UNIVERSITAT DE BARCELONA

Essence and Nomicity

On the Foundations of Dispositional Essentialism

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PHD DISSERTATION

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Abstract

Dispositional Essentialism is the view that fundamental properties essentially confer nomic roles on their bearers and as such are the sources of natural modality. The view offers an intriguing account of natural modality. Yet, thus far, its key concepts and the import of its core claims have remained rather unclear, and this lack of clarity has prevented the view from finding many supporters. My dissertation provides a new foundation for Dispositional Essentialism, by clarifying its theoretical and ontological commitments and situating it in the context of the current debate on essence, dependence, grounding, and their logic. Chapter 1 develops and defends a novel nominalist account of Dispositional Essentialism, Austere Nominalist Dispositional Essentialism. Drawing on resources in higher-order metaphysics, the proposed account forgoes commitment to the existence of properties altogether, while preserving the core tenets of Dispositional Essentialism. Chapter 2 defends Dispositional Essentialism against a central objection, according to which the view incurs mutually incompatible commitments, where this incompatibility is alleged to derive directly from the nature of the relations between essence, dependence, and grounding. Chapters 3 and 4 both concern a prominent and prima facie compelling principle about the explanatory role of essence, according to which essence-truths ground their prejacents. I argue that two recent arguments based on considerations pertaining to the logic and semantics of essence and ground ultimately fail, but then go on to develop a novel argument against that same principle based on considerations more specifically rooted in truthmaker semantics.

Contents

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Introduction

1 Dispositional Essentialism and its Place in the Debate on Nomicity

If one billiard ball hits another, the first makes the second roll away; if we drop an object, it is attracted by the earth; if we immerse a sugar cube in water, it dissolves. In our everyday lives, the world appears to us to be full of 'pulling and pushing', where events cause other events and laws of nature govern the behavior of objects.

According to one of the main views in metaphysics of science, the *Humean view*, such nomic connections are a purely superficial phenomenon. Ultimately, everything is 'separate and loose'. Nomic phenomena, or, to use another phrase, natural modalities — such as the laws of nature, as well as counterfactual, causal, and dispositional facts — merely correspond to explanatorily powerful generalizations about regularities in the distribution of properties. David Lewis provides the paradigmatic defense of the view. According to Lewis (1983b, p. ix f.), ultimately, 'all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another'. The fundamental level consists entirely of the distribution of monadic, intrinsic properties at the four-dimensional manifold of space-time points in the actual and other possible worlds. Everything else is ultimately due to these 'Humean mosaics'. Nomic phenomena are no extra additions that govern the ways of the world. Instead, they are merely reflections of the mosaics — 'cosmic summaries' of the regularities that are present in them.

Going into some more detail, according to the Humean best system account, the laws of nature are roughly the axioms of a system of true generalizations about the actual world that best balances simplicity and informativity (see e.g. Beebee 2000, Cohen and Callender 2009, Lewis 1994, Loewer 2012 and Ramsey 1978). Counterfactual conditionals of the form 'if p were the case, q would be the case' are analyzed in terms of q's being the case in all the closest p-worlds, that is, in those among the worlds in which p is the case that are most similar to the actual world. And causal claims and dispositional ascriptions are in turn analyzed in terms of counterfactuals. Roughly, one event a causes another event b if it is the case that, had a not occurred, b would not have occurred either. And, roughly, an object is disposed to manifest a certain feature in response to a certain stimulus if it is the case that, were the object in the stimulus conditions, the object would manifest those features.[1]

Anti-Humean metaphysicians oppose this picture. They maintain that there is a 'real cement of the universe', a deeper source of the nomic connections in nature. Two main strands of anti-Humeanism about natural modality are *Law-Primitivism* on the one hand, and the *Dretske-Tooley-Armstrong-account* ('DTA-account'), on the other. According to Law-Primitivism, the laws of nature are simply brute, contingent facts that resist an elucidation in different terms (Carroll 1994, Maudlin 2007). In contrast to the Humean laws, which play a merely descriptive role, the primitivist's laws play a governing role: they impose constraints on how the world may be at any given moment in time, or guide the course of events as time goes by. According to the DTA-account, the ultimate source of the nomic connections lies in relations of nomic necessitation ('N-relations') among universals (Armstrong 1978, Dretske 1977, Tooley 1977). While properties are taken to stand merely contingently in N-relations, in all worlds where they do, the holding of the relations 'dictates' regularities in the distributions of the N-related properties in those worlds.

While Humeanism and these two strands of anti-Humeanism disagree on whether there are real connections in nature, they still agree in another crucial respect, however: they maintain that physical properties 'float free of' their nomic roles.

[1] See Lewis 1973 for causation, and Lewis 1997 for dispositional ascriptions. The idea of analyzing dispositions in terms of counterfactuals traces back to Carnap 1936.

Consider, for instance, the property of unit negative electric charge ('negative charge' in what follows). All negatively charged objects are disposed to behave in a certain way: if they were to come in the vicinity of other negatively charged particles, they would repel them; if they were to come in the vicinity of other positively charged particles, they would attract them. More specifically, all negatively charged particles exert repulsive or attractive forces in accordance to Coulomb's law, according to which, if the negatively charged particle was at distance u from another object with charge v, it would exert a force of $\epsilon\frac{e\cdot v}{u^2}$.

On all the theories considered thus far, however, the connection between charge and this 'charge-role' is purely contingent. While it holds in our world, it breaks down in the vast majority of other worlds. In some other worlds, negatively charged particles e.g. repel rather than attract positively charged particles, in other worlds, they make electrons change their spins, and in yet other worlds, they do nothing at all. The connection between negative charge and the charge-role is thus loose in a modal sense. And, as may already be clear from this (granting the common assumption that essence implies necessity), neither Humeans, nor primitivists nor DTA-theorists think that the connection between negative charge and the charge-role pertains to the essence of charge.[2] On their views, the nature of negative charge 'knows nothing of' repulsion or attraction; it is devoid of nomicity.[3] The connection between charge and the charge role is thus also loose in an essentialist sense. Finally, the fact that some negatively charged particle, say electron Eddie, plays the charge-role is only very partially explained by the fact that Eddie has negative charge. In order to obtain a full metaphysical explanation, we need to resort to further extraneous facts.[4] In

[2]For more on the connections between essence and necessity, see section §2.2.

[3]I use the expressions 'nature' and 'essence' interchangeably.

[4]Metaphysical explanations contrast with other types of explanations, such as, most importantly, causal and scientific explanations. In particular, while Humean laws do not metaphysically explain their instances, they still scientifically explain them. I presuppose an at least moderately realist view of metaphysical explanation, according to which metaphysical explanation is 'primarily (or even entirely) objective and mind-independent' (Brenner et al. 2021). As we will see in section §2.3, the default type of metaphysical explanations are grounding-explanations, but there are arguably also other types of metaphysical explanations besides grounding-explanation. In this introduction, I allow myself to move freely between talk of (metaphysical) explanation and talk about underlying phenomena, such as relationships of grounding or determination. See Brenner et al. 2021 for an overview over theories of metaphysical explanation, and section §2.3 for more on the relationship between grounding-explanations and underlying relationships of determination.

the case of Humeanism, the ultimate metaphysical explanation will draw on facts about the whole Humean mosaic in the actual and other close-by possible world. And in the case of Primitivism and the DTA-theory, we need to invoke further facts about the primitive laws of nature or facts about the holding of N-relations among universals, respectively. The connection between charge and the charge-role is thus also loose in an explanatory sense.

There is, however, an alternative view on the matter in the anti-Humean camp: *Dispositional Essentialism*, or 'DE' for short. Proponents of this view reject the idea that the fundamental properties float free of their nomic roles. Instead, they conceive of the properties as the very sources of the nomic connections in nature. According to dispositionalists, the connections between fundamental properties and their nomic roles are not superimposed on them from the outside, but pertain to their very essences. To use the words of Alexander Bird (2007a, p. 2):

> '[L]aws are not thrust upon properties, irrespective, as it were, of what those properties are. Rather the laws spring from within the properties themselves.'

