truth-fundamental, not item-fundamental; "*a* is F" is merely taken to depict the fundamental level

16 Against trans-categorial identifications, independently of issues of fundamentality, see Trueman (2021, 59–60). See Button and Trueman (2022) for a Fregean argument pro Standard and against Cumulative Type Theory.

correctly; no mysterious coming together of two fundamental items in a third is assumed.)[17]

8 Categorial Metaphysics: The Conjunction Problem for Fundamental Dispositions

I have introduced the idea of categorial metaphysics by distinguishing the three categories of entity, potential truth and predicable. We can now see that these three categories are not completely independent of each other. Suppose we appreciate the metaphysically neutral point that a metaphysically perspicuous language must describe fundamental reality by stating truths about it, i.e., by using complete sentences. Even if we cannot (now) specify the specific vocabulary of these sentences, we can still ponder their grammatical forms. Suppose further that we, as most metaphysicians do, adopt the category of entities as pertaining to fundamental reality. In the formal mode this means that we expect some (possible) singular terms to denote metaphysically fundamental items. Then we are not completely free in what further categories of fundamental items we assume. For the only way for singular terms to enter into a complete sentence is together with a predicate, as in "F*a*" and "R*ab*." Indeed, as Frege observed, a predicate simply is the kind of expression required in order to form a sentence on the basis of one or more singular terms. Semantic type theory transfers this functional approach to the semantic values of expressions of different categories (as did Frege himself with his notion of "concepts" and "relations"). The values of names are of the basic type e (entity) and the values of sentences are of the basic type t (truth-value). The semantic value of a monadic predicate is then defined as being of the derived type $\langle e, t\rangle$: it is a function mapping entities to truth-values (cf. Heim and Kratzer 1998, chap. 2).

17 A further, delicate issue is how, on a basis of atomic truths alone, negations and universal generalisations could be rendered true. Those problems led Armstrong to postulating fundamental totality facts (2004, chaps. 5–6) to the effect that $a, b, c \ldots$ are all the particulars there are (fundamentally). However, in a ticket check, *all*-ness is not an extra passenger, but part of the instruction to control everybody in the train. Similarly, my view is that *all*-ness is not constitutive of fundamental reality but of the way reality is "read" by the grounding relation. It is part of the relation between the fundament and the non-fundamental truths, which is not fundamental itself. An unorthodox idea could be that, mimicking the introduction rule for universal generalisation in a calculus admitting open formulas, one uses open formulas to express grounds and reads "Fx grounds $\forall x$Fx" as being to the effect that the fact that the propositional function Fx holds concerning any arbitrary object there is grounds that $\forall x$Fx.

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The central insights we gain from these considerations are the following: first, if the metaphysically fundamental level of reality is aptly described as consisting in (truth-)fundamental *truths* and if among the (item-)fundamental items there are *entities*, then it is (almost) mandatory to also accept *predicables* as metaphysically fundamental.[18] Secondly, we must not care about the question what kind of "things" predicables are if they are not entities, neither concrete nor abstract. To assume fundamental predicables consists in nothing more than taking predicates to go metaphysically down to the fundament of reality. This assumption can be formulated in the material mode either by using specific predicates within the fundamentality operator or by quantifying into predicate positions in the scope of this operator. Alternatively, it can be put forward in the formal mode by stating that a perspicuous language for fundamental reality must contain predicates.

Thirdly, and most importantly for our topic, from these considerations we can extract an idea of the *ex officio* metaphysical role of fundamental predicables. Their role is to turn, as it were, a fundamental entity (or several entities) into a fundamental truth by characterising that entity (or those entities) in a fundamental way. There is little more we can and should say positively about what characterising an entity in a fundamental way consists in. For to say what the characterising *consists in* would amount to denying the very *fundamentality* of the characterising.[19] Arguably, something that consists in something else is not metaphysically fundamental; that water consists in hydrogen bonded to oxygen means that water is not fundamental. Still, we have said something about the role of fundamental predicables by saying that their job is to characterise things in a simple, structureless, fundamental way. This job is specific to their metaphysical category. Fundamental entities, for example, do not all by themselves characterise things fundamentally. Fundamental universals or tropes characterise things only with the aid of an instantiation or compresence predicable. So it is not quite true that a "posit

18 "Almost," because what completes the entities to form truths may be complex. When the complement is assumed to be the complex predicable of instantiating a universal or trope, instantiation is the fundamental predicable. But someone could suggest that the complement is being such that OP(p), for an assumed fundamental predicables-generating operation OP and a fundamental feature-placing truth p; though it is hard to see how such a complement could characterise one thing as opposed to another.

19 Might the idea of a fundamental, hence simple manner of characterising things be challenged by a contrasting model? Maybe every characterisation requires some structure, such as arithmetic or geometrical structure? But arguably, structures are networks of relational items of whatever exact category, and we are hardly better off with such relational networks than with simple predicables.

without axioms would be an idle wheel," as Schaffer (2016, 579) urges. The *ex officio* role of a fundamental item of a certain category is fixed by the corresponding syntactico-semantic type plus its assumed fundamentality. It need not be determined by explicit metaphysical axioms about the item in question.

Also, on the basis of the *ex officio* role of predicables we can safely say that there is no obstacle to a (monadic) predicable's characterising several numerically different entities in one and the same fundamental way, so that the perspicuous description of reality can contain sentences "F*a*," "F*b*," "F*c*," … for an unambiguous predicate "F" and names "*a*," "*b*," "*c*," … for numerically different entities. (Jones 2018, 825–830, argues that predicables can only be understood as repeatables, so that the universals vs tropes dispute dissolves; cf. Trueman 2021, 123–129.) This is how fundamental predicables give rise to a metaphysically basic kind of resemblance among things: perfect resemblance in one fundamental way to be (or to be related). If, for example, being elementarily charged is a fundamental predicable, all the charged particles resemble each other perfectly in this basic sense. So the important role of making for perfect resemblance immediately results from the *ex officio* role of fundamental predicables to characterise entities in a fundamental way.

We are also in a position to confirm the intuition mobilised in section 6 that fundamental properties contrast with logically complex properties. Starting from "fundamental" sentences such as "F*a*," "G*a*" and "R*ab*," one can form logically complex sentences such as "F$a \wedge$ Ga" and "$\exists y$Ray." The lambda-calculus then allows one to construct complex predicates such as "λx[F$x \wedge$Gx]" and "$\lambda x \exists y$Rxy" for logically complex predicables, in words: *being* F *and* G, *being* R *to something*.[20] Thus, it is the syntactico-semantic role of predicates of generating sentences on the basis of singular terms that allows one to transform the complexity specific to sentences, which arguably is logical complexity, to predicates. This validates the idea that the category-specific complexity of predicables is logical complexity and, correspondingly, that the fundamentality of predicables centrally involves their logical simplicity or structurelessness.

This idea of fundamental predicables as logically simple can be both sharpened and generalised once we adopt the "in virtue of" or grounding locutions featuring prominently in recent (meta-)metaphysics.[21] In the intended cases,

20 Note that lambda-abstraction does not form abstract singular terms (denoting properties) out of predicative expressions, but predicates (expressing predicables) out of open sentences.

21 See Rosen (2010), Schaffer (2009), Fine (2012) for seminal papers and Raven (2020) for the state of the art.

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we can say that the explicitly complex predicable $\lambda x[\mathrm{F}x \wedge \mathrm{G}x]$ characterises entity a in virtue of its being the case that Fa and Ga and also that $\lambda x \exists y \mathrm{R}xy$ characterises a in virtue of its being the case that $\exists y \mathrm{R}ay$. Here the grounding-step corresponds to lambda-abstraction: from F$a \wedge$ Ga infer $\lambda x[\mathrm{F}x \wedge \mathrm{G}x](a)$; from $\exists y \mathrm{R}ay$ infer $\lambda x \exists y \mathrm{R}xy(a)$. However, a non-fundamental predicable need not be overtly logically complex. While being married is not overtly complex, its hidden logical structure is revealed by the fact that being married has being married *to somebody else* as its analysis or real definition. We need not even tie ourselves to the view that every non-fundamental predicable has an ideal metaphysical analysis or real definition by some logical complex of fundamental items. A predicable's hidden logical structure can all the same be brought to the fore by stating that whenever the predicable characterises an entity, this characterisation grounds in a logically complex truth or, alternatively, that it has a plurality of actual or possible grounds related in a characteristic logical, typically conjunctive or disjunctive manner. Thus, while the determinable predicable *being red* is not overtly complex, its hidden complexity is revealed by the fact that an entity's being red always grounds in its being crimson *or* grounds in its being scarlet *or* ..., for all the different shades of red there are.[22] A fundamental predicable, by contrast, is not logically complex even in its deepest grounds—because it is not overtly complex and has no grounds.

