dialectica

Vol 76 : 3
September 2022

Categorial Metaphysics and the Reality of the Inference Problem

On Flying Pigs and Fundamental Lawhood

Ralf Busse

doi:10.48106/dial.v76.i3.03

Ralf Busse. 2022. "Categorial Metaphysics and the Reality of the Inference Problem: On Flying Pigs and Fundamental Lawhood." *Dialectica* 76(3): 1–1. doi:10.48106/dial.v76.i3.03.

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 (Lewis 1983, 40) and B. van Fraasen's (van Fraassen 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-

doi: 10.48106/dial.v76.i3.03

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.i3.03

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 1986). 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 2010b, 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-

doi: 10.48106/dial.v76.i3.03

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 Q*a*, Q*b*, Q*c*, R*ab*, R*bc*, R*ca* 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 (2021, 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* ϕs 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.i3.03

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. Structureless, 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.i3.03

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, 26n37).[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.

doi: 10.48106/dial.v76.i3.03

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 2023, 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.i3.03

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 predicable *non-entity*, a 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 ques-

tions 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. 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.

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.

doi: 10.48106/dial.v76.i3.03

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 Fs are Gs*. 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 (2007, 18–40)). The idea of an inherent dispositionality of, say, charge is 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

doi: 10.48106/dial.v76.i3.03

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 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 $\lambda x[\text{Field}(x) \rightarrow$

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.

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 λx[Field(x) $\rightarrow$ Force(x)](a) infer Field(a) $\rightarrow$ 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.

doi: 10.48106/dial.v76.i3.03

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.

doi: 10.48106/dial.v76.i3.03

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:

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

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. section 10, section 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

doi: 10.48106/dial.v76.i3.03

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, 549n20, 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 §§48-49 of Russell 1903, 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 F

doi: 10.48106/dial.v76.i3.03

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 α^{Φ}, 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 (2021) 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 (1986, 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.

doi: 10.48106/dial.v76.i3.03

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.

doi: 10.48106/dial.v76.i3.03

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, 580n). 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, 20). 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, 68n49). Most plausibly his proposal is that the nominalist can accept sameness of type as a

doi: 10.48106/dial.v76.i3.03

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

doi: 10.48106/dial.v76.i3.03

(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, sec. 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 metaphysical claims? Not at all; the logical apparatus is fully in play, though

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).

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 of dualism, one of fundamental feature-placing truths plus a fundamental

doi: 10.48106/dial.v76.i3.03

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*)

$$\lambda x[\exists y \exists z \exists u \exists v \exists w \ : \ x = \text{Fusion}(y, z, u, v, w) \wedge y \neq z \wedge z \neq u \wedge$$
... [for all other pairs of different variables, "x" 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 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

doi: 10.48106/dial.v76.i3.03

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, chap. 6, chapter 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 that fundamental reality consists in many particulars being characterised by monadic and relational predicables is correct, 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 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

doi: 10.48106/dial.v76.i3.03

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 1922, sec. 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 fundamental 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 overstructures 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 1cm, 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 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

doi: 10.48106/dial.v76.i3.03

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. 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

doi: 10.48106/dial.v76.i3.03

best systematise the particular facts of the world, as the Best System Analysis suggests.[25]

11 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]

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

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 2g object more than it resembles a 1g 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 1g and 2g 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.

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" (Fine 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 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