DE originated in the seventies and early eighties in the work of Rom Harré and Edward H. Madden (Harré 1970, Harré and Madden 1975), David Hugh Mellor (Mellor 1974), Sydney Shoemaker (Shoemaker 1980) and Chris Swoyer (Swoyer 1982). The term 'Dispositional Essentialism' is due to Brian Ellis and Caroline Lierse (Ellis 2001, Ellis and Lierse 1994). The arguably most elaborated defense of DE, however, that has become the main point of reference in the current debate, is provided by Bird (2007a).[5]

Going into some more detail, on a natural construal of DE, the theory maintains an intimate connection between properties and their nomic roles in all the three senses encountered before: the essentialist, the modal, and the explanatory sense. Thus, proponents of DE maintain that at least some of the fundamental properties are powers: properties that are essentially connected to the nomic roles that they con-

[5]Further influential accounts of DE, broadly construed, include Cartwright 1999, Martin 2007, Martin and Heil 1999, Molnar 2003, Mumford and Anjum 2011, Mumford 2002, and Williams 2019.

fer on their bearers. Let us call this claim the 'essence-claim' of DE. The property of negative charge is the paradigm example of a property that proponents of DE standardly conceive of as a power. Thus, it is commonplace among dispositionalists to maintain that it is part of the very nature of negative charge that all negatively charged objects play the charge role. On the widely held view that entities possess their essences with necessity, DE's essence-claim also entails that powers are necessarily connected to their nomic roles. In this vein, the fact that negative charge essentially confers the charge-role on its bearers entails that it necessarily does so. Hence, we also have a modal claim, but one that is parasitic on the essence-claim. Finally, proponents of DE hold that facts about the nomic roles played by objects can be fully explained by facts about powers. Let us call this claim the 'explanatory claim' of DE. Consider as an example again electron Eddie. According to the dispositionalist, the fact that Eddie is negatively charged already fully accounts — possibly jointly with a fact about the essence of negative charge — for the fact that Eddie plays the charge role. No need to appeal to further 'extraneous' facts in order to complement the explanation, as is the case for the other views on nomicity. All that is needed for the explanation is already, so to speak, 'present in' Eddie's being charged and the way negative charge is.[6]

The combination of the essence- and explanatory-claim provides us with the bare-bones of an account of DE, and, in this thesis, I shall understand DE precisely as a combination of these two claims. Note that this characterization of DE leaves open whether all the fundamental physical properties are powers. So called 'dispositional monists' answer positively to this question, while proponents of the so-called 'Mixed View' answer negatively.[7] Moreover, the characterization leaves open whether powers are individuated in terms of their nomic essences. So-called 'strong dispositional essentialists' maintain that they are, while 'weak dispositional essentialists' maintain that they are not.[8]

[6] Assuming that the relevant form of explanation is such that the explanans necessitates the explanandum — as it is commonly maintained for grounding-explanations (to already anticipate matters that will come in section §2.3) — the explanatory claim also entails the modal claim.

[7] Proponents of Dispositional Monism include Mumford and Anjum 2011 and Bird 2007a. The Mixed View is most famously advocated by Ellis 2001 and Lowe 2006.

[8] Proponents of Strong Dispositional Essentialism include Bird 2007a, Mumford and Anjum 2011, Ellis 2001, Molnar 2003, and Shoemaker 1980. Proponents of Weak Dispositional Essentialism include Martin and Heil 1999, Heil 2010, and Martin 2007. The distinction between Strong

When introducing the example of negative charge, I sketched the associated nomic role in counterfactual terms: that if a negatively charged particle were in the vicinity of another negatively charged particle, it would repel it, and that if a negatively charged particle were in the vicinity of a positively charged particle, it would attract it. Bird (2007) provides the paradigmatic defense of an account which ties the essences of powers to counterfactuals. Other proponents of DE, however, associate powers with different types of natural modality, such as with causal connections (see e.g. Shoemaker 1980), causal necessitation (see e.g. Hawthorne 2001), or a primitive dispositional modality that cannot be accounted for in other terms (see e.g. Mumford and Anjum 2011).

According to the explanatory claim of DE, the instantiations of powers provide us with explanations of the natural modalities that pertain to the property essences. Proponents of DE typically do not stop here, however, and offer also explanations for other types of natural modality in terms of powers. To give just two examples, Stephen Mumford and Rani Lill Anjum (2011) associate the essences of powers with a primitive dispositional modality, and then offer an account of causation in terms of powers, and Bird (2007a, 2010) associates the essences of powers with counterfactuals and provides accounts of causation and the laws of nature in terms of powers. This is not to say, however, that all proponents of DE wish to account for all the natural modalities in terms of powers. In particular, it has been also suggested that DE indeed goes naturally together with a variant of the best system account of laws (Demarest 2017, Kimpton-Nye 2017, Williams 2019).

Why endorse DE rather than any other view on natural modality? A core motivation driving the anti-Humean opposition is dissatisfaction with the Humean idea that the fundamental property distribution in the mosaic is ultimately just a brute fact that lacks any deeper, 'genuine' explanation. For the Humean mosaic exhibits strikingly strong and general regularities that seem to cry out for an explanation, or so many anti-Humeans maintain (see e.g. Blackburn 1990, Foster 1983, Strawson 2014 for the worry, and Filomeno 2019 for a recent discussion). As Aldo Filomeno (2019) vividly puts this 'cosmic coincidence worry' against Humeanism:

vs. Weak Dispositional Essentialism is one way in which the notoriously ambiguous distinction between so-called 'Pure Powers Views' vs. 'Powerful Qualities Views' can be understood.

> 'Our highly patterned actual Humean mosaic seems an extremely unlikely possibility among all the possible irregular mosaics. It would be, following Strawson's (2014) analogy, like having a screen whose pixels display the random noise produced by some underlying generator and in which you find not just some fluke which surprisingly resembles a frame of a movie, but the whole of, say, Kubrick's 'Clockwork Orange'.'

An argument specifically in favor of DE arises from epistemological and semantic considerations. Thus, our primary ways of recognizing and referring to properties seem to stem from their nomic interactions and their nomic relations to devices for their detection. But these ways would seem to be threatened by the possibility of sceptical scenarios in which multiple properties play exactly the same nomic roles, or scenarios in which, unbeknownst to us, properties swap their nomic roles over the course of time. While at least those versions of DE that subscribe to Strong Dispositional Essentialism block such scenarios, on other views of natural modality, such scenarios constitute live possibilities: we are condemned to what Lewis calls 'Ramseyan Humilitiy', i.e. the impossibility of ruling out such sceptical scenarios. And this, or so it has been argued, would render properties semantically and epistemically inscrutable to us (see Shoemaker 1980 for the argument, and Hawthorne 2001 for critical discussion). In addition to these metaphysical-cum-epistemological considerations, many proponents of DE have provided arguments for DE based on naturalistic considerations. Thus, it has been argued that DE not only fits particularly well with our manifest image of the world, but also with the scientific image of the world. As Barbara Vetter (2020, p. 3) summarizes the latter idea, science seems 'difficult to understand without the appeal to powers and dispositions, both in terms of its results (see Bird 2007; Ellis 2001; Harre 1970, and many more) and in terms of its practice (Blackburn 1990; Harre 1970, p. 90; Shoemaker 1980).' More specifically, arguments have been put forward to the effect that DE is better suited than its competitors to accommodate the possibility of ceteris paribus laws and to account for the behavior of complex systems (see Bird 2007a, Cartwright 1999, Corry 2009, Ellis 2001).

While all of these considerations are subject to lively debate, they still indicate that DE is an intriguing view that offers a promising alternative to the other views on natural modality. However, the view has only be sketched in the literature and awaits

proper, theoretical elaboration. Large parts of the debate on DE have proceeded within a purely modal framework, which had dominated metaphysics in the second half of the 20th century.[9] And while the current developments in foundational debates in metaphysics have been fruitfully applied to other views on natural modality in recent years, they have not yet been much exploited in application to DE. Furthermore, DE faces arguably the greatest number of challenges among anti-Humean accounts of natural modality: while it shares many challenges with its anti-Humean competitors, it faces additional objections as well.

One major challenge that affects DE and its anti-Humean competitors alike is the so-called 'problem of governance' or 'inference problem'. As we have seen, a core tenet of the anti-Humean big picture is the idea that laws or lawmakers — and, in the case of DE, dispositional essences — help to metaphysically explain the patterns of distribution of fundamental properties and allow us to account for other forms of natural modality. The problem of governance contends that it is unclear what kind of determination might be at stake. Thus, Bas van Fraassen (1989) and Lewis (1983a) famously argue that DTA-theorists fail to offer an account of why it is impossible to have the N-relations but not the corresponding regularities. In a similar vein, Helen Beebee (2000) and Barry Loewer (2012) contend that it remains mysterious what forms of determination the talk of 'guidance' and 'governance' should correspond to. As Loewer puts it: 'What do these metaphors of governing and guiding come to? No one thinks that the laws literally govern events. Nor do the laws cause the events.' And in the case of DE specifically, Stephen Barker and Benjamin Smart (Barker and Smart 2012, Barker 2013) argue that that it remains unclear how powers give rise to the regularities in nature.