In sum, categorial considerations strongly support the idea that a fundamental property, more accurately a fundamental predicable, is nothing more than a possible simple, both superficially and in its deepest grounds (because it has no further grounds) logically structureless qualitative characterisation of things—an ultimate qualitative way for a thing to be.

One may ask, if fundamental predicables amount to possible fundamental characterisations of things, why things cannot also be fundamentally characterised as being such that, if they occur in an electric field, they must also experience a certain force. Surely there is a predicable that characterises things in this way: the conditional predicable $\lambda x[\mathrm{Field}(x) \rightarrow \mathrm{Force}(x)]$. A particle characterised by this predicable that also occurs in a field must, by the power of logic (lambda-conversion plus modus ponens), also experience a force. However, $\lambda x[\mathrm{Field}(x) \rightarrow \mathrm{Force}(x)]$ is not fundamental, but overtly logically complex. Note that this conditional predicable is no good

22 See Rosen (2010) on the grounding relations between determinates and determinables. I believe the distinction between overt and hidden or deep logical complexity is important. It does not appear to be done justice to by existing higher-order accounts, such as Bacon's (2020, 560) notion of metaphysical definability.

candidate for electric charge. For in order for a thing's to be characterised by $\lambda x[\text{Field}(x) \rightarrow \text{Force}(x)]$ it suffices for it to contingently either not occur in a field or to experience a force. Moreover, essentialists presumably want it to be the case that a particle's being characterised by charge not only necessitates but also grounds the conditional that it experiences a force if it occurs in a field. But for the conditional predicable the grounding takes the opposite direction: the conditional truth that $\text{Field}(a) \rightarrow \text{Force}(a)$ grounds a's being characterised by $\lambda x[\text{Field}(x) \rightarrow \text{Force}(x)]$, in accordance with lambda-abstraction. This direction of grounding remains in force even if the conditional is modally strengthened to a counterfactual or a strict conditional.

We can rephrase the diagnosis concerning fundamental dispositions as follows: the posit of a fundamental disposition such as electric charge has the form *fundamental* C *that φs*. What is assumed is a fundamental item of the category of monadic predicable (first conjunct) that is such that a thing's being characterised by that predicable all by itself necessitates its experiencing a force if it occurs in an electric field (second conjunct). But now we see that the *ex officio* role connected to the first conjunct is in conflict, if not in contradiction, with the additional role postulated in the second conjunct. The *ex officio* role of a fundamental predicable is to characterise things in a simple, logically structureless way. The postulated additional role, by contrast, arguably requires the predicable to be logically structured—if not on its surface, then at least in its analysis, definition or grounds. This tension motivates the sceptic's challenge to explain how a fundamental property could all by itself, without the assistance of a law of nature, do the additional job of a disposition. Dispositional Essentialism confronts a serious Conjunction Problem.

In order to corroborate his Axiomatic Solution, Schaffer refers to Lewis's highlighting of the option of taking a phenomenon as primitive in metaphysics (2016, 580, n.2). Lewis writes that one way of accounting for the undeniable phenomenon of objective sameness of type is not to offer an analysis in terms of universals (or tropes) but to "accept it as primitive" (1983, 352). Yet Lewis hardly wishes to suggest that sameness of type itself can be accepted as metaphysically fundamental. As is clear from the idea of resemblance nominalism, sameness of type is a similarity-like relation. But "any sort of similarity is an internal relation" (1986, 176–177), "which is determined by the two intrinsic natures of its two *relata*" (1986, 176). By contrast, "all perfectly natural [i.e., metaphysically fundamental] relations are external" (1986, 68, n.49). Most plausibly his proposal is that the nominalist can accept sameness

doi: 10.48106/dial.v76.i3

of type as a conceptual primitive, as an element of her ideology. She can then embrace the view that the relata's intrinsic natures are not constituted by the occurrence of universals or tropes, but that the particulars simply are the fundamental ways they are. For example, two electrons are of the same type because they are both electron-massy or because they are both elementarily charged—all by themselves, without the help of occurring universals or tropes. Taking sameness of type as primitive is therefore tantamount to the idea of fundamental predicables doing their *ex officio* job of characterising things in a fundamental way, thereby grounding the basic resemblances of things. It does not have the problematic form *fundamental* C *that φs* to be found in the three examples of Monism, Dispositionalism and, as we will see, Fundamental Laws and therefore raises no Conjunction Problem. Thus, Lewis should clearly not be misinterpreted as advocating an anything goes policy, according to which one may accept as metaphysically primitive or fundamental whatever one likes.

9 *Ex Officio* Roles Generate No Conjunction Problems: Relations and Bradley's Regress

It is important to see that the assumption of fundamental items that play certain *ex officio* roles differs from Schaffer's Axiomatic Solution. *Ex officio* roles are not free of charge. Positing fundamental items of a certain category constitutes a metaphysical cost. But by itself, such a posit does not generate a Conjunction Problem, which is a conflict between the demands of a fundamental item's category and its assumed additional roles.

A good example is the metaphysics of relations. Schaffer thinks that the metaphysical problem of relations, as it is discussed in Russell's reaction to Bradley's regress argument, is of a kind with the alleged inference problem for fundamental laws and enjoys the same kind of Axiomatic Solution (2016, 581–582). However, if by relations one means fundamental abstract entities, either universals or tropes, then there is a problem about relations that cannot be solved by an axiom. Alternatively, if relations are relational predicables, then it is their *ex officio* job to characterise things as fundamentally related, so that no Conjunction Problem of the form *fundamental* C *that φs* arises and no special axiom is needed.

Suppose that by relations we mean relational universals. A relational universal is an entity, and a fundamental entity if we are concerned with fun-

damental reality. Bradley wondered how such an entity could in fact relate things. We can rephrase his question by construing job φ as that of rendering true relational statements of the form "*a* is R to *b*." The simple point, repeatedly highlighted by Armstrong in particular, is that the sheer existence of the three fundamental entities *a*, *b* and R does not suffice to make it the case that *a* is R to *b*. Something more seems to be required that relates R to *a* and *b*, a relationship of *standing-in-to*. If *standing-in-to* is in turn taken to be a fundamental entity, the regress is on the way. For the sheer existence of *a*, *b*, R, and *standing-in-to* does not appear to render the relational statement true either. It is no step towards an answer to the sceptical question of how entity R could relate *a* and *b* to write down an axiom to the effect that it simply does. Instead, as already observed in section 5, in order to maintain their position universals theorists need to embrace instantiation and standing-in-to as fundamental non-entities, as relational predicables—or, alternatively, a fundamental non-mereological mode for particulars and universals to form states of affairs, assuming for a moment that this makes sense.

Alternatively, suppose that by relation we do not mean an entity but a predicable. Then no Conjunction Problem arises in the first place (cf. Trueman 2021, 129–137). A dyadic predicable is whatever is expressed by a dyadic predicate "R" in an atomic sentence such as "R*ab*." It is the categorial, *ex officio* job of such a predicable to turn the two relata *a* and *b* into a truth, assuming that the sentence describes reality correctly. No conflict between the *ex officio* job and an additional job of doing φ arises. Quite the contrary, job φ of rendering true relational statements is tantamount to the *ex officio* job of relational predicables of characterising entities with respect to their ways to be related to each other. Thus, the intuition that it is the job of relations to relate is perfectly correct. But it does not apply to relations as fundamental entities, either universals or tropes, but only to relational predicables, where this *ex officio* job results from their metaphysical category and requires no extra axiom.[23]

23 We may thus distinguish between more specific role problems, according to which a certain role (such as characterising particulars, fundamentally) can be played by fundamental items of one category (predicables) but not of another (entities), from general role problems, according to which a certain role (such as featuring necessary connections) cannot be played by fundamentalia of any category. Even in the latter case, however, it is crucial to consider the category of the fundamental items claimed to be capable of playing the role in question. For the category is associated with characteristic forms of complexity, and a positive model/missing equipment consideration can reveal the fundamental items to be lacking the complexity required for playing

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(Leibniz may be interpreted as raising a Conjunction Problem concerning fundamental relations. According to his nominalism, which is perhaps in part motivated by Bradley-style considerations, properties are not universals, but are predicables that occur as "modes" or accidents somehow "in" substances. He argues that in the case of a relational mode, "[…] we should have an accident in two subjects, with one leg in one and the other in the other, which is contrary to the notion of accidents" (Leibniz and Clarke 2000, paras. 47, 47). Thus, *qua* a way of a thing to be, a fundamental accident must *ex officio* be in exactly one substance; but *qua* relational it would have to occur in two substances at once. Arguably, Leibniz was wrong about the *ex officio* role, maybe due to his view of predication as a kind of containment. Once one puts polyadic predications on an equal footing with monadic predication, which Leibniz solely focussed on, modes can be accepted that are irreducibly ways of different entities to be related, in addition to ways of single things to be.)