doi: 10.48106/dial.v76.i3.03

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 form "essential 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) suggest that we instead start with a generalised notion of identity for two singular terms (objectual identity, "$a = b$"), two sentences ("$p \equiv q$") or two open formulas ("F$x \equiv_x$ Gx") and define essence and grounding with it. To focus on "generic" identity between predicables, the idea is that in the simplest cases F is essential to G by being a conjunct in a complex that is generically identical to G, with F$x \equiv_x$ Fx as a trivial limiting case, so that essence is reflexive; similarly, F is a ground of G by being a disjunct in a complex that is identical to G. For example, being rational is essential to being human in that being human is identical to being a rational animal (2019, 652–653); and being red grounds being coloured in that being coloured is identical to the disjunction of red, green, etc. (2019, 657). On that account, in order to have a non-trivial essence, a feature must be generically identical to a conjunctive logical complex of features. But very plausibly, a target phenomenon that is identical in any serious sense to a logical complex cannot be fundamental. So on its face this account excludes non-trivial fundamental essences of predicables, too. However, the view might be construed as an attempt to reduce two notions of metaphysical priority, ground and essence, to a notion of generalised identity not designed for stating metaphysical priorities itself. (This need not be the authors' own ambitions, though. See Correia 2017 for a related account that

explicitly relies on relative fundamentality, and hence on a priority notion.) For in contrast to Fine's essential IS, which inherits the metaphysical directedness and asymmetry of essence and grounding, Correia and Skiles follow A. Rayo in construing generic identity as a reflexive, symmetric and transitive "no-difference operator" and hence as not indicating metaphysical priority (Correia and Skiles 2019, 645). Essentialists could perhaps hope that because the underlying notion of predicables identity has no priority direction built into it, the proposed analysis affords them a non-modal conception of essence that does not render the essentials metaphysically prior to the target after all and thus permits essences for fundamental items.

A first question is whether the idea of extending the notion of identity from the paradigmatic case of objectual identity to generic identity between predicables provides one with an independent, non-modal conception of facts of generic identity from which corresponding metaphysical necessities can be inferred. Relying on "tight analogies" of generic identity "with [...] objectual identity" (Correia and Skiles 2019, 665), Correia and Skiles maintain that "[a]s with objectual identity," every generic identity holds necessarily (Correia and Skiles 2019, 646). However, the usual principle of necessitation, $a = b \rightarrow \Box(a = b)$, holds only for objectual identities with two rigid designators, and rigidity is defined in modal terms, roughly as a term referring to the same thing in every possible world. Even if it is held that definite descriptions are not really singular terms and that all proper singular terms are rigid, this is a theoretic thesis essentially stated in modal terms. In and by itself, objectual identity has nothing to do with necessity and is aptly described by the extensional semantic clause that "$\alpha = \beta$" is true iff there is an object to which α and β both refer.[27] The immediate analogue for predicables would be to construe "$\phi(x) \equiv_x \Psi(x)$" as being true just in case ϕ and Ψ apply to, or are true of, the same things; $\phi(x) \equiv_x \Psi(x)$ would be equivalent to $\forall x(\phi(x) \leftrightarrow \Psi(x))$. The immediate analogue to a restriction to rigid singular terms would be to focus on predicates that have the same extensions in all possible worlds. This

27 The authors acknowledge the extensionality of ordinary identity when they call objectual identity "its own extensional correlate" (Correia and Skiles 2019, 13). Note that what is at issue with regard to the Barcan-Kripke proof of the necessity of identities (cf. Correia and Skiles 2019, 9) is the substitutability of singular terms in *de dicto* modal context, for example in the inference from "$\Box$Fa" and "$a = b$" to "$\Box$Fb." Such a move is licensed only for rigid terms. We can still infer non-identity from a difference in *de re* modal profiles as stated by "a is necessarily F" and "b is not necessarily F," whether "a" and "b" are rigid or not. Note further that on the usual construal variables are rigid, so that no necessity of identity independent of rigidity comes to the fore by a *de re*-formulation such as $a = b \rightarrow \forall x \forall y(x = a \wedge y = b \rightarrow \Box x = y)$.

doi: 10.48106/dial.v76.i3.03

is hardly the authors' intention (cf. Correia and Skiles 2019, 13n11). So which assumption in place of rigidity licenses or explains applications of a generalisation of Leibniz's Law (roughly, that if $\phi \equiv \Psi$ and $\phi(\phi)$, then $\phi(\Psi)$) to contexts of *de dicto* metaphysical modality? Those applications play a crucial role for the alleged link between generalised identity and necessity (2019, 645–646). Unless such an assumption can be stated in independent, non-modal terms, it appears that the entailment of metaphysical necessities partially definites generic identity, rather than metaphysical necessity naturally flowing from an independent understanding of such a relationship that is supported by a substantive analogy to objectual identity.[28] When sources of necessity are sought, ordinary identity is a bad example, because it is none.