One family of objections specifically directed against DE, by contrast, are what I shall call 'structural objections': worries to the effect that DE conflicts with various common core assumptions about phenomena that limn the structure of the world, such as essence, dependence, grounding, and fundamentality. The traditionally most influential objection of this sort targets versions of DE that additionally subscribe to Strong Dispositional Essentialism and Dispositional Monism. Roughly, this ar-

[9] See §2.2 and §2.3 for more on the modal framework.

gument contends that such versions of DE yield either vicious circles or else vicious regresses of identity dependence. The worry proceeds from the idea that the nomic roles of fundamental physical powers include further fundamental physical properties, and that in consequence, dispositionally individuated powers depend for their identities on further fundamental physical properties. Granting that all the fundamental physical properties are powers, however, this purportedly leads to the result that, as Lowe (2006, p. 138) puts it, 'each property owes its identity to another, which, in turn owes its identity to another — and so on, in a way that, very plausibly, generates either a vicious infinite regress or a vicious circle'.[10] While this debate is still ongoing, however, other structural objections have taken centerstage in recent years. In contrast to the identity-dependence objection, these objections affect all versions of DE alike, rather than just strengthened versions of DE. These worries include the objection that, according to DE, the fundamental properties fail to be ontologically independent, since other properties feature in their essences (Wang 2019); that DE violates Theodore Sider's (2011) doctrine of Purity, according to which fundamental truths involve only fundamental notions (Jaag 2014); and a variety of objections that contend that DE's essence-claim conflicts with its explanatory claim (see e.g. Coates 2020, Coates 2022, Jaag 2014, Kimpton-Nye 2021, Tugby 2020, Tugby 2022b).

A third purported disadvantage of DE is the problem of ontological commitment. Thus, the view seems to go hand in hand with a commitment to properties as the bearers of nomic essences. And more than that: many authors in the debate think that DE requires us to commit to a Platonist account of properties, according to which properties are necessarily existing universals that reside outside of space and time (see e.g. Fales 1990, Dumsday 2013, Tugby 2013, Tugby 2022b, Yates 2016). Platonism is, however, a view of properties that many philosophers in the debate on natural modality find hard to swallow. And even if these further arguments for the Platonist commitment could be dispelled, the commitment to properties would still seem to stand, rendering DE into an unattractive option for a large number of philosophers.

[10] See Lowe 2006 for the objection, Bird 2007b for a proposed solution, and, among others, Bigaj 2010, Busse 2021, Ingthorsson 2015, Lowe 2010, and Lowe 2012 for arguments against this solution.

It is my view that, in order to meet these challenges, it is crucial for proponents of DE to carry out more careful investigations into the foundational aspects of their view and to pay closer attention to the current developments in the debates on foundational issues in metaphysics. Thus, in order to make progress with the problem of governance, proponents of DE need to come clean on how exactly the instantiations and essences of powers are supposed to give rise to the different forms of natural modality and the non-modal regularities. And one crucial step in this context will be to move away from a purely intensional framework — in which providing metaphysical explanations for certain phenomena just amounts to demonstrating how certain facts are entailed by other facts, or supervene on these facts — to a hyperintensional framework that allows us to capture which underlying forms of determination are at stake.[11] To already anticipate matters that will be addressed in detail later (section §2.3), a natural 'default' option would be to appeal to the notion of grounding to cash out the relevant forms of determination. But whether this is indeed the right construal of (all) the explanatory steps, and if so, how the relevant grounding explanations should look in more precise terms remains to be seen. These types of investigations are also of crucial importance in the context of the structural objections. For once the claims of DE are cashed out in more precise terms, we can come to see more clearly which kinds of 'structural connections' DE in the end really postulates. In addition, a closer examination of the connections between the structural notions themselves is needed. Finally, in order to get clearer on the problem of ontological commitment, a more careful investigation of the ontological commitments incurred by DE is required: is DE really committed to certain accounts of properties, or do these commitments turn out to be optional on closer examination? To once again anticipate matters to be addressed in due course, it will prove crucial for this aim to draw on resources from so-called higher-order metaphysics (section §2.1).

This thesis is devoted to an investigation of these issues. Its aim is to put the dispositionalist theory on a firmer theoretical footing by examining its metaphysical foundations in the light of the flourishing debates on the structural notions and higher-order metaphysics. Each of the individual chapters will provide an in-depth discussion of a central topic in the areas just indicated. Before we come to this,

[11] See §2.3 on the notion of supervenience.

however, the remainder of the introduction will provide the relevant background for the metaphysical framework that I shall use in the individual thesis chapters — on higher-order resources (§2.1), essence (§2.2), and grounding (§2.3) — as well as a preview of the thesis chapters (§3).

2 The Metaphysical Framework

2.1 Higher-orderese

First-order quantifiers bind variables that occupy the syntactic position of singular terms. Higher-order quantifiers, by contrast, bind variables that occupy different syntactic positions, such as, in particular, those of predicates and sentences. In a higher-order (semi-)formal language, we may thus form sentences such as:

(1) $\exists X(X(\text{Suzie}) \ \& \ X(\text{Fred}))$.
(2) $\exists p(\text{Suzie believes that } p \ \& \text{ it is not the case that } p)$.

We can roughly approximate these sentences in natural language in, for instance, the following ways:

(1*) Suzie is somehow such that Fred is that way too.
(2*) Suzie believes things to be in a way in which they are not.

Philosophers have taken various attitudes towards higher-order quantification. The most dismissive stance is to simply reject second-order languages as unintelligible, thus refusing to even countenance sentences such as (1) and (2) as something to be accounted for. The second stance is to adopt the objectual interpretation, which interprets quantification into predicate position as quantification over properties, quantification into sentence-position as quantification over propositions, and so on. On this understanding, (1) and (2) would amount to:

(1**) There is a property that both Suzie and Fred instantiate.
(2**) Suzie believes a proposition that is false.

A third stance, the substitutional interpretation, interprets (1) and (2) in a meta-semantic way as a quantification over linguistic expressions, along the the following lines:

> (1***) There is a predicate that applies to both the expression 'Suzie' and the expression 'Fred'.
> (2***) There is a sentence such that complementing 'Suzie believes that' with this sentence yields a true sentence.

What these three stances have in common is that they only countenance quantification that is ultimately understood in first-order terms. All forms of quantification are either explicated in forms of first-order terms or else rejected. For a long time, the received view in analytic metaphysics had it that these three stances are the only options on the table, particularly due to the influence of Willard Van Orman Quine (1970).

There is, however, an alternative view on the matter, which traces back to the work of Arthur Prior (1971). This view does not seek to explicate higher-order quantification in first-order terms, but countenances higher-order quantification as a perfectly legitimate *sui generis* form of quantification, that cannot be explicated in different terms. Prior noted that while we cannot perspicuously express claims such as (1) and (2) in ordinary English, English contains other expressions that quantify into non-nominal position (viz., positions other than those occupied by singular terms), such as the following ones:

> (3) I hurt him *somehow*, viz. by treading on his toe.
> (4) *However* he says things are, *thus* they are.

Prior also offered an argument against the re-interpretation of the expressions in first-order terms. The basic idea of the argument is that quantifying into a certain position cannot generate new ontological commitments that were not, so to speak, already present in the instances: uses of quantifiers commit one at most to entities of the kind denoted by the expressions that the variables stand in for. Assuming that predicates and sentences are non-referential expressions, this principle implies that quantification into sentence- and predicate-position should not be interpreted in objectualist or substitutionalist terms.

Recent years have seen a surge of interest in this ontologically non-committal construal of higher-order quantification. Agustin Rayo and Stephen Yablo (2001) as well as Crispin Wright (2007) suggested ways of rendering Prior's argument more precise. Rayo and Yablo (2001), and Timothy Williamson (2003) argued that the objectual interpretation threatens to lead to paradox, unless the expressive capacities of language are taken to be severely limited. Moreover, Williamson provided dialectical considerations to the effect that the lack of expressibility of (1) and (2) in English and other natural languages should give us no reasons to doubt their legitimacy. As Williamson (2003, p. 459) puts it in the case of quantification into predicate position, a lack of expressibility in natural language 'does not show that something is wrong with quantification into predicate position, for it may reflect an expressive inadequacy in natural languages. We may have to learn second-order languages by the direct method, not by translating them into a language with which we are already familiar. After all, that may well be how we come to understand other symbols in contemporary logic'.