If the *ex officio* job of fundamental predicables is to characterise entities in a logically structureless way, what is the job of fundamental *entities*? I assume that our most general notion of an entity is captured by the logico-semantic apparatus of singular and plural reference, first-order objectual quantification, *n*-adic predication, identity and classical mereology. So the best we can say is that the *ex officio* job of fundamental entities is to exist as by themselves (rather than in virtue of distinguishing properties) numerically distinct constituent parts of fundamental reality capable of exhibiting fundamental ways to be and to be related.[24] Thus, the crucial job of fundamental entities is that their assumption allows us to avoid a metaphysical monism or holism, by construing fundamental reality as consisting in a multitude of bits that enter into distinct fundamental truths, such as the nominalist's truths that *a* is F, *a* is R to *b*, etc.

Assuming that the notion of the broad category of entities is captured by this logical apparatus, how can it then be true that entities feature at the fundamental level without that logical apparatus featuring at that level? Would this not mean to deprive ourselves of the conceptual basis for our

the role—such as logical complexity in the case of assumed fundamental inherently dispositional predicables.

24 In principle, such a constituent part could be a portion of gunk that is not an atom in the sense of Lewis's innocent mereology. I will not discuss whether a fundamental entity could, in principle, be "bare" by not being characterised by any fundamental predicable at all, or whether the two categories are so deeply intertwined that nothing could be an entity without in fact being characterised by a monadic or relational predicable (cf. Armstrong's principle of the rejection of bare particulars).

metaphysical claims? Not at all; the logical apparatus is fully in play, though outside the fundamentality operator. For example, we can state that there is an entity x and an entity y such that $x \neq y$ and there is a way to be F such that FUND: x is F but not FUND: y is F; here, the conceptual basis and a sober, atomistic metaphysics are present in one and the same statement.

Let me stress that the point is not that the fundamental entity-predicable scheme can be had for free and raises no worries. For one, if predicables are simple qualitative ways for things to be and to be related, does this not commit one to quiddities that remain the same across possible worlds due to their qualitative natures but can play the role of negative charge here, that of positive charge there, and that of mass elsewhere? We can bracket the issues of in what precise sense, if at all, the entity-predicable scheme commits one to quiddities and of why and how quiddities should cause trouble. The crucial point is that even if quiddistic predicables seem problematic, this does not put them in the same box with the assumption of fundamental dispositions. For as I have argued, the latter assumption generates a Conjunction Problem, a conflict between the *ex officio* job of fundamental features of characterising things in a structureless way and their assumed additional job of being inherently dispositional. By contrast, whatever the objections to quiddities may be, they constitute no Conjunction Problem. In principle, one can bite the bullet (if it is one) and accept quiddistic features in spite of their (alleged) implausibility and disadvantages. The dispositionalist cannot bite the bullet, because doing so would not answer the sceptic's well-motivated question of how simple, logically structureless features can all by themselves necessitate conditionals involving other such features. Moreover, we do not appear to have the choice between accepting and rejecting fundamental predicables as characterising things in a structureless way. For given that the fundamental level is a level of truths, the assumption of fundamental entities commits one to the view of fundamental predicables as nothing more than simple ways of making truths out of entities. In order to avoid this consequence, dispositionalists would have to abandon the entity-predicable scheme as a whole. To be sure, the entity-predicable scheme is openly dualistic, and one may perhaps want to avoid such a metaphysical dualism. The crucial question is, what would be the alternative? We have seen that ontologically monistic views such as Paul's mereological bundle-of-universals theory and Dasgupta's algebraic generalism do not get along without their own typological posits (composition; algebraic operations and a status of obtaining), which, in addition, generate inference problems. Similarly, a sophisticated nihilism exhibits its own kind

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of dualism, one of fundamental feature-placing truths plus a fundamental apparatus for the construction of complex patterns of such features-placings (Turner 2011). It is hard to see how any of this could be less worrisome than the entity-predicable scheme. Some kind of categorial pluralism seems to be needed in order to do justice to the complexity and richness of the world.

10 The Paradigm of Logic and Non-logical Entailments

The aim of this section is to shed some light on the question of why logical complexity is the paradigmatic source of entailments in the context of metaphysics. A first part of the suggested answer is that logic is the paradigmatic study of truth-preserving inferences. This, however, makes sense only if the meanings of logical words are not metaphysically fundamental. Logic therefore cannot provide a model for entailments due to posited fundamental items. A second observation is that while derivative items other than logical contents may well be sources of entailments too, logic is distinguished because it is the most plausible apparatus for forming complex inputs for the grounding of derivative items on the basis of fundamental reality. In addition, I will consider whether there could be necessary connections regarding fundamental items at all, such as that for symmetric R, R*ab* entails R*ba*, with the result that a promising handling of such entailments cannot be applied to fundamental dispositions or Fundamental Lawhood.

Someone may suspect that the contrast between logically structured non-fundamental and logically simple fundamental predicables attaches too much weight to logic. One worry could be whether it is really true that while the characteristic structure of entities is mereological, all structure of properties is logical. Armstrong, for example, assumes structural universals and construes them as complex in a quasi-mereological rather than a logical manner (1997, 34–38, 53). On the one hand, however, universals *are* entities. (When Armstrong's characterises universals as not things but ways, this is actually a move towards nominalism.) If, on the other hand, structural properties are construed not as entities but as monadic predicables, then their structure proves to be logical after all. The structural predicable that characterises methane molecules is perspicuously represented as the logical complex (with "<" for

part of)

$$\lambda x[\exists y \exists z \exists u \exists v \exists w\colon x = \text{Fusion}(y, z, u, v, w) \wedge y \neq z \wedge z \neq u \wedge \ldots$$
$$\text{[for all other pairs of different variables, “}x\text{” excluded]} \wedge$$
$$\text{Carbon}(y) \wedge \text{Hydrogen}(z) \wedge \text{Hydrogen}(u) \wedge \text{Hydrogen}(v) \wedge$$
$$\text{Hydrogen}(w) \wedge \text{Bond}(y, z) \wedge \text{Bond}(y, u) \wedge \text{Bond}(y, v) \wedge \text{Bond}(y, w)]$$

A more principled worry could be that the argumentation presupposes that all entailments are at bottom logical. However, in the argument I have merely relied on the consensus that logical entailments are unproblematic. The paradigm of logic is, for example, in play when Rosen considers a reduction of determinable properties to disjunctions of determinates and, as an alternative, an “‘existentialist’ approach” according to which to “be blue is to instantiate some *shade-of-blue*” (2010, 128–129). On the basis of the unproblematic paradigm of logical entailment, the argument against dispositionalism contrasts fundamental, logically unstructured predicables with logically structured ones and challenges the essentialist to explain in virtue of what equipment instead of a logical build-up the former should be capable of generating interesting entailments.

Beyond such a consensus, we may ask what is special about logical complexity that renders it a paradigmatic source of entailments. First, let me confine myself to a fairly orthodox general view of logic as a study of logical consequence, where logical consequence is understood as truth-preservation between a set of sentences and a further sentence due to the logical forms of the sentences involved. Inferentialists about the meanings of logical words hold that the meaning of, say, “and” is constituted by our practise of inferring “A and B” from A, B and *vice versa* (Horwich 1998, 45). They may say that, at least if the practice is coherent, that meaning is thereby constituted so as to render the inferences in question truth-preserving. A more objectivist view would be that the inferential behaviour is essential to the concept of conjunction (Fine 1994, 9–10; Hale 2018, 122). According to the Tarksi-Williamson definition of logical consequence, a logical truth at bottom corresponds to a highly abstract actual general fact, such as that $\forall p \forall q(p \wedge q \rightarrow p)$, in which all non-logical constituents have been quantified away (Williamson 2017, 325–331). Maybe it can be argued that every scenario that is to count as a metaphysical possibility must respect those extremely general facts of logic. Alternatively, a specific notion of logical necessity (cf. Bacon 2020, 544) could be defined by the demand of congruence with those facts, and logical complexes

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could be maintained to entail other items in that sense. In any case, logic is the paradigmatic systematic study of truth-preserving inferences. Since the main target of this paper is an attempt to postulate away looming inference problems in metaphysics, claimed inferences concerning items assumed in foundational metaphysics should certainly be measured against this paradigm of logic.