A second question is whether generic identity is in fact free of constraints involving metaphysical priority in such a way that the notion of essence defined in terms of it allows for essences not being metaphysically prior to their targets. While they assume predicable identity to entail necessities, Correia and Skiles deny that necessary equivalence suffices for generic identity (principle (11), 2019, 646). For example, they wish to exclude the generic identity of being green with being grue-before-3000-A.D. or bleen-after-3000-A.D. (2019, 646; for a more liberal conception of higher-order identity see Bacon's *Classicism*, 2020, 546n18, 574, 579; and the Booleanism of Dorr 2016, sec. 7). But which general principle governs this exclusion? It would appear that only such a principle could prevent generic identity from collapsing into either logically or metaphysically necessary coextensionality. The authors regiment their intended notion by formal principles. But no formal constraints can mark the difference between blue and grue. A plausible rationale would be that grue and bleen are defined partly in terms of being green and that it is inadequate to split up a predicable into other predicables that require it in their

28 A possible view might be that the semantics for predicates is not primarily extensional, but that a predicate basically *expresses* some predicable. "F$x \equiv_x$ Gx" would be true iff some F^1 is expressed both by "F" and by "G." But there hardly is a unique intuitive or natural relationship of expressing that answers the purpose. It would therefore have to be laid down explicitly that, although hyperintensionally non-equivalent predicates such as "human" and "rational animal" may express the very same predicable, a crucial requirement on sameness of expressed predicables is necessary co-extensionality. The thought might be that in the context of $\equiv$, predicates express "worldly" rather than "representational" contents. But it must be doubted that the wordly/representational distinction (Correia and Skiles 2019, 656, 659, 662–663; cf. Dorr 2016, 44, 54, 77) is firm and sharp enough in order to engender a definite notion of "worldly" quasi-identity. One reason is that, unless eliminativism is correct, mental and linguistic representation and with it all the representational distinctions between propositional and predicative contents is part of the world.

definition. Yet this rationale precludes a parallel exclusion of the plausible generic identity of grue with a disjunctive complex involving blue and green only if it engages a constitutive notion of definition, one according to which the defining predicables are objectively prior to the predicable defined. Indeed, the most comprehensible kind of a general notion of generic identity seems to emerge when, say, "man ≡ rational animal" is understood as providing a metaphysical analysis, more or less in C. Dorr's (2005)[29] sense, of a given item into more basic, constituent items. But then the underlying notion would be of a kind with Fine's asymmetric constitutive IS. A feature that is essential to a complex target in the sense of being a conjunctive constituent of that complex would be metaphysically prior to the target, rendering the target non-fundamental. Challenging Fine, Correia and Skiles demand "an informative story of what constitutive relations are" (2019, 667). The truth seems to be that plausible examples for constitutive metaphysical analysis and for Fine's essential IS provide us with a suitable grasp of relations of metaphysical constitution, while no priority-free consistently non-modal notion of generic identity emerges that both engenders metaphysical necessities and affords a conception of essence for metaphysically fundamental features.[30]

(In section 10, I tentatively used a symmetric operator "≡" myself in order to represent certain necessities, such as inherent symmetry, asymmetry, or transitivity, that reflect the qualitative characters of fundamental relational

29 According to Dorr (2005, 261–262), "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," which at that time he seems to have thought of as directed or asymmetric. In his (2016), he dismisses such asymmetric notions of analysis and real definition (2016, 42) in favour of symmetric "identifications" (2016, 43). In order to cope with the blue/grue asymmetry, however, he then returns to an idea of identifications as real definitions (2016, 72). This idea he elucidates by an analogy to an extreme relationship of semantic priority, the stipulative definition of a new simple symbol by a given complex term, and restricts the logic of identifications accordingly. It thus appears that notions of metaphysical priority, such as relative fundamentality, can be defined by his conception of identifications (section 9) only to the extent that an idea of constitutive real definition plays an essential role in establishing the notion of identifications.