Thus far, in my exposition of higher-order resources, I have purely focused on the question of higher-order quantification. But in addition to higher-order quantification, the higher-orderese toolkit also contains (monadic and relational) higher-order predicates. Thus, for instance, we have a predicate that applies to predicates such as 'is green', 'is red', 'is blue' — a higher-order version of the second-order property of being a color, so to speak. Natural language does not contain the means to perspicuously express most cases of higher-order predications. But, just as in the case of higher-order quantification, this should give us no reasons to re-construe such higher-order predications in an objectualist or substitutionalist fashion. Higher-order predicates neither attribute things of properties nor of predicates. Instead of being analyzed in different terms, higher-order predicates, just as higher-order quantifiers, need to be countenanced as a further *sui generis* resource.

One particularly important case of higher-order predicates consists in higher-order identity predicates, which express what may be called 'generalized identity' or 'worldly equivalence' (see, in particular, Dorr 2016 for discussion).[12] In contrast to the first-

[12]Note that we have a multiplicity of different higher-order identity predicates for the different types.

order relational identity predicate, which can exclusively be flanked by singular terms, higher-order identity predicates may be flanked by expressions of arbitrary syntactical categories. In natural language, at least the identity predicate flanked by predicates and the identity predicate flanked by sentences can be expressed via the 'just is'-idiom. Thus, we may, for instance, say that to be square just is to be rectangular and equilateral, that for there to be a vixen in the garden just is for there to be a female fox in the garden, and that for it to be the case that it is sunny or it is sunny just is for it to be the case that it is sunny. Focusing on the sentential case, the difference between any two sentences 'p' and 'q' such that for p to be the case just is for q to be the case is a purely representational one; the two sentences demand, so to speak, precisely the same of reality. The question under which conditions this is the case — that is, the question of how fine-grained reality is — is subject to lively debate, however.[13]

2.2 Essence

Proponents of DE — just as many other philosophers in contemporary times and throughout the history of philosophy — subscribe to the idea that there is a crucial distinction among the features of any given entity: a distinction between the features that the entity possesses essentially vs. the features that it possesses merely accidentally. As the case of DE illustrates, the question of which features should be regarded as essential to an entity and which not is in many cases subject to lively debate among proponents of essence. Some claims that many would be prepared to accept, however, are the following ones: while Socrates is essentially a human being, he is merely accidentally a philosopher; while my desk is essentially made from a particular piece of wood, it has merely accidentally a coffee stain at its left side; and while it is essential to being an electron that electrons are negatively charged, electrons are only accidentally Suzie's favorite natural kind.

It is nearly universally accepted that entities possess their essential features in all

[13] See e.g. Brast-McKie 2021, Correia 2010, Correia 2016, Dorr 2016, Elgin forthcoming, Fritz 2017, Linnebo 2014, Rayo 2013 and Trueman 2020 for discussion.

worlds, or, at least, in all worlds in which they exist. That is, if some entity is essentially F, then, necessarily, if it exists, it is F. Thus, if the aforementioned essence-claims are true, there is no possible world in which Socrates exists but fails to be human, in which my desk exists but is not made of the specific piece of wood, or in electrons fail to be negatively charged. A non-human entity, an entity that did not originate from this piece of wood, and a kind whose members are not negatively charged, respectively, would simply not be Socrates, my desk, or the kind of being an electron, respectively.

That entities possess their essential features with necessity leaves open, however, whether the converse holds as well: that if an entity is necessarily F if it exists, the entity is essentially F. Our three example cases would be in perfect harmony with this converse claim, for all the accidental features considered seem to be contingent features of the relevant entities. Plausibly, there are other possible worlds in which Socrates chose to become a gardener rather than a philosopher, in which I did not spill the coffee, and in which Suzie prefers penguins over electrons. With the rise of quantified modal logic, and the growing popularity of modal methods in metaphysics in the second half of the 20th century, the received view in the 1970s became that this converse claim should be adopted too, and that essence could be analyzed in modal terms: that to be essentially F is simply to be necessarily F, or necessarily F if existent (see, among many, e.g. Forbes 1985, Kripke 1980, Plantinga 1974).

In his (1994a), however, Kit Fine raised a number of powerful objections against the modal-existential view of essence, leading to a radical shift in the debate. As Fine argued, Socrates is necessarily a member of his singleton set if existent, distinct from the Eiffel Tower if existent, and such that 1+1 equals 2 if existent. However, it seems highly implausible that these should be essential features of Socrates. As Fine (p. 5) puts it in the set-membership case, 'strange as the literature on personal identity may be, it has never been suggested that in order to understand the nature of a person one must know to which sets he belongs'. And clearly, the same can be said in the other cases too: it has never been suggested that in order to understand the nature of a person one must know all the things that she is distinct from, or all the mathematical truths that obtain.

In reaction to these example cases, various proposals for refined reductive accounts of essence were developed. Roughly, these proposed analyses either add further conditions to the modal condition or analyze essence in terms of modal phenomena different from metaphysical modality. Accounts of the former variety build on the notions of intrinsicality (Denby 2014, Bovey Forthcoming), naturalness (Melo 2019, Wildman 2013), qualitativeness plus discriminatoriness (De 2020), concreteness and encoding (Zalta 2006), or existential dependence (Rizzo 2022). Accounts of the latter variety invoke non-vacuous counterpossibles (Brogaard and Salerno 2007) or a 'local' Priorian notion of modality (Correia 2007). Counterexamples to these accounts followed suit (De 2020, Skiles 2015, Zylstra 2019a), leading to more elaborated and complex accounts, and in turn to new counterexamples. While the debate is still lively and ongoing, it seems fair to say that the majority of philosophers who are sympathetic to essence nowadays do not subscribe to reductive accounts anymore. Instead, the account that has arguably become standard is the primitivist take on essence, also proposed by Fine 1994a. After raising the objections to the modal-existential account, Fine suggested that, in reaction, we should put the common picture upside down: instead of seeking to account for essence in terms of modality, we should countenance essence as a theoretical primitive and use it to account for other phenomena of metaphysical interest, such as, in particular, modality and a certain notion of ontological dependence.

To better understand these accounts, and other matters in what follows, let me say a little bit more on the construal of essence-claims. Thus far, I have spoken of features that are essential to individual objects or kinds. This would suggest a regimentation of essence-claims in terms of a predicate-modifier, which, for instance, turns the predicate 'is human' into the new predicate 'is essentially human'. For many purposes, however a different way of regimenting essence-claims will be more handy. This regimentation construes essence via an operator that takes a sentence, as well as one or a multiplicity of singular terms as inputs. In formal language, we may use the '$\Box_{\ldots}\,\cdots$'-operator, which is indexed to singular terms that designate the (joint) bearer(s) of the essence, and followed by a sentence that indicates what is essential to them, called the 'prejacent' of the essence claim. Thus, for instance, we

may have:[14]

$\Box_{Socrates}$(Socrates is human)

$\Box_{Socrates,\, the\ Eiffel\ Tower}$(Socrates $\neq$ the Eiffel Tower).

In natural language, we may use formulations such as 'it is true in virtue of the nature of ... that'-formulation, 'it is (jointly) essential to ... that ...', or '... is/are (jointly) essentially such that ...'. Focusing on the (more interesting) second example claim, we may express it by saying that 'it is true in virtue of the nature of Socrates and the Eiffel Tower taken together that Socrates and the Eiffel Tower be distinct', that 'it is jointly essential to Socrates and the Eiffel Tower that Socrates and the Eiffel Tower be distinct', or that 'Socrates and the Eiffel Tower are jointly essentially such that Socrates and the Eiffel Tower be distinct'. It is often assumed that essence is monotonic in the sense that if it is essential to some entity a that p, it is also essential to any plurality of entities that includes a that p. The converse, by contrast, fails: while it is plausibly jointly essential to Socrates and the Eiffel Tower that they be distinct, it is not essential to Socrates, or to the Eiffel Tower, that they be distinct.