Secondly, it could be urged that there are items other than the meanings of logical words that encode an inferential behaviour in an analogues way to logical meanings. Inferentialists may hold that just as with logical meanings, descriptive concepts such as the colour concepts are constituted by inferential practices so as to stand in relations of entailment and incompatibility. Objectivists may hold that derivative properties can be constituted by reality so as to stand in entailment and exclusion relations, for example, because it is essential to gold to consist of atoms with exactly 79 protons in their nucleus and essential to silver to consist of atoms with exactly 47 protons. However, such constituted items are clearly metaphysically non-fundamental. In one way or another, they must depend on fundamental reality. Yet this dependency requires two things: a notion of dependence, such as ground or essence, linking derivative items to the fundament; and an apparatus for forming a complex input for the constitution of derivative items on the basis of what is fundamental, at least if the fundament consists of a multitude of facts. Logic is clearly the leading candidate for such a general apparatus that allows fundamental reality to form an appropriate foundationalist input for the constitution of non-fundamental predicables. For example, the atomic structures underlying and constituting gold and silver must ultimately be described as logical complexes of fundamental physical characteristics, more or less in the style of the analysis of being methane presented with respect to Armstrong's idea of structural universals. In any case, the propounded extension of acceptable sources of entailment beyond the contents of logical words is of no help for the dispositional essentialist, who maintains necessary connections between metaphysically fundamental features and thus not between items that are constituted so as to stand in such connections.

The Tarski-Williamson analysis of logical consequence as extreme generality can hardly provide a model for Dispositional Essentialism. The corresponding view would be that it is a mere general actual fact that whenever charge and field co-occur, they are accompanied by force. This would amount to the very kind of regularity view of laws of nature that essentialists reject. Similarly, it is hardly the view of fundamentalists about lawhood that Law(p)

happens, as a matter of fact, always to be accompanied by p. Surely no sceptical challenge basing on a Conjunction Problem can be raised against that view. But what explanatory surplus value could be expected of such an idle add-on Law(p) to some regularities p?

In section 7, I have argued that Sider's view that logical contents must be construed as "structural" and logical structure be part of the fundamental structure of the world (2009; 2011, chaps. 6, 10) reflects an implausible anthropocentric employment of methodological linguisticism. Admittedly, logical constants will indispensably feature in our best theory of the world. But they need not feature in the fully adequate "book of the world" available to a semantically and epistemically ideal being. If the nominalist view is correct that fundamental reality consists in many particulars being characterised by monadic and relational predicables, then such a being could represent that level by a long list of atomic sentences, "a is F," "a is R to b," etc. free of logical words. We can now add the objection that in order to deserve the name of specifically logical contents, assumed fundamental items of so-called conjunction, negation, *all*-ness and existence would have to deploy the required inferential behaviour. But assume, for example, that the word "and" stands for a dyadic fundamental bond of *and*-ness between given truths or facts within fundamental reality. Being fundamental, this item is definitely not constituted so as to deploy the required inferential behaviour, neither in the inferentialist manner nor in Fine's sense of having a logical behaviour as a part of its constitutive essence. Fundamentalism about logic thus provokes a most serious inference problem precisely in the field that constitutes our paradigm of unproblematic entailments: logic.

Might the Tarski-Williamson analysis offer a way out to the fundamentalist about logic? Might it just be a general fact about fundamental reality that, for example, whenever p *and* q is the case, for fundamental *and*, p is the case (as well as q)? One question is what the surplus value of postulating such a fundamental *and*-ness should be. The fundamental bond of *and*-ness would accompany all and only cases in which some p is true alongside some q. But p together with q arguably suffice in order to render a statement "p and q" true; no fundamental extra bond is required. What is more, the extreme generality is crucial to the Tarski-Williamson account. For example, in the general fact concerning conjunction, $\forall p \forall q(p \wedge q \rightarrow p)$, the quantification over possible truths p and q must be completely unrestricted. But the assumed fundamental logical bond of *and*-ness has only been assumed to feature within fundamental reality, not to pervade all of reality, both fundamental and derivative. Even

doi: 10.48106/dial.v76.i3

if there is a metaphysically fundamental bond of (so-called) *and*-ness, it is highly implausible that it also link all kinds of derivative truths about ordinary objects, persons, galaxies, fictional objects, numbers, moral norms and values, and whatnot. Note finally that the rejection of a distinguished realm of fundamental logical items is perfectly compatible with the existence of significant differences between alternative candidate meanings for logical words. Those differences could account for the preference for a particular selection out of them, maybe in the way of "reference magnetism" (Sider 2011, sec. 3.2). Indeed, extreme generality of applicability across all kinds of areas and topics would appear to be a crucial quality of the designated logical meanings. For example, an *and* conjoining all kinds of truths without restriction would be preferable to an *and** only applying to truths about the fundament, or about the weather.

In sum, there are very strong reasons to avoid fundamentalism about logic and to accommodate, regarding fundamental reality, the Tractarian "fundamental thought [...] that the 'logical constants' do not represent" (Wittgenstein 1961, 4.0312). For the purposes of this paper, the crucial upshot is that alleged fundamental logical items cannot serve as model for the inferential power of other assumed fundamental items, such as inherently dispositional properties or Fundamental Lawhood. For it is precisely by declaring the logical contents fundamental that one turns them from a paradigm source of entailments into metaphysical troublemakers suffering from a serious inference problem.

Our examples strongly suggest that elementary logic is part of the apparatus for forming the input for the constitution of derivative items on the basis of fundamental reality. One may wonder whether modalities are part of that apparatus, too, or whether they are instead constituted by a structure pertaining to the fundament to be described in more elementary terms—maybe some mode of recombining fundamental particulars and predicables. Metaphysical modality is certainly not fundamental itself. For the assumption that it is would provoke an inference problem, most evidently concerning the T-axiom $\Box p \rightarrow p$. On this basis, an imaginable idea on behalf of essentialism might be that what accounts for the entailment between having fundamental charge and having the conditional feature $\lambda x[\text{Field}(x) \rightarrow \text{Force}(x)]$ is not a constitutive structure of charge, field strength and/or force, but the constitutive structure of metaphysical necessity. However, the only imaginable way for metaphysical necessity to select the connection between the three fundamental properties as necessary would be by being sensitive to their actual lawful correlation, whatever that may consist in. Laws would underlie allegedly fun-

damental dispositions, and metaphysical necessity would collapse into natural necessity, in contradiction to the essentialist's claim that the laws necessarily flow from the dispositional essences of fundamental physical properties.

If logical complexity, overt or covert, is the paradigmatic source of entailments concerning predicables and if fundamental predicates lack such a complexity, does this mean there are no metaphysical entailments pertaining to fundamental predicables at all; and if there are, what is their source, and how far may they extend? This is a very difficult question, which cannot be fully answered here. However, a rough guide can be given; and it can be seen that necessitations such as those claimed by Dispositional Essentialism are definitely beyond what the guide permits. First, the most obvious entailments link the fundamental with the non-fundamental: F*a*, F*b* should entail that *a* and *b* resemble in a basic respect. This can be explained as logical entailment if the basic kind of resemblance between two particulars *x* and *y* is defined by there being some fundamental F^1 such that F^1x and F^1y. In this case it is the logical complexity of the relation entailed that carries the entailment. A nominalist with qualms concerning non-substitutional quantification into predicate positions would have to embrace basic resemblance R as a conceptual primitive instead. She could elucidate this piece of her ideology by pointing out that, for example, *a* and *b* are R because *a* is electron-charged and *b* is electron-charged, *c* and *d* are R because *c* is electron-massy and *b* is electron-massy, etc. Though not explicitly defined in terms of shared predicables, such a primitive notion of resemblance R would nevertheless be constituted so as to be sensitive to the alikeness of particulars in their fundamental ways to be, so that the entailment from, say, F*a* and F*b* to R*ab* would hold.