30 Another epicycle would be described by the view that to be fundamental is to not have a *complete* metaphysical analysis or real definition in other terms and that this is compatible with a fundamental item's being *partially* defined by a particular role, such as that of Law(p) to necessitate p; for an analogy, think of a theoretical concept partially defined by means of observation terms. Such a choice on using the term "fundamental" does not change the fact that what is partly defined, in a metaphysically substantive sense, and hence dependent on the defining items, cannot be fully fundamental; no more than a concept partly defined by another is independent of this given concept. Thanks to Tobias Wilsch for drawing my attention to the idea of partial definitions.

doi: 10.48106/dial.v76.i3.03

predicables. However, the operator is not advertised as a general notion for linking predicables. Its use relies on the presupposition that we are dealing with a certain fundamental predicable and appeals to the insight that one and the same truth concerning fundamental reality can be categorially structured by linguistic expressions in somewhat different ways that evidently make no difference to reality itself, such as the different orders of relata in R*ab* and R**ba* for converse relations R and R*.)

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 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

doi: 10.48106/dial.v76.i3.03

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 (2017, 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 Williamson 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.[31] 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. 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 funda-

31 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.i3.03

mental 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.

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

doi: 10.48106/dial.v76.i3.03

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.*

Ralf Busse
0009-0005-3546-9153
University of Mainz
rbusse@uni-mainz.de

References

Armstrong, David M. 1986. "In Defence of Structural Universals." *Australasian Journal of Philosophy* 64(1): 85–88, doi:10.1080/00048408612342261.
—. 1989. *Universals: An Opiniated Introduction*. Boulder, Colorado: Westview Press.

* I am very grateful to three anonymous referees for supporting this paper. They complained a bit about its complexity, but at the same time raised many additional issues. This revised version aims at a balance between simplicity and strength in addressing those issues. The paper benefitted from discussions in my research colloquium and from Nick Haverkamp's help in particular.

—. 1997. *A World of States of Affairs*. Cambridge: Cambridge University Press, doi:10.1017/cbo9780511583308.

Bacon, Andrew. 2020. "Logical Combinatorialism." *The Philosophical Review* 129(4): 537–589, doi:10.1215/00318108-8540944.

Bird, Alexander. 2007. *Nature's Metaphysics. Laws and Properties*. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780199227013.001.0001.

Bliss, Ricki Leigh and Trogdon, Kelly. 2021. "Metaphysical Grounding." in *The Stanford Encyclopedia of Philosophy*. Stanford, California: The Metaphysics Research Lab, Center for the Study of Language; Information. Revision, December 6, 2021 of the version of November 25, 2014, https://plato.stanford.edu/entries/grounding/.

Busse, Ralf. 2009. "Humean Supervenience, Vectorial Fields, and the Spinning Sphere." *Dialectica* 63(4): 449–489, doi:10.1111/j.1746-8361.2009.01218.x.

—. 2018. "The Adequacy of Nominalism about Perfect Naturalness ." *Philosophy and Phenomenological Research* 96(2): 443–469, doi:10.1111/phpr.12324.

—. 2020. "Against Metaphysical Structuralism: A Case Study on the Apriori Dimension Within Inductive Metaphysics." *Grazer Philosophische Studien* 98(1): 90–122, doi:10.1163/18756735-000097.

—. 2021. "Asymmetry Cannot Solve the Circularity/Regress Problem of Property Structuralism ." *Synthese* 199(3-4): 10685–10720, doi:10.1007/s11229-021-03264-8.