With this regimentation, and the monotonicity-assumption in place, the account of necessity in terms of essence proceeds roughly as follows: for it to be necessary that p is for it to be true in virtue of the nature of all entities that p.[15] In his 1995b and 2000, Fine offers a logic and semantics for the account, and shows that the systems validates S5. Moreover, in these papers and in his 1995a, he develops an account of a certain notion of ontological dependence, which may be labeled 'essential dependence'. On this notion of dependence, an entity a depends on all the entities that 'occur as objects' in its essence: if it is essential to a that p, and p contains a singular term for b, then a depends on b. Thus, for instance, singleton Socrates essentially depends on Socrates, but not the other way around, given that the essence of singleton Socrates 'mentions' Socrates but not the other way around.

[14] See Fine 1994b for discussion of the differences in expressive strength of the predicate-modifier vs. sentence-operator regimentation, and Fine 1995b for the specific notation. Strictly speaking, Fine uses predicates as subscripts of the $\Box$-operator. In this notation, e.g., '$\Box_F p$' stands for 'it is essential to all objects which are F that p'. But the notation also allows for singular terms like a as subscripts in a derivative sense, understood as shorthand for the predicate of being identical to a, and, indeed, this 'derivative notation' has become standard. I shall adopt only this shorthand-notation in this thesis.

[15] See Correia 2012 and Michels 2019 for discussions of how to spell out the account in more detail.

We may distinguish between various more specific notions of essence: between *mediate* vs. *immediate* essence on the one hand, and between *constitutive* vs. *consequential* essence on the other (cf. Fine 1994b). Thus, for instance, while it is plausibly immediately essential to singleton Socrates that it have Socrates as a member, and immediately essential to Socrates that he be human, it is only mediately essential to the singleton that it have a member that is human. And while it is plausibly constitutively essential to Socrates that he be human, it is merely consequentially essential to him that, say, he be either human or such that it is not the case that it is not the case that he is human. Mediate and consequential essence-truths may be seen as arising from immediate constitutive essence-truths by closing the latter under certain operations. In the case of immediate essence, we close essence under chaining: if it is essential to some entity a that p and some other entity b essentially depends on a, then it is also essential to b that p. The consequential essence arises by closing essence-truths under a certain form of consequence relation. In his 1995b, Fine opts for a closure in terms of a restricted version of logical entailment, which, so to speak, only allows for logical consequences that do not 'add further objects', and thus, do not incur new dependencies. That is, roughly, if it is essential to a that p, and q logically follows from p and does not *de re* mention any objects that a does not depend upon, then it is also essential to a that q.

2.3 Grounding

An important part of philosophical theory building consists in showing how certain 'higher-level' matters can be seen as obtaining in virtue of some more basic underlying matters. Thus, non-reductive physicalists claim that mental properties are instantiated in virtue of the instantiation of physical properties; consequentialists hold that what makes an action morally right is that the action has the best consequences; and Humeans maintain that everything is ultimately due to facts in the Humean mosaics. And dispositionalists maintain that objects have their nomic roles in virtue of the power-properties that they possess.

Just as the modal view of essence has dominated philosophy in the second half of the 20th century and until relatively recent times, a modal construal of the underlying

structure of the cited metaphysical explanations was prevalent in these times: one in terms of the notion of *supervenience*. Thus, non-reductive physicalists maintained that mental properties supervene on physical properties, consequentialists that the rightness of actions supervenes on their consequences, Humeans that everything supervenes on the distribution of properties in the Humean mosaics, and dispositionalists that nomic roles supervene on powers. Roughly, one class of properties B is said to supervene on another class of properties A if there can be no variation among the B-properties without a variation among the A-properties. Thus, in our examples, if we keep fixed the distribution of physical properties, the consequences of actions, the property distribution in the mosaics, and the possessions of powers, we also keep fixed the mental properties, the rightness-properties, all properties whatsoever, and the nomic roles of objects, respectively. Just as the modal account of essence yields 'false positives' due to its coarse-grainedness, however, so does the construal of metaphysical explanation in terms of supervenience. Thus, in particular, every class of necessary properties trivially supervenes on all properties whatsoever. Yet it seems extremely implausible to think that, say, the instantiation of the property of being such that 1+1 equals 2 should even merely partially be explained in terms of the instantiation of the property of, say, being a flower-pot on a balcony: intuitively, the latter bears no explanatory relevance at all for the former.

The debate of ground emerged by not seeking to further elucidate the phenomena that underly the aforementioned explanations in different terms, but to simply countenance ground as a primitive form of non-causal determination that underlies such metaphysical explanations. Once this is done, we can directly use formulations of ground to express philosophical claims such as the aforementioned ones. Understood in this way, the claims become, respectively: that the instantiations of mental properties are grounded the instantiations of physical properties, that facts about the moral rightness of actions are grounded in facts about their consequences, and that everything is grounded in facts about the Humean mosaic. And, most importantly for our aims in this thesis, on the grounding-interpretation of DE's explanatory claim, the possession of nomic roles is grounded in the possession of powers.[16]

[16]For explicit construals in terms of ground, see e.g. Dasgupta 2014 for the case of physicalism, Berker 2018 for the case of ethics, and Bhogal 2017 for the case of Humean supervenience. In the case of DE, the grounding-construal of the explanatory claim is suggested by e.g. Azzano

While the aforementioned grounding-claims are subject to lively debate, some paradigmatic examples for claims that a large number of proponents of ground would subscribe to include:

(1) My desk exists because its legs and plate do.

(2) My plant's being emerald makes it the case that it is green.

(3) Singleton Socrates exists in virtue of the existence of Socrates.

(4) The sentence 'Berlin is in Germany' is true because Berlin is in Germany.

(5) It is sunny or cold in virtue of it's being sunny.

(6) The fact that snow is white and the fact that grass is green jointly ground the fact that snow is white and grass is green.

As the examples illustrate, grounding claims can be expressed in a number of other ways than via the expression 'ground(s)': in terms of the locutions 'in virtue of', 'makes it the case', and 'because'. Since all of these expressions also have a causal reading, however, it is helpful to also have the unequivocal expression 'ground' at one's disposal. Notably, the various ways of expressing statements of ground differ with regard to their grammatical form: while some of the locutions correspond to a relational predicate that is flanked by singular terms, others correspond to a sentential operator that takes two sentences as inputs. The crucial difference between these two formulations is that the former *predicational* formulation carries a commitment to entities that stand in a relationship of grounding — which are commonly taken to be either facts, states of affairs, or propositions — whereas the latter *operational* formulation is free of such ontological import.[17] Note, however, that the operational formulation does not preclude that grounding is a relation between entities. Instead, it simply remains neutral on whether there is a grounding-relation and if so, which kind of entities it relates. For this reason, the operational formulation is preferable

2020, Jaag 2014, and Tugby 2020.

[17]For the former account, see e.g. Audi 2012a and Rosen 2010, and for the latter account Correia 2010, Dasgupta 2017, Fine 2012a and Schnieder 2010. Schaffer 2009 also allows for particulars of arbitrary categories as the relata of grounding. As Schnieder 2020 argues, however, this conception of grounding arguably tracks a quite different notion than the usual 'alethic' conception of grounding, according to which ground relates exclusively entities such as facts, states of affairs, or propositions.

in many contexts, and I shall assume it as my official idiom in this introduction and most chapters of the thesis.[18] In formal language, we can use the sentential operator '$<$', which is flanked by one or multiple sentences on the left-hand side and one sentence on the right-hand side, to express grounding claims in line with the operational account.[19] So, for instance, (2) and (6) become:

> My plant is emerald $<$ My plant is green.
> Snow is white, grass is green $<$ Snow is white and grass is green.

As is commonplace for operationalists, however, I shall nevertheless help myself to formulations such as 'the fact that my plant is emerald grounds the fact that it is green', 'the truth that my plant is emerald grounds the truth that my plant is green', and 'it's being the case that my plant is emerald grounds it's being the case that my plant is green' to enhance readability.

In the beginning of this section, I have characterized ground as a form of non-causal determination that underlies metaphysical explanations. Indeed, this formulation is not fully neutral, but corresponds to one of the two main takes on the relationship between grounding and explanation that proponents of ground have endorsed, the so-called *separatist* account. The separatist conceives of the relationship between grounding and the corresponding kind of metaphysical explanation as akin to the relationship between causation and causal explanation. For, also here, it is common to distinguish causal explanations from causation, where the former is 'backed by' the latter, but also sensitive to pragmatic features such as our explanatory interests and goals. On the alternative *unionist* account, by contrast, grounding is directly identified with a certain form of metaphysical explanation, rather than with what underlies such explanations.[20] In what follows, I shall continue to formulate things in line with the separatist account for means of definitiveness, but nothing will hinge on this choice. The unionist should feel free to reformulate everything that has been

[18] In chapter 2, however, I construe grounding as a relation between facts in order to adapt my framework to the relevant literature.