A second, more delicate case are entailments that pertain to different occurrences of the same fundamental predicable. For example, where R is fundamental and symmetric, one would want R*ab* to entail R*ba*. Note that no asymmetry in metaphysical priority corresponds to this entailment; R*ba* is no less fundamental than R*ab*. This suggests that language in this case over-structures fundamental reality. We are using two different representations, "R*ab*" and "R*ba*," of the same fundamental truth. Such over-structuralisation may also occur trans-categorially. Consider a line in space of 1 cm, pretending that spatial (rather than spatiotemporal) lengths are fundamental. The line is a fusion of spatial positions that extend over 1 cm. One may wonder what exactly is the fundamental truth in this case: the singular one that the line is 1 cm long, or the plural one that the positions extend over 1 cm? On my

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view, there is just a single fundamental fact of the matter represented both in a singular and in a plural manner. (I am assuming that the line is the Lewisian innocent fusion of the positions, not a derivative constituted complex grounded by them.) Using a (non-factual) two-place sentential operator "≡," we can make the fact identity explicit: the line is 1 cm ≡ the positions extend over 1 cm. Similarly, we may state that given that R is symmetric, R*ab* and R*ba* are the same fundamental truth: R*ab* ≡ R*ba*. Clearly, "R*ab*" and "R*ba*" are not different representations of the same truth by standing for that truth in virtue of different contingent modes of presentations, more or less in the way Frege thought "Hesperus" and "Phosphorus" did. They merely structure that same truth somewhat differently. It is therefore plausible that if R*ab* ≡ R*ba*, then necessarily, if R*ab* then R*ba*. For if R*ab*, then the potential truth in question holds; since R is symmetric, that truth can be restructured as R*ba*; so that also R*ba*. So for symmetric fundamental R, R*ab* necessitates R*ba*. Note that even on this model, logical (over-)structure is a crucial part of the source of the entailment.

This over-structuralisation of a single underlying fundamental truth as R*ab* and R*ba* may be avoided if a neutral representation is available. The natural proposal is that when R is symmetric, the really fundamental feature is a fundamental plural property, R(x, y).

It is not clear that such a neutral format is always available. For example, I can think of no neutral way to state the fundamental fact underlying the truths that the line is 1 cm and that the points extend over 1 cm. It is not clear that we will ever have reason to assume a fundamental relation that is inherently transitive. Maybe transitivity can always be gained by forming the transitive closure of a non-transitive fundamental relational predicable. But suppose we need a fundamental inherently transitive predicable R, so that necessarily, if R*ab* and R*bc*, then R*ac*. A possible example would be a fundamental earlier-later relation that induces a continuous order but no metric, so that *a* is earlier than *c* in the very same way in which *a* is earlier than *b* and *b* than *c*. We may account for that necessity by stating that if R*ab* and R*bc* are given, R*ac* does not add anything to the fundamental situation; for it to be the case that R*ab* and R*bc* is already for it to be the case that R*ac*; R*ab* ∧ R*bc* ≡ R*ab* ∧ R*bc* ∧ R*ac*. Similarly, if fundamental R is inherently asymmetric, then R*ab* is already the complete positive information about *a* and *b* concerning R, so that R*ba* is thereby excluded: R*ab* ≡ R*ab* ∧ ¬R*ba*.

The common idea in all those cases is that symmetry, transitivity or asymmetry are specificities of a predicable R's way of characterising pairs of things

in a simple, qualitative way. Some fundamental aspects may characterise things as symmetrically, some as transitively, some as asymmetrically related. Those different ways of characterising things do not harm the qualitative simplicity of the predicables in question. This idea may serve as a general guide to answering the question which metaphysical entailments beyond those engendered by logical structure of a predicable are acceptable: such entailments must be nothing more than explications of the specific simple qualitative way that a predicable characterises things to be. It is impossible, however, to understand the dispositional essentialist's necessities as explicating such simple qualitative ways. In order to account for the entailment from Charge(a) and Field(a) to Force(a) in terms of operation $\equiv$, one would have to maintain that for a to be charged and to occur in a field is already for it to experience a force, i.e., that Charge(a) $\wedge$ Field(a) is the very same fact as Charge(a) $\wedge$ Field(a) $\wedge$ Force(a). But this claim is inconsistent with the assumption that charge, field and force are three distinct fundamental predicables. If force is a third, distinct qualitative character over and above charge and field, then Force(a) clearly adds something to a situation in which charge and field are co-present; otherwise, why postulate force in addition to force and field strength at all? By being charged a particle resembles all the charged things, by being in a field it resembles all the things in the same kind of field; by being both charged and in a field, a particle resembles both kinds of things; but why should it thereby also resemble a third kind of things, those that happen to experience a certain force?

Anticipating the application of our considerations concerning Dispositional Essentialism, the problem is particularly manifest for Fundamental Lawhood. Though "Law" is an operator rather than a predicate, Law(p) is tantamount to attributing a fundamental status to a possible truth, or *vulgo*, a proposition. The law fundamentalist maintains that Law(p) necessitates p. Let p^* be the proposition or possible truth that all swans are white, which, taken by itself, is neutral concerning truth or falsity. In order to account for the claimed necessitation in terms of $\equiv$, one would have to maintain that for p^* to have the fundamental status Law is already for all swans to be white. One would have to claim that the fact that proposition p^* has a certain fundamental, simple feature is the very same fact as the fact that p^* has that feature *and all swans are white*. But this is bizarre, and unbelievable. Clearly the fact that all swans are white does add a content to the fact that a certain proposition has a certain fundamental feature. An ideal investigator scrutinising the fact that p^* has the status Law could not find the actual whiteness of swans in that fact.

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She could find it only if its actually being the case that p^* was constitutively built into Law(p^*), in which case the status Law would not be fundamental—for example, if Law(p) was defined as p being an actual regularity that helps to best systematise the particular facts of the world, as the Best System Analysis suggests.[25]

4.1 Fundamental Essences: A Wooden Iron

The upshot so far is that in order for predicables to stand in strictly necessary connections, at least one of them must either be logically complex such as $\lambda x(\text{Field}(x) \rightarrow \text{Force}(x))$, in which case it cannot be logically simple in the way required for fundamentality, or it must somehow be constituted so as to stand in those relations, such as logical contents are on important views, and therefore cannot be metaphysically fundamental either. Dispositional essentialist, however, typically maintain that the necessary connection between features such as charge, field strength and force is not an ultimate fact but results from the inherently dispositional *essence* of, say, electric charge. Clearly, such a view of necessity as resulting from essences must be based on a non-modal, broadly Aristotelian notion of essence, one that does not again collapse into *de re* necessity. Bird characterises property essences in modal terms of transworld identity: "Essentially dispositional properties are ones that have the same dispositional character in all possible worlds." Then again he insists that such "properties have their identities fixed by their dispositional characters" (2007, 44), which could mean that their transworld identities result from dispositional essences in a non-modal sense. In any case, only a non-modal sense of essence could be of further help to the essentialist.[26]

25 A particularly hard nut are fundamental continuous quantities. One problem is that they are expected to ground comparative resemblances between objects. Ceteris paribus, an object with 3 grams of mass resembles a 2 g object more than it resembles a 1 g object. That resemblance cannot be analysed in terms of shared fundamental predicables. Maybe it can be embraced as unanalysable and nevertheless grounded in the determinate masses. Another problem is to account for the mutual exclusion between determinate properties of the same quantity. If 1 g and 2 g are two different fundamental predicables, why is it impossible for them to co-occur? Qua fundamental, the two features have no complex constitutions that could be incompatible for logical reasons.

26 Complete essences need not be individuating, in spite of the widespread locution of essences making for "identities" of things. For a structuralist about mathematics, i and $-i$ play the same complete essential role in the complex plane but are two different numbers nevertheless. Since dispositionalists typically think of essences as unique to properties (though see Busse 2021, sec. 6), I will bracket this complication in what follows.

According to K. Fine's neo-Aristotelian elucidation, metaphysics is concerned "with the identity of things, with what they are" (1994, 1). Let us call the item to which an essence is attributed the *target* and whatever is attributed to it as (part of) its essence its *essentials*. From the outset Fine connects essence to metaphysical priority. As a particularly narrow, basic sense of essence he distinguishes that of constitutive essence, meaning that "the constitutive essence is directly definitive of the object" (1995b, 57). He also uses the notion of essence in a definition of ontological dependence, with the target being dependent on the objects featuring in its essence (1995a, 275). Both points strongly suggest that essence is a notion of metaphysical priority, with, notably, the essentials being metaphysically prior to the target rather than the other way around. Indeed, if {Socrates} is constituted as what it is by something else and if it can be defined in a metaphysically appropriate sense by something else, viz., containing Socrates as its sole member, the singleton can hardly be fundamental; clearly, Socrates and membership are more fundamental than {Socrates} if they constitute or metaphysically define the singleton. And if {Socrates} ontologically depends on Socrates because it is essential to the set to have Socrates as a member, having that member is metaphysically prior to the singleton, which therefore cannot be fundamental. On such an account of essence, a fundamental dispositional essence would be a wooden iron: precisely by having its dispositional profile *essentially*, a feature such as electric charge could *not* be metaphysically *fundamental*; instead, it would be constituted by or dependent on its essential profile (for a similar consideration see Wang 2019).