Button, Tim and Trueman, Robert. 2021. "Against Cumulative Type Theory ." *The Review of Symbolic Logic* 15(4): 907–949, doi:10.1017/S1755020321000435.

Chalmers, David J., Manley, David and Wasserman, Ryan, eds. 2009. *Metametaphysics. New Essays on the Foundations of Ontology*. Oxford: Oxford University Press, doi:10.1093/oso/9780199546046.001.0001.

Correia, Fabrice. 2017. "Real Definitions." in *Philosophical Issues 27: Metaphysics*, edited by Jonathan Schaffer, pp. 52–73. Oxford: Wiley-Blackwell, doi:10.1111/phis.12091.

Correia, Fabrice and Skiles, Alexander. 2019. "Grounding, Essence, and Identity." *Philosophy and Phenomenological Research* 98(3): 642–670, doi:10.1111/phpr.12468.

Dasgupta, Shamik. 2009. "Individuals: an Essay in Revisionary Metaphysics." *Philosophical Studies* 145(1): 35–67, doi:10.1007/s11098-009-9390-x.

Dorr, Cian. 2005. "What We Disagree About When We Disagree About Ontology." in *Fictionalism in Metaphysics*, edited by Mark Eli Kalderon, pp. 234–286. Oxford: Oxford University Press, doi:10.1093/oso/9780199282180.003.0009.

—. 2016. "To Be *F* Is To Be *G*." in *Philosophical Perspectives 30: Metaphysics*, edited by John Hawthorne, pp. 39–134. Hoboken, New Jersey: John Wiley; Sons, Inc., doi:10.1111/phpe.12079.

FINE, Kit. 1994. "Essence and Modality." in *Philosophical Perspectives 8: Logic and Language*, edited by James E. TOMBERLIN, pp. 1–16. Oxford: Basil Blackwell Publishers. The second Philosophical Perspectives Lecture, doi:10.2307/2214160.
—. 1995a. "Ontological Dependence." *Proceedings of the Aristotelian Society* 95: 269–290, doi:10.1093/aristotelian/95.1.269.
—. 1995b. "Senses of Essence." in *Modality, Morality, and Belief: Essays in Honor of Ruth Barcan Marcus*, edited by Walter SINNOTT-ARMSTRONG, Diana RAFFMAN, and Nicholas ASHER, pp. 53–73. Cambridge: Cambridge University Press.
—. 2001. "The Question of Realism." *Philosophers' Imprint* 1(2).
—. 2012. "Guide to Ground." in *Metaphysical Grounding. Understanding the Structure of Reality*, edited by Fabrice CORREIA and Benjamin Sebastian SCHNIEDER, pp. 37–80. Cambridge: Cambridge University Press, doi:10.1017/CBO9781139149136.002.
—. 2015. "Unified Foundations for Essence and Ground." *The Journal of the American Philosophical Association* 1(2): 296–311, doi:10.1017/apa.2014.26.
—. 2017. "A Theory of Truthmaker Content I: Conjunction, Disjunction and Negation." *The Journal of Philosophical Logic* 46(6): 625–674, doi:10.1007/s10992-016-9413-y.
HALE, Bob. 2018. "The Basis of Necessity and Possibility." in *Metaphysics*, edited by Anthony O'HEAR, pp. 109–138. Royal Institute of Philosophy Supplement n. 82. Cambridge: Cambridge University Press, doi:10.1017/s1358246118000073.
HAWTHORNE, John and CORTENS, Andrew Joseph. 1995. "Towards Ontological Nihilism." *Philosophical Studies* 79(2): 143–165, doi:10.1007/bf00989707.
HEIM, Irene and KRATZER, Angelika. 1998. *Semantics in Generative Grammar*. Oxford: Basil Blackwell Publishers.
HORWICH, Paul. 1990. *Truth*. Oxford: Basil Blackwell Publishers. Second edition: Horwich (1998).
—. 1998. *Truth*. 2nd ed. Oxford: Basil Blackwell Publishers. First edition: Horwich (1990), doi:10.1093/0198752237.001.0001.
JONES, Nicholas K. 2018. "Nominalist Realism." *Noûs* 52(4): 808–835, doi:10.1111/nous.12097.
LEIBNIZ, Gottfried Wilhelm and CLARKE, Samuel. 2000. *Correspondence*. Indianapolis, Indiana: Hackett Publishing Co. Edited with an introduction by Roger Ariew.
LEWIS, David. 1983. "New Work for a Theory of Universals." *Australasian Journal of Philosophy* 61(4): 343–377. Reprinted in Lewis (1999, 8–55), doi:10.1080/00048408312341131.
—. 1986. *On the Plurality of Worlds*. Oxford: Basil Blackwell Publishers.
—. 1991. *Parts of Classes*. Oxford: Basil Blackwell Publishers.
—. 1999. *Papers in Metaphysics and Epistemology*. Cambridge: Cambridge University Press, doi:10.1017/CBO9780511625343.