[19] That grounding is merely plural with regard to the grounds, but not the groundees (i.e. what is grounded) is the mainstream view. See, however, Dasgupta 2014 and Litland 2016 for arguments that grounding is many-many, i.e., can also be plural with regard to groundees.

[20] The camp of separatists includes Correia and Schnieder 2012, Koslicki 2012, Schaffer 2012, and Trogdon 2013. The camp of separatists of separatists includes Dasgupta 2014, Fine 2012a, Litland 2013, Raven 2012, and Rosen 2010.

said and will be said along unionist lines.

Note that, among both separatists and unionists, it remains an open question whether grounding-explanation is the *only* form of metaphysical explanation. In the founding days of the debate on ground, arguably, the common view was that it is. In recent years, however, a pluralist take on metaphysical explanation is gaining popularity. According to this view, there are other forms of metaphysical explanation in addition to grounding-explanation (see e.g. Bertrand 2019, Glazier 2017 and Kappes 2021). And thus, while the construal of the aforementioned metaphysical views — and, in particular, of DE's explanatory claim — in terms of ground is the default option, it is an open possibility that they should be construed in different terms.

We can distinguish between various different notions of ground. To begin with, we can distinguish between *partial* and *full* grounding. While, for instance, the truth that snow is white is a full ground for the truth that snow is white or grass is green, it is only a partial ground for the truth that snow is white and grass is green. We can distinguish between *immediate* and *mediate* grounding. While, for instance, the truth that Socrates exists plausibly immediately grounds that singleton Socrates exists, it only mediately grounds that singleton Socrates exists or snow is white. For the grounding has, so to speak, to first pass in the first step through the existence of the singleton and can only then reach in a second step the truth that singleton Socrates exists or snow is white. Moreover, we can distinguish between a *factive* and a *non-factive* notion of grounding.[21] Whereas, on the former notion, the truth of 'my plant's being emerald grounds its being green' presupposes that the plant be indeed emerald (and thus green), on the latter conception, this is not required, and the claim would be still true, if say, my plant had not be watered and were yellow rather than green. What is rather meant can be very roughly approximated (but not analyzed) by saying that if the plant were emerald this would ground its being green. When I shall use the expression 'ground' in what follows, this is always to be understood in the sense of 'fully, mediate, factive ground', unless specified otherwise.

Mediate grounding is commonly taken to induce a strict partial order, that is, to

[21] See Fine 2012a for the distinction.

be transitive, asymmetric, and irreflexive.[22] I will also make this assumption in this thesis. It is commonplace among proponents of ground to understand (at least one notion of) absolute fundamentality in terms of ungroundedness: a truth/fact is absolutely fundamental iff it is ungrounded. The orthodox view has it that grounding is well-founded, in the sense that every truth that is not fundamental is fully grounded in fundamental truths.[23] Moreover, grounds are commonly taken to necessitate what they ground: necessarily, if all the grounds obtain, so does the groundee (viz., the grounded truth).[24] Most of the thesis will also implicitly draw on the assumptions of well-foundedness and grounding-necessitarianism for means of simplification, but nothing will crucially hinge on this matter.

We can distinguish between *worldly* conceptions of ground on the one hand, and *representational* conceptions of ground on the other.[25] These two conceptions differ with regard to whether they take grounding to be sensitive to purely representational differences or not. Consider two sentences 'p' and 'q' such that for p to be the case just is for q to be the case. Combing back to our examples from §2.1, candidates for such cases would arise by letting 'p' stand for 'there is a female fox in my garden' and 'q' for 'there is a vixen in my garden', or letting 'p' stand for 'it is sunny' and 'q' for 'it is sunny or it is sunny'. Then, on worldly accounts of ground, p and q will play the same ground-theoretical roles, that is, ground the same truths and be grounded in the same truths. On a representational conception of ground, by contrast, such p and q may still come apart with regard to their ground-theoretical roles. In particular, on a representational conception of ground, a natural claim is that, in both of our example cases, p grounds q and not vice versa.

An important part of theorizing about ground consists in developing logical systems

[22] See, however, Jenkins 2011 against irreflexivity, and Schaffer 2012 against transitivity. See Litland 2013, and Krämer and Roski 2017 for a defense of the transitivity of grounding.

[23] Note that — contrary to what is sometimes claimed — this characterization does not preclude infinitely descending chains of ground, as long they merely bottom out in the fundamental. See Bliss 2013, Morganti 2014 and Tahko 2014 against foundedness.

[24] See, however, Baron-Schmitt 2021, Leuenberger 2014 and Skiles 2015 against this claim.

[25] For accounts of worldly grounding, see e.g. Audi 2012a, Audi 2012b, Correia 2010, Correia and Skiles 2019, Fine 2017a and Lovett 2020. For accounts of representational grounding, see e.g. Correia 2017a, Correia 2017b, Correia 2018, Krämer 2018, Krämer 2019, Rosen 2010 and Schnieder 2010.

that capture formal features of ground. The relevant systems concern both the so-called pure logic of ground — which is concerned with structural features such as, for instance, whether ground is transitive — and the impure logic of ground — which investigates the interaction of ground with the truth-functional connectives. Importantly, with regard to the latter, the systems strongly differ depending on whether a worldly or a representational logic is at stake. In systems for representational ground, we typically find principles such as that, for any p and q, $p < \neg\neg p$, $p < p \vee q$, and $p, q < p \& q$. On worldly accounts, by contrast, such principles turn out to be problematic. Let us focus on the principle regarding disjunction for means of illustration. This principle would dictate that it's being the case that it is sunny grounds that it is the case that it is sunny or it is sunny. Yet, as we have seen, plausibly, for it to be the case that it is sunny just is for it to be case that it is sunny or it is sunny. And thus, on the worldly conception, from these two facts, it follows that it's being the case that it is sunny grounds itself. So we would face a violation of the irreflexivity of ground. Proponents of worldly ground thus standardly endorse only restricted versions of the aforementioned principles about disjunctions and conjunctions, viz. restricted to cases in which, roughly, the disjuncts and conjuncts are suitably disconnected. And they standardly reject the idea that any truth grounds its double-negation.

In addition to investigating logical systems for ground, another part of formal theorizing about ground consists in developing semantics for ground. The by far most influential such account is *truthmaker semantics*, which provides an important tool for theorizing about worldly ground (see e.g. Fine 2012a, Fine 2012b, Krämer 2021, and Leuenberger 2020). Truthmaker semantics may be conceived as a successor to possible worlds semantics that yields a more fine-grained framework. Roughly, it construes the semantic values of sentences in terms of the verifiers of sentences, that is, (possible or impossible) states that guarantee the truth of the sentence and are fully relevant for its truth.

With this metaphysical toolkit in the background, I shall now move on to a brief preview of the topics of the individual thesis chapters.

3 Preview of the Thesis Chapters

Chapter 1: Nominalist Dispositional Essentialism

As highlighted in section §1, one of the commonly assumed downsides of DE consists in its ontological commitments: DE purportedly commits its proponents to an inflated ontology of powers as universals, and possibly even to Platonist universals. The aim of the first chapter of my dissertation will be to argue against this common view. I will show that, on closer examination, DE comes with no commitment to properties at all: the view is perfectly compatible with the ontologically most lightweight view on properties, austere nominalism, according to which there are no properties whatsoever.

I shall develop and explore an account that combines DE with austere nominalism. The proposed view, *Austere Nominalist Dispositional Essentialism*, crucially builds on the availability of higher-order resources introduced in §2.1: on quantification into predicate-position and second-order predication, both conceived as ontologically non-committal. In addition to these, however, the account also draws on a further, less familiar higher-order resource: on a higher-order notion of essence, usually called *generic essence* (cf. Correia 2006, Correia and Skiles 2019, Fine 2015). Countenancing generic essence in our metaphysical toolkit allows us to systematically replace dispositionalist essence-claims such as that it is essential to charge that all charged objects play the charge-role with claims such as that *it is essential to what it is to be charged that all charged objects play the charge-role*. My aim in the chapter will be to show that, as soon as we allow ourselves these metaphysical resources, we have all the means that it takes to translate any property-realist account of DE into a nominalist variant thereof. The resulting theory carries no committment to anything but particulars, and yet preserves the core tenets of DE.