In a more recent paper, Fine distinguishes essence and ground as two forms of metaphysical constitution, explanation and determination (2015, 296) and hence of metaphysical priority: roughly, φ is essential to ψ just in case φ is constitutively necessary for φ; φ grounds ψ just in case φ is constitutively sufficient for ψ (2015, 306). Both notions are connected to metaphysical necessity. For grounding, the direction of metaphysical determination and of necessitation coincide: if φ is constitutively sufficient for ψ, φ entails ψ. The crucial point about essence is that here the direction of metaphysical priority and that of necessitation are opposed: if φ is constitutively necessary for ψ, it is ψ that entails φ; the target necessitates its essentials because these essentials are required for its constitution; so in this case, what is necessitated is more basic than the source of the necessitation. Indeed, why is it plausible that containing oxygen is *essential* to being water and is *therefore* necessarily entailed by being water? Only because consisting of oxygen bonded to hydrogen is the

doi: 10.48106/dial.v76.i3

constitution of water. But this very fact entails that water is not metaphysically fundamental but constituted by something more basic. Dispositional essentialists appear to have been misled by the direction of necessitation. Let us assume that the target, dispositional charge, necessitates its essential, the dispositional profile of charge. It would still be a fallacy to infer from this that the dispositional behaviour and with it the laws of nature "flow from" dispositional properties.

B. Hale follows Fine in holding that "necessities have their source in the nature of things" (2018, 122), but classifies essence as modal (2018, 128). The disagreement with Fine's non-modal view is more verbal than real, though. For like Fine, Hale accepts the neo-Aristotelian view that the "essence (or nature) of something is *what it is to be that thing*" and that a "thing's essence is given by its *definition*" (2018, 126). What is more, the metaphysical priority of essentials over their target is clearly indicated in his statement that the "properties figuring in a thing's definition are those properties which *make* it what it is" (2018, 127, my emphasis). It should give us pause that it proves impossible to elucidate a neo-Aristotelian notion of essence without resorting to expressions for metaphysical priority and without prioritising what is essential to a target item over that item.

According to Fine, essence and grounding together define "essentialist *IS*": water IS H_2O in the sense that being H_2O is both constitutively necessary and sufficient for being water (2015, 308). F. Correia and A. Skiles (2019; cf. Correia and Skiles 2022) suggest that we instead start with a generalisation of ordinary objectual identity "$a = b$" (for two singular terms "a," "b") that allows for factual identities "$p \equiv q$" linking two sentences and generic identities such as "$Fx \equiv_x Gx$" linking two open formulas and define essence and grounding with $\equiv$ plus $\neg$, $\wedge$, and $\vee$. To focus on generic identity, the basic idea is that a predicable F is (partially) essential to G by being a conjunctive part of G (for some H, $Gx \equiv_x Fx \wedge Hx$; 2019, 650; 2022, 1283) and that in the simplest case F is a full ground of G in that it is in a non-circular way a disjunctive part of G (for some H, $Gx \equiv_x Fx \vee Hx$; 2019, sec. 3).

Someone may want to exploit the identity-based definition of essence for a defence of dispositional essences of fundamental predicables. For Correia and Skiles understand generic identity in analogy to objectual identity as a reflexive, symmetric and transitive "no-difference operator" (2019, 645) that indicates no metaphysical priority. The dispositionalist's proposal could be that, for example, electric charge is generically identical to the conditional of field strength and electric force, $Qx \equiv_x Ex \rightarrow Fx$ (where the right-hand

side is short for "¬Ex ∨ Fx"). The idea would be that to be charged *just is* to experience a force when in an electric field. Charge could be metaphysically fundamental nevertheless, so the idea, because the identity involves no metaphysical priority running from right to left. In the framework under consideration, this generic identity is a fact of essence, as the framework identifies full essence for predicables with $\equiv_x$ (2019, 649; 2022, 1282). Provided that identity-based essence is a source of metaphysical necessity, dispositionalists might try to defend the necessitation of the conditional profile E → F (to use a simple notation) by the fundamental predicable of charge Q on this basis.

Let me begin with some relevant comments on the identity-based framework and then focus on the supposed application to dispositional essentialism (for which the authors of the framework are not responsible). I have used a notion of factual identity myself in section 10 to express the fact that a linear language over-structures fundamental reality. More generally, I agree that genuine identifications play a role in metaphysics. One may wonder why the "is" in "Water is H_2O" should express a constitutive relation of "essential *IS*" between different referents. The statement may well express the objectual identity between a stuff referred to opaquely on the left-hand side and identically the same stuff transparently referred to on the right-hand side, so that this side reveals the true chemical structure of the stuff referred to on the left. Quasi-identifications of facts or truths and of predicables might play a similar role.

However, by itself ordinary identity is a rather boring, purely extensional notion. It is aptly described by the semantic clause that "$\alpha = \beta$" is true iff there is an object x to which α and β both refer. The relation is sensitive only to *what* is referred to on the left and on the right, whether this is one object or two, and not at all to *how* it is referred to—in what guises or via what Fregean senses. Similar things can be said of generalised identity, if its "tight analogies with [...] objectual identity" (2019, 665) are taken seriously. We may call the relationship quasi-extensional because it is sensitive only to *what* predicables are expressed on the left and on the right and not to *how* they are expressed. Its semantic clause would read: "$\varphi(x) \equiv_x \psi(x)$" is true iff there is a predicable F^1 that is expressed both by "$\varphi(x)$" and by "$\psi(x)$". Crucially, Correia and Skiles insist that generalised identities concern "worldly" rather than "representational" contents (2019, 662). According to them, sentences and formulas of different logical complexity can stand for identically the same worldly fact or predicable, and a generalised identification can be to the effect that this is the case.

doi: 10.48106/dial.v76.i3

However, precisely because generalised identity is construed in analogy to extensional objectual identity, we should not expect too much metaphysical power from this relation all by itself. Our assumed dispositional essentialist seeks to base the necessitation of the profile $E \rightarrow F$ by fundamental Q on a generic identity. But there are reasons to doubt that identities can be sources of necessitation in the required way. Correia and Skiles maintain that "[a]s with objectual identity," generic identity entails metaphysically necessary co-extensionality (2019, 646, principle (8)). In a similar vein, Dorr (2005, 261–262) writes that "it seems mysterious how there could be any necessary truth whose necessity did not flow from metaphysical analysis" of the sort "to be water is to be H_2O" (see also Dorr 2016). However, as Correia and Skiles recognise (Correia and Skiles 2022, 1291, n.11), the principle "$a = b \rightarrow \Box(a = b)$" holds only for objectual identifications with two rigid designators. Rigidity is defined in modal terms, roughly as a term referring to the same thing in every possible world. We only get a modality out of an identification because we have put it into it, by exploiting the fact that we are using two rigid terms. The necessity does not "flow from" the extensional relationship of identity, but from the restriction to identifications between rigid terms. In and by itself, objectual identity has nothing to do with necessity. A language for extensional predicate logic without identity is not turned into a kind of modal language by adding the identity symbol to it.

Analogously, the necessary co-extensionality "$\Box\forall x(Fx \leftrightarrow Gx)$" can be inferred from the generic identification "$Fx \equiv_x Gx$" only if it can be assumed that the two predicates involved are quasi-rigid, in the following sense: a predicate (or open formula) is quasi-rigid iff it expresses the very same worldly predicable in every possible world. Suppose that "the morning star" and "the evening star" express different descriptive senses, but that "x sees the morning star" and "x sees the evening star" are taken to stand for one and the same singular worldly predicable, *seeing Venus*. Then the generic identification will be true, while the two predicates fail to be necessarily co-extensional. Perhaps it can be shown that all predicates we use are in fact quasi-rigid, or perhaps the theory can be restricted to such predicates (cf. Correia and Skiles 2022, 1291, n.11). Still, the necessary co-extensionality does not flow from the harmless, quasi-extensional relation of generic identity, but from the assumed quasi-rigidity of the predicates.