Lowe, Edward Jonathan. 2006. *The Four-Category Ontology: A Metaphysical Foundation for Natural Science*. Oxford: Oxford University Press, doi:10.1093/0199254397.001.0001.

Maudlin, Tim. 2007. *The Metaphysics Within Physics*. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780199218219.001.0001.

Maurin, Anna-Sofia. 2023. "Tropes." in *The Stanford Encyclopedia of Philosophy*. Stanford, California: The Metaphysics Research Lab, Center for the Study of Language; Information. Revision, March 16, 2023, of the version of September 9, 2013, https://plato.stanford.edu/entries/tropes/.

Melia, Joseph. 1995. "On What There's Not." *Analysis* 55(4): 223–229, doi:10.1093/analys/55.4.223.

Nozick, Robert. 1981. *Philosophical Explanations*. Cambridge, Massachusetts: Harvard University Press.

O'Hear, Anthony, ed. 2018. *Metaphysics*. Royal Institute of Philosophy Supplement n. 82. Cambridge: Cambridge University Press.

Paul, Laurie A. 2017. "A One Category Ontology." in *Being, Freedom, and Method: Themes from the Philosophy of Peter van Inwagen*, edited by John Adorno Keller, pp. 32–61. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780198715702.003.0003.

Raven, Michael J., ed. 2020. *The Routledge Handbook of Metaphysical Grounding*. Routledge Handbooks in Philosophy. Milton, Abingdon: Routledge, doi:10.4324/9781351258845.

Rosen, Gideon. 2010. "Metaphysical Dependence: Grounding and Reduction." in *Modality: Metaphysics, Logic, and Epistemology*, edited by Bob Hale and Aviv Hoffmann, pp. 109–136. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780199565818.003.0007.

Russell, Bertrand Arthur William. 1903. *The Principles of Mathematics*. Cambridge: Cambridge University Press. Second edition: Russell (1937), doi:10.4324/9780203822586.

—. 1937. *The Principles of Mathematics*. 2nd ed. London: George Allen & Unwin. Second edition of Russell (1903), with a new introduction.

Schaffer, Jonathan. 2009. "On What Grounds What." in *Metametaphysics. New Essays on the Foundations of Ontology*, edited by David J. Chalmers, David Manley, and Ryan Wasserman, pp. 347–383. Oxford: Oxford University Press, doi:10.1093/oso/9780199546046.003.0012.

—. 2010a. "The Least Discerning and Most Promiscous Truthmaker." *The Philosophical Quarterly* 60(239): 307–324, doi:10.1111/phiq.2010.60.issue-239.

—. 2010b. "Monism: The Priority of the Whole." *The Philosophical Review* 119(1): 31–76, doi:10.1215/00318108-2009-025.

—. 2016. "It is the Business of Laws to Govern." *Dialectica* 70(4): 577–588, doi:10.1111/1746-8361.12165.