The results of this chapter should be good news for philosophers who reconcile their dispositionalist inclinations with a taste for ontologically 'desert landscapes'. But the account should also be of interest to dispositionalists who are perfectly happy to endorse properties. For the account brings the explanatory commitments of DE into

sharper relief and helps us to see what DE is at its very core a view about: about essence and explanatory order, with properties as purely optional add-ons. While proponents of DE may choose to endorse properties for independent reasons, they are free to make do without them if they prefer to.

Chapter 2: Dispositional Essentialism and the Connections between Essence, Dependence, and Ground

As we have seen in section §1, a core challenge to DE stems from the structural objections: objections to the effect that DE conflicts with plausible assumptions about phenomena that limn the structure of the world, such as essence, dependence, grounding, and fundamentality. And among these objections, there are, especially, objections to the effect that DE's essence-claim and explanatory claim are in conflict with one another. In recent years, this latter type of structural objection has gained increasing influence in the debate, and, in particular, has been the driving force behind a movement of many of DE's previous defenders toward weaker views in the vicinity.[26]

The second chapter of this thesis is devoted to defending DE against the most well-developed and influential structural objection in this ballpark, Siegfried Jaag's *Argument from Essential Dependence* (Jaag 2014; see also Coates 2020, Kimpton-Nye 2021, Tugby 2020, Tugby 2022b). Jaag's argument rests on a construal of DE in terms of ground, that is, a construal on which the instantiations of powers are taken to ground the instantiations of the corresponding natural modalities. It has two premises. According to the first premise of the argument, the essence-claim of DE implies that powers are essentially dependent upon the natural modalities that pertain to their essences. But this, or so the second premise has it, precludes that the instantiations of powers ground the associated natural modalities: nothing can ground something that it essentially depends upon. To give it a slogan, grounding and essential dependence can never go in the same direction.

[26] See e.g. Azzano 2020, 2019, Coates 2020, Kimpton-Nye 2021, Tugby 2022a, Tugby 2022b, and Vetter 2020.

In my defense of DE, I shall argue that both premises of the argument can be resisted. Contra the first premise, I shall show that the essential dependence that is needed for the argument to get off the ground only follows if we invoke further contentious assumptions about the inheritance of essence from properties to facts. And contra the second premise, I shall show that, on closer examination, the reasoning put forward in its favor turns out to be inconclusive. Moreover, I shall argue that there are indeed other plausible cases in which grounding and essential dependence go in the same direction. And thus, in the absence of further argument of a different kind, there is no need for us to worry about this pattern of ground and essential dependence in the case of DE either.

Chapter 3: Two Problems for Zylstra's Truthmaker Semantics for Essence

A crucial area for further work for proponents of DE that emerged from the discussion at the end of section §1 is the explanatory role of essence. Proponents of DE must ultimately come clean on the question of how their explanations of the different natural modalities and the non-modal regularities in terms of the essences of powers are to be understood in more precise terms. In a recent publication, Justin Zylstra (2019b) has offered an account which, if adequate, would provide us with a promising formal framework to conduct precisely such investigations: a truthmaker-semantics for essence. We already encountered truthmaker semantics briefly in section §2.3 in the context of the semantics for ground. But the range of applications of the truthmaker framework is much wider than this, as the multitude of truthmaker-accounts that have been developed in various areas of philosophy in recent years witnesses.[27] Having a truthmaker-semantics for essence at our disposal would be thus of great interest for the systematic study of the explanatory role of essence, and, in particular, of the interactions between essence and ground.

And indeed, as Zylstra himself shows, the semantics for essence could be used to

[27] Among the applications are various topics in epistemology, logic, metaphysics, the philosophy of language, the philosophy of science, and value theory. See Fine 2017b for an overview.

undermine a popular and prima facie compelling candidate principle regarding the interaction of essence and ground, *Essence Grounds Prejacents* (see e.g. Rosen 2010, Kment 2014, Dasgupta 2014). According to this principle, every constitutive essence-fact grounds its prejacent. Thus, for instance, the fact that Socrates is essentially human grounds the fact that he is human. And in the case of DE, Essence Grounds Prejacents would imply that the fact that it is essential to charge that all charged particles play the charge role grounds the fact that all charged particles play the charge-role. In this way, Essence Grounds Prejacents would provide proponents of DE with a natural and straightforward starting point for how to cash out their explanatory claims in more precise terms.[28] If Zylstra's case against Essence Grounds Prejacents proved successful, however, this simple and natural way of accounting for the explanatory role of essence would be excluded.

The aim of the third chapter of my thesis is to argue that we have good reasons to reject the semantics proposed by Zylstra. As I shall show, the suggested verification conditions for essence-claims are in one sense too undemanding, and in another sense too demanding. And both of these shortcomings give rise to highly implausible results. These considerations show that Zylstra's semantics does not afford us with a promising framework to formally investigate the explanatory role of essence. Proponents of DE thus need to look elsewhere for such a framework. And at the same time, these considerations block Zylstra's case against Essence Grounds Prejacents, thus re-opening the question of whether this principle might be used as a starting point to cash out the explanatory role of dispositional essence.

[28] To be clear, this account would not yet provide us with an account of DE's explanatory claim, according to which the instantiations of powers ground the instantiations of the corresponding nomic roles. A way to get closer to this would be to embed grounding-claims, rather than material conditionals, in the essences. And, indeed, far from being an artificial ad hoc move, this embedding of grounding claims would seem to be a natural way of rendering the common gloss that powers essentially *confer* nomic roles on their bearers more precise. But, obviously, it would be still a huge step from such an account for the explanatory claim to carrying out all the various types of dispositionalistic explanatory projects (i.e., offering dispositionalistic accounts of the various forms of natural modality and of the corresponding non-modal regularities).

Chapter 4: Ground by Status and the Logic of Ground

The fourth chapter of the thesis takes up matters from where the third chapter left them: the point where we ask whether proponents of DE can use the principle of Essence Grounds Prejacents to cash out the explanatory role of dispositional essence. More precisely, the subject of the fourth chapter is a generalized version of Essence Grounds Prejacents, the principle *Ground by Status*. Ground by Status extends Essence Grounds Prejacents from the case of essence-truths to the broader class of status truths, i.e. truths which ascribe a non-accidental status to their embedded prejacents. In addition to essence-truths, this class also subsumes truths of the forms 'it is a law of metaphysics/logic/nature that p' and 'metaphysically/naturally/logically necessarily p'.

While, as we will have seen in the third chapter, Zylstra's case against Ground by Status for the case of essence fails, this does not mean that Ground by Status is off the hook. For Martin Glazier (2017, 2021) and Yannic Kappes (2021, forthcoming) have recently offered a variety of other arguments against this principle. The argument that both Glazier and Kappes take to be the most pressing one among these, however, is an argument that I shall call the *Argument from the Logic of Ground*.[29] This argument contends that Ground by Status would violate an intuitively plausible and popular principle about the grounds of disjunctions, according to which, roughly, the only grounds of disjunctions are the disjuncts and truths that ground one of the disjuncts.

In the thesis chapter, I will show that Glazier's and Kappes' argument is wanting as it stands, only to then present an enhanced version of the argument. My objection against Glazier's and Kappes' argument will crucially draw on the distinction between worldly vs. representational conceptions of ground, introduced in section §2.3. In this vein, I shall argue that while the principle regarding the grounds of disjunctions that Glazier's and Kappes' argument builds upon enjoys intuitive appeal

[29] Their other arguments consist in example cases that would seem to violate Ground by Status, in considerations to the effect that status truths do not have the right subject matter to explain their prejacents, as well as in considerations to the effect that Ground by Status would lead to a vicious infinite descent of ground.

on a representational conception of ground, it fails as soon as a worldly conception is adopted. And since there are no good reasons to construe Ground by Status along representationalist rather than worldly lines, the force of their argument is severely limited. As I shall go on to show, however, invoking considerations in the context of truthmaker semantics for ground allows us to derive a weaker worldly variant of the principle employed by Glazier and Kappes which allows for a modified version of the argument. The ultimate upshot of these considerations thus is that Ground by Status in general, and hence Essence Grounds Prejacents in particular, turns out to be problematic. Proponents of DE are thus well-advised to look elsewhere for a theory about the explanatory role of essence. But the exploration of which theory is best suited for their aims will have to wait for another occasion.