Admittedly, there is a kind of *de re* sense in which identifications induce necessitation quite independently of rigidity and quasi-rigidity. If "$a = b$" is true, then the existence of the referent on the left necessitates that of the

referent on the right and *vice versa*, simply because this is one and the same thing x. If "F$x \equiv_x$ Gx" is true, any instantiation of the predicable expressed on the left necessitates that of the predicable expressed on the right, because this is one and the same predicable F^1. But such a trivial necessitation of x by x and of F^1 by F^1 is of no help to the assumed dispositional essentialist. For it is crucial to her proposal that the fundamental predicable of charge Q necessitates the conditional profile E → F.

The required quasi-rigidity of the two formulas in "Q$x \equiv_x$ Ex → Fx" could be secured in the following way. Assume that the three simple predicates "Q," "E," and "F" are all quasi-rigid. They could be a kind of predicative Millian names for charge, field strength, and electric force lacking any descriptive content that could lead to quasi-nonrigidity. Then "Qx" is quasi-rigid, and it is hard to see how "Ex → Fx" could fail to be so as well. For conditionalization hardly introduces a descriptive content that could form a quasi-nonrigid formula out of two quasi-rigid formulas.

This observation, however, reveals that what is doing substantive work of potential metaphysical importance is not generic identity, but an operation of conditionalization that forms a third predicable out of two given ones. We discussed such an operation earlier when we considered the overtly logically complex predicable λx(Ex → Fx). Since Correia and Skiles focus on worldly contents, we cannot assume that logically complex predicates or formulas express such overtly logically complex predicables. For example, conditionalizing being red on being self-identical might perhaps result just in being red. However, an identity-theoretic dispositionalist would now need to account for a two-place operation on predicables that does two things at the same time: first, for a solution of the inference problem, the operation expressed by "→" must be a form of conditionalization by licensing the *modus ponens* from the presence of E to that of F when applied to the two fundamental predicables F and E; secondly, when so applied, it must yield not some conditional complex with F and E as constituents, but instead a completely different third fundamental, structureless predicable Q. I contend that we do not have the slightest idea of an operation that fulfils both requirements on the result of its application to E and F. A conditional E → F out of fundamental field strength and electric force *just is not* fundamental charge Q. Reversely, if it is insisted that the result of "conditionalizing" F on E is fundamental Q, then the inference from the presence of Q and E to that of F is incomprehensible. The inference problem for dispositionalism persists.

doi: 10.48106/dial.v76.i3

Correia and Skiles are sceptical about Fine's characterisation of essence and ground as constitutive relations, demanding "an informative story of what constitutive relations are" (2019, 667). However, the discussion of a conceivable identity-theoretic approach to dispositionalism suggests that it is hard to suppress the idea of constitutivity. What is doing real metaphysical work in the example is not so much generalised identity, but the formation of a new, somehow conditional predicable out of the two fundamental predicables E and F. In that formation, it is very natural to understand E and F as constituting a derivative predicable that is constituted so as to license the inference from E to F, even if that resulting predicable is not construed as overtly logically complex.

Acknowledging the constitutive nature of essence does not strictly commit us to the irreflexivity of essence. We could adopt a liberal conception which allows an item being essential to itself as a limiting, trivial case. The crucial point can then be stated by saying that metaphysically fundamental items have only trivial essences: the essence of a fundamental entity is simply to be *it*, to be *that* particular subject of monadic and relational predicables; and the essence of a fundamental predicable is simply to be *thus*, to be *that* simple qualitative way for things to be or to be related, fundamentally. Only non-fundamental, constituted items can have interesting, rich essences, namely, those items that enter into their constitution. Since the dispositional essentialist's inherently dispositional properties are expected to have rich essences from which necessary connections to other properties flow, they cannot be metaphysically fundamental, but would somehow have to be constituted as so related.

The result is that essentialists face an inference problem even if they emphasise the notion of essence. For either this notion is modal in nature after all. In this case no progress has been made in comparison to simply postulating that fundamental predicables can stand in interesting entailment relations. Or essence is construed in a non-modal, neo-Aristotelian manner. Then Fine's view proves inevitable that essence is a constitutive notion, so that no fundamental predicable can have a non-trivial essence. A non-modal but at the same time non-constitutive account of essence is not within sight. We must conclude that Dispositional Essentialism confronts an inference problem that is not solved by relying on essence as a source of necessity.

12 Fundamental Lawhood Again

Let us finally return to the original problem of Fundamental Lawhood. *Conjunctive assumption*: The non-Humean under consideration postulates a metaphysically fundamental operation *It is a law that…* (a fundamental item of category C), which combines with certain possible regularities to form laws of nature that, in particular, necessitate the regularity's actual obtaining (job φ). *Sceptical challenge*: The sceptic wonders how a metaphysically fundamental operation could have the power of forcing the possible regularity to which it attaches into actuality. *Positive model*: She puts forward a positive model of a factive operation. Assume a sentential operator that combines with arbitrary sentences "p" in order to form sentences "It is a regularity in the best system of truths that p." As this Lewisian law operator demands belonging of the regularity to the best systematisation of *truths*, it clearly has the inferential power to necessitate the truth of the sentence in its scope, due to its logical complexity. *Missing equipment*: The assumed non-Humean law operation, by contrast, has no logically complex definition in terms of true regularities forming a system, but is postulated as metaphysically fundamental. It therefore lacks any logical complexity that could constitute an inferential power of making valid the inference from "It is a law that p" to "p." *Theoretical task*: The non-Humean's task is to explain in virtue of what fundamental equipment the assumed law operation could play its role of necessitating the obtaining of regularities nevertheless. *No easy reply*: It is no step towards an answer to this sceptical challenge of how Fundamental Lawhood could play this necessitating (or governing) role to insist that *it simply does*. For the challenge is precisely that being metaphysically fundamental, this item *cannot* perform this task because it lacks the required equipment, a complexity, either overt or covert, that could constitute an inferential power.

The problem becomes more vivid when lawhood is aligned to a predicable. Arguably, to say that it is a law that Fs are Gs is to assign a specific status to the possible regularity in question. Its being a law that p, fundamentally, thus appears to be tantamount to the proposition that p having a fundamental property, or rather the proposition being characterised by a fundamental monadic predicable L of being a law. A proposition is some kind of intensional abstract entity: an equivalence class of synonymous sentences, a set of possible worlds, or else *sui generis*. It is the *ex officio* job of a fundamental predicable to characterise an entity as being a certain logically unstructured way. In order to solve the inference problem, the metaphysician would have to explain how

doi: 10.48106/dial.v76.i3

a proposition's being characterised by fundamental L necessitates the world's being the way the proposition represents it to be. Yet it remains completely incomprehensible why the fact that the proposition that all swans are white, this abstract intensional entity, is characterised in a certain logically unstructured way L should make it the case that in concrete reality all swans are in fact white. The proposition that all swans are white would be rendered true by all swans being white, not by the proposition having some fundamental feature L.

Schaffer appeals to the intuition that we would not doubt the factivity of metaphysical necessity or of knowledge even if someone posited necessity or knowledge as metaphysically fundamental (2016, 579–580). However, this is exactly what we should do. It is incomprehensible how a subject's being related to a proposition in a logically simple, fundamental way by a dyadic predicable called "knowledge" could necessitate the proposition's truth. The relationship would appear to be a matter between the subject and the proposition with no consequences for the correspondence between the proposition and the real world. Likewise, it is incomprehensible how a proposition's being characterised in a logically simple way by a predicable called "metaphysical necessity" should force the proposition into truth. The characterisation would appear to be a matter of the proposition alone without any consequence for the world's in fact being the way the proposition says it is. In all such cases, the assumed additional job φ of factivity is in deep conflict with the *ex officio* job of fundamental predicables to characterise entities in a way that is logically structureless even in its deepest metaphysical grounds. All those posits face a Conjunction Problem, more specifically an inference problem.

No deep inference problem, by contrast, burdens views to the effect that metaphysical necessity or knowledge are conceptually primitive rather than metaphysically fundamental, i.e., that there is no analysis of those modal and epistemological concepts by more basic concepts such as truth in possible worlds or belief, truth, and justification, causation, counterfactual dependence, or safety. What is more, no inference problem burdens views according to which those primitive concepts capture something metaphysically so deep that it is beyond the scope of what is metaphysically analysable by us, or by any manageable means. (I take this to be the positions in Williamson 2000; and 2013, resp.) Deep maybe. But not fundamental.