—. 2017. “Laws for Metaphysical Explanation.” in *Philosophical Issues 27: Metaphysics*, edited by Jonathan SCHAFFER, pp. 302–321. Oxford: Wiley-Blackwell. Reprinted in O’Hear (2018, 1–20), doi:10.1111/phis.12111.

SELLARS, Wilfrid. 1967. *Philosophical Perspectives*. Springfield, Illinois: Charles C. Thomas. Reprinted as Sellars (1977a, 1977b).

—. 1968. *Science and Metaphysics: Variations on Kantian Themes*. London: Routledge & Kegan Paul. The John Locke Lectures for 1965-1966, republished as Sellars (1992).

—. 1977a. *Philosophical Perspectives, volume 1: History of Philosophy*. Atascadero, California: Ridgeview Publishing Co. Reprint of the first part of Sellars (1967).

—. 1977b. *Philosophical Perspectives, volume 2: Metaphysics and Epistemology*. Atascadero, California: Ridgeview Publishing Co. Reprint of the second part of Sellars (1967).

—. 1992. *Science and Metaphysics: Variations on Kantian Themes*. Atascadero, California: Ridgeview Publishing Co. Reprint of Sellars (1967).

SIDER, Theodore. 2008. “Monism and Statespace Structure.” in *Being: Developments in Contemporary Metaphysics*, edited by Robin LE POIDEVIN, pp. 129–150. Royal Institute of Philosophy Supplement n. 62. Cambridge: Cambridge University Press, doi:10.1017/s1358246108000611.

—. 2009. “Ontological Realism.” in *Metametaphysics. New Essays on the Foundations of Ontology*, edited by David J. CHALMERS, David MANLEY, and Ryan WASSERMAN, pp. 384–423. Oxford: Oxford University Press, doi:10.1093/oso/9780199546046.003.0013.

—. 2011. *Writing the Book of the World*. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780199697908.001.0001.

SIMONS, Peter M. 2010. “Relations and Truthmaking.” *Proceedings of the Aristotelian Society, Supplementary Volume* 84: 199–213, doi:10.1111/j.1467-8349.2010.00192.x.

SKIBA, Lukas. 2021. “Higher-Order Metaphysics.” *Philosophy Compass* 16(10), doi:10.1111/phc3.12756.

TRUEMAN, Robert. 2021. *Properties and Propositions: The Metaphysics of Higher-Order Logic*. Cambridge: Cambridge University Press, doi:10.1017/9781108886123.

TURNER, Jason. 2011. “Ontological Nihilism.” in *Oxford Studies in Metaphysics*, volume VI, edited by Karen BENNETT and Dean W. ZIMMERMAN, pp. 3–54. New York: Oxford University Press, doi:10.1093/acprof:oso/9780199603039.003.0001.

VAN FRAASSEN, Bas C. 1989. *Laws and Symmetry*. Oxford: Oxford University Press, doi:10.1093/0198248601.001.0001.

WANG, Jennifer. 2019. “The Essences of Fundamental Properties.” *Metaphysics* 2(1): 40–54, doi:10.5334/met.29.

WILLIAMSON, Timothy. 2000. *Knowledge and Its Limits*. Oxford: Oxford University Press, doi:10.1093/019925656X.001.0001.

—. 2013. *Modal Logic as Metaphysics*. Oxford: Oxford University Press, doi:10.1093/acprof:oso/9780199552078.001.0001.

—. 2017. "Semantic Paradoxes and Abductive Methodology." in *Reflections on the Liar*, edited by Bradley Armour-Garb, pp. 325–346. New York: Oxford University Press, doi:10.1093/oso/9780199896042.003.0013.

Wilson, Jessica M. 2014. "No Work for a Theory of Grounding." *Inquiry* 57(5–6): 535–579, doi:10.1080/0020174x.2014.907542.

Wittgenstein, Ludwig. 1922. *Tractatus logico-philosophicus*. International Library of Psychology, Philosophy and Scientific Method. London: Kegan Paul, Trench, Trübner & Co.

doi: 10.48106/dial.v76.i3.03