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1

Nominalist Dispositional Essentialism

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Dispositional essentialism, as commonly conceived, consists in the claims that at least some of the fundamental properties essentially confer certain causal-nomological roles on their bearers, and that these properties give rise to the natural modalities. As such, the view is generally taken to be committed to a realist conception of properties as either universals or tropes, and to be thus incompatible with nominalism as understood in the strict sense. Pace this common assumption of the ontological import of dispositional essentialism, the aim of this paper is to explore a nominalist version of the view, Austere Nominalist Dispositional Essentialism. The core features of the proposed account are that it eschews all kinds of properties (be they universals, tropes, or sets of particulars), takes certain predicative truths as fundamental, and employs the so-called generic notion of essence. As I will argue, the account is significantly closer to the core idea behind dispositional essentialism than the only nominalist account in the vicinity of dispositional essentialism that has been offered so far—Ann Whittle's (2009) Causal Nominalism—and is immune to crucial problems that affect this view.

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1 Introduction

According to *dispositional essentialism* ('DE'), as commonly conceived, natural modality is intimately tied to the essences of properties. On this view, at least some of the fundamental properties are powers, that is properties which essentially confer certain causal-nomological roles on the objects that instantiate them. Thus, for instance, a dispositional essentialist might maintain that it is part of the essence of the property of unit negative electric charge that objects with this property repel other negatively charged particles with a certain magnitude. The dispositional essentialist then conceives of these dispositional essences as the metaphysical sources of the different kinds of natural modality, such as causation, counterfactual connections and the laws of nature.[2]

DE seems to go hand in hand with a realist conception of properties as irreducible property universals or tropes. Moreover, there are reasons to think that the ontological commitment of DE goes even deeper: Virtually all the accounts of DE in the literature are based on a universals-account of properties, and it has been argued that DE is incompatible with both trope views (Tugby 2013) and Aristotelian views of universals (Dumsday 2013; Tugby 2013, Tugby 2015; Yates 2016). If these arguments were sound, this would leave the Platonist view of universals as the sole option—a view that many people in the debate on natural modality find hard to swallow.

In her 'Causal Nominalism' (2009), however, Ann Whittle showed that a nominalist account in the vicinity of DE can be given. Her account eschews any commitment to irreducible property universals and tropes, and yet shares DE's basic idea that properties and natural modality are intimately tied to one another. But while Causal Nominalism constitutes an important position in conceptual space, the view has not found further advocates in the debate, arguably because it departs quite substantially from the core tenets of DE and is affected by serious systematic problems (cf. Tugby 2016). Given that Causal Nominalism is the only account of nominalist DE (i.e., the

[2] Accounts of DE, broadly construed, include: Bird 2007, Harré 1970, Harré and Madden 1975, Ellis 2001, Ellis and Lierse 1994, Martin 2007, Molnar 2003, Shoemaker 1980 and Williams 2019.

combination of DE and nominalism) that has been offered thus far, it might seem that going nominalist is not a promising option for the dispositional essentialist.

The aim of this paper is to argue to the contrary: Going nominalist should be considered as a live option for the dispositional essentialist that is worthy of further consideration. I will explore a novel version of nominalist DE, *Austere Nominalist Dispositional Essentialism*. As I will argue, the view allows us to mimic the core tenets of the standard reified (i.e., property realist) versions of DE within a nominalist set-up extremely closely, and it is immune to the objections raised by Matthew Tugby against Causal Nominalism.

I start out by introducing the relevant background framework regarding essence, grounding, and fundamentality (§2). I then outline the core tenets of the standard reified accounts of DE (§3). In the central part of the paper, I develop and further explore the account of Austere Nominalist Dispositional Essentialism, my proposal for nominalist DE (§4). Finally, I end with some concluding remarks concerning the dialectical upshot of the results (§5).

2 Background Framework

This section introduces the background framework that I will use in what follows. Since some of these claims rely on resources that are only available in formal languages and can be merely approximated in natural language, I will also always provide formal regimentations of the notions under consideration.

2.1 Essence

The commonly employed notion of essence in contemporary metaphysics is that of *objectual* essence. On this understanding, essence concerns features that pertain to the very nature of a certain entity, or, in other words, features that tell us what this entity is at its very core. Thus, for instance, we may maintain that it is essential

to Socrates that he be human, that it is essential to the singleton {Socrates} that it have Socrates as a member, or that it is essential to God that she be wise.

It was commonplace in analytic metaphysics for a long time to analyze essence in modal terms. On such an understanding, for Socrates to be essentially human would simply reduce to him being necessarily human, or, alternatively, human in all worlds in which he exists. As Michael Dunn (1990) and Kit Fine (1994a) showed, however, this account of essence is defective in the sense that it fails to capture what philosophers commonly have in mind when they say that an entity is essentially thus-and-so. To use the commonly cited Finean example, while Socrates is necessarily a member of his singleton set, this is not an essential feature of him.[3] In reaction to cases like that of singleton {Socrates}, Fine proposes that we reverse the order of explanation: We take essence as primitive, and analyze metaphysical modality in terms of it. The common means of formalizing objectual essentialist claims is the $\Box_{\cdot}$-operator. It takes a nominal term for an entity—such as 'e'—and a sentence—such as 'p'—as its input, and yields anther sentence—'$\Box_e p$'—as its output. For instance, with this notation, the previous essentialist claim about Socrates could then be expressed in the following way:

$\Box_{Socrates}$(Socrates is human).

A crucial distinction that will become relevant in what follows is that between *immediate* essence on the one hand, and *mediate* essence on the other. While the immediate essence of some object only 'include[s] that which has a direct bearing on the nature of the object' (Fine 1994b, p. 61), the mediate essence of an object also includes features that, so to speak, arise due to the chaining of immediate essence. For instance, to borrow again an example from Fine, while it is immediately essential to Socrates' singleton that it have Socrates as a member, and immediately essential to Socrates that he be human, it is only mediately essential to the singleton that it have a member that is human.

[3]See also Yates 2013 for arguments in favor of the claim that proponents of DE should employ a Finean rather than modal account of essence.

2.2 Grounding

Grounding is commonly conceived as a form of non-causal determination which gives rise to a layered structure of reality and underlies metaphysical explanations.[4] Some paradigmatic examples of candidate grounding claims are: (a) Mental truths obtain in virtue of physical truths; (b) The fact that snow is white and the fact that grass is green jointly ground the fact that snow is white and grass is green; (c) Singleton {Socrates} exists in virtue of the existence of Socrates; (d) The ocean is blue because it is azure. It is generally assumed that conjunctions are grounded in their conjuncts, disjunctions in their disjuncts, and universal as well as particular generalizations in their instances, plus maybe totality truths. Moreover, grounding is commonly taken to be transitive and asymmetric (and hence also irreflexive).[5]

In what follows, I will adopt an *operationalist* formalization of grounding claims, i.e., regiment grounding claims in terms of a sentential operator, as we have it in the example claim (d).[6] In formal language, I will employ the operator '$<$', which goes in the opposite direction of 'because'. Thus, for instance we have:

> The ocean is azure $<$ The ocean is blue.
> Snow is white, grass in green $<$ Snow is white and grass is green.

To enhance readability, I will nevertheless help myself to formulations such as 'that the ball is maroon grounds that it is red', 'physical truths ground mental truths' etc., in non-regimented natural language, which are shorthand for sentences of the form '$p < q$' in regimented language.

[4] For overviews of the debate on grounding, see Bliss and Trogdon 2014, Correia and Schnieder 2012, and all the articles in Raven 2020.

[5] See, however, Schaffer 2012 against transitivity, Thompson 2016 against asymmetry, and Jenkins 2011 against irreflexivity.

[6] See e.g. Correia 2010, Dasgupta 2017, Fine 2012 and Schnieder 2010 for the operationalist formalization. I use this formalization in order to stay neutral regarding the existence of facts and propositions.

2.3 Fundamentality

As is commonplace for proponents of grounding, I shall conceive of a truth's being fundamental as its being ungrounded. Corresponding to the operationalist formulation of grounding, I will thus also employ a sentential operator for truth-fundamentality, i.e., 'it is fundamentally the case that _' or '$\mathbb{F}$' in formal language:

$$\mathbb{F}p \text{ iff}_{\text{def}} \; p \;\&\; \neg\exists q_1, q_2, ...(q_1, q_2, ... < p).$$

Besides this notion of truth-fundamentality, there is also a second notion of fundamentality that is relevant in the context of DE, viz., that of *entity* fundamentality, which figures in DE's