Similarly, no serious inference problem would arise for the position that being a law is a primitive concept that cannot be analysed in terms of, say, membership in the best axiomatic system about the world. What is more,

that concept may well capture something metaphysically deep. Being a law may be an unanalysable *gestalt* feature of certain actual regularities that we are capable of grasping directly, perhaps on the basis of our explanatory practice with laws and our practice of confirmation of laws, rather than by some kind of analysis or definition. Lawhood may be conceptually primitive and go metaphysically deep, but it cannot be fundamental. In general, with respect to arguments allegedly revealing the fundamentality of a certain phenomenon, I recommend examining carefully whether the arguments do not instead highlight the unanalysability of our concepts of the phenomenon or the phenomenon's relative metaphysical depth, rather than its absolute metaphysical fundamentality.

It might be urged that all those considerations mere highlight the theoretical cost of postulating a fundamental item with an intended role and that such costs can be outweighed by sufficient epistemic pressure from the phenomena supporting the postulate. Such a reaction, however, underestimates the importance of metaphysical categories and the depth and inevitability of associated Conjunction Problems. First, the categorial part of a fundamental posit is inevitable. The only choice is between a purely categorial posit and a categorial one with some add-on role.[27] The usual route to Fundamental Lawhood starts with an alleged phenomenon, the assumed requirement of a strong kind of necessitation of lawful regularities, and results in a theoretic postulate, a fundamental accomplisher for the phenomenon. On the one hand, our inquiry into the idea of metaphysical fundamentality shows that fundamentality of predicables, as well as of statuses of possible truths, requires them to be simple in a certain way. This result could be resisted by arguing that logical complexes can be fundamental after all—a mission impossible, after all that has been said. On the other hand, our elements of a phenomenology of necessitation, entailment and inference reveal that necessitation between predicables or statuses requires a certain complexity of the items related, paradigmatically a logical structure; necessity essentially reflects complexity.

27 It is therefore no way out to construe the desired extra role as an ingredient of the category in question. First of all, being a predicable is a category, but being a predicable that does job φ, for arbitrary φ, is not. Predicables can only be understood as whatever generates possible truths out of entities. I have argued that doing so fundamentally can only mean to be structureless in a characteristic way, most prominently being logically structureless. Secondly, if one insists on writing an extra role φ into the very category, the Conjunction Problem remains as a problem of the consistency of the so-called category of, say, structureless predicable that is nevertheless the source of laws-generating necessities. Surely the problem of Flying Pigs is not solved by simply construing the ability to fly as an ingredient of a so-called animal species of flying pigs.

doi: 10.48106/dial.v76.i3

This phenomenology may be contested, but only by offering an alternative, superior phenomenology, of which I know no example. The phenomenology cannot be simply postulated away—no more than a metaphysical account of the Eiffel tower can postulate away the phenomenal fact that this building is a construction out of many different iron elements. To toss phenomenology overboard by inventing instead a connection of schmessisitation for fundamental predicables and statuses would mean to change the subject and to miss the position's initial motivation: to account for a strong necessitation of lawful regularities. It is not a convincing methodology to replace the very phenomenon on which one bases one's metaphysical reasoning by some invented *ersatz* item or by a mere node in a postulated overall structure. Indeed, the strategy of postulating a network of fundamental items that realise an abstract structure of required roles is severely limited. Metaphysical necessity, for example, cannot be characterised by purely formal roles alone. The T-axiom $\Box p \rightarrow p$, for example, holds equally for knowledge and truth. At some point, one must leave the phenomena for which one seeks a metaphysical account well enough alone and focus on describing them as they are, instead of replacing them by postulated role-players for ever more abstract roles. It may, of course, turn out that an alleged phenomenon is not genuine in the first place. This is what happens with the idea of a laws-generating necessitation between fundamental predicables.

Let me add a diagnostic observation that highlights the importance of categories. Schaffer points out that the knowledge operator is factive and that a fundamental factive operation for lawhood may be assumed following this model. This suggests that the apparent acceptability of Fundamental Lawhood rests on the availability of items within the same category, that of operations on possible truths, that do play a necessitating role: we know there are factive operations, so why not also fundamental factive ones? In fact, however, it is precisely by declaring lawhood fundamental that one deprives it of the required equipment for playing a necessitating and hence factive role. Postulating a fundamental necessitator Law(p) of p is just as bad as assuming some absurd necessitator beyond the category of operations. One could just as well postulate that the existence of a particular grain of dust on the moon necessitates that swans are white. Structureless Law(p) is no better equipped for doing the job than a grain of dust.

Thirdly, my main point is that those considerations reveal that posits such as Fundamental Lawhood are faced with a factual, genuinely metaphysical problem, and not merely with the epistemic challenge of providing evidence for

them. It should also be noted, however, that metaphysical and epistemological issues are intertwined. The predominant methodology in metaphysics today seems to be broadly abductive. A range of metaphysically relevant phenomena is taken into consideration, and one's metaphysical theory is to provide the best-possible explanation of those phenomena. Abductive justification, however, involves two factors: on the one hand, evidence that the phenomena in question are real and, on the other, explanatory power of the proposed theory with respect to those phenomena (cf. Busse 2020). Factual problems of the kind highlighted by Conjunction Problems undermine this second factor of explanatory power and thereby substantially, and often crucially, weaken the claimed *epistemological* support of the theory in question. In fact, the failure of fundamental Law(p) to account for the necessitation of p is only one aspect of the view's broader malfunctioning. It is hard to see, for example, how the view could account for the modal stability of laws. For one wonders why one should hold Law(p) fixed in counterfactual considerations if Law is nothing more than some structureless status of p. Also, Law(swans are white) is expected to explain the particular instance that if a is a swan, a is white. On important accounts, explanation consists in a form of necessitation or entailment: logical implication on the classical deductive nomological model, apriori metaphysical entailment in the debate about the explanatory gap, and grounding (assuming that this entails necessitation) in metaphysics. But in a successful explanation, it must be possible to keep three things apart, the explanans, the explanandum, and the explanatory relation between them. This required distinctness is violated if the alleged explanans, Law(swans are white), is essentially characterised just by its role of necessitating in an explanation-constituting manner that, for example, if a is a swan, a is white. The proposal would in effect be that an instance of p, p_i, is explanatorily necessitated by the fact that it is explanatorily necessitated by Law(p). "(The fact that Law(p) explains p_i) explains that p_i" hardly states a successful explanation. Surely a theory of metals would not successfully explain electric conductivity by simply contained a clause to the effect that the structure of metals explanatorily entails conductivity, without any further information about that structure. What is missing, when lawhood is postulated as fundamental, is an independently characterisable structure of Law(p) by which it could explanatorily necessitate instances of p, in analogy to the atomic structure of metals with their characteristic conduction bands.

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13 Conclusion

A posit in foundational metaphysics is always a posit of a fundamental item of a specific metaphysical category, such as entity or monadic or relational predicable. Each such category of fundamental items comes with an *ex officio* metaphysical job. The job of fundamental entities is to exist as ultimate numerically distinct constituents of fundamental reality capable of being this or that way; the job of fundamental monadic and relational predicables is to characterise entities in a simple, logically structureless manner as being certain ways or being related in certain ways. Whenever a postulated fundamental item is assumed to do an additional job, a Conjunction Problem can occur: it may be that the additional job requires an equipment that the item *qua* fundamental cannot have. Typically the required equipment is that of a certain complexity or structure, such as mereological structure of an entity or logical structure of a predicable. In particular, in order for a status of Fundamental Lawhood to be capable of necessitating a regularity's actual obtaining, it would appear to have to have an appropriate logical complexity; but being fundamental, it is logically simple and cannot have such a structure. The inference problem for strong laws, then, is a special case of a Conjunction Problem, the problem of a conflict between a fundamental item's categorial status and a postulated metaphysical job that exceeds its categorially determined *ex officio* role. The goal of this paper was not to refute any specific metaphysical theory nor to defend one. Its goal is to reveal why it is not true that all fundamental posits are inherently alike and differ merely in their epistemic support. Some posits, such as the entity-predicable scheme, show no inner tension between category and assumed jobs and are readily acceptable once data speak in their favour. Others, by contrast, confront serious Conjunction Problems. Those problems cannot be solved by *fiat* nor by piling up alleged explanatory advantages, but only, if at all, by decent metaphysical work. The inference problem for strong views of natural laws is a case in point.*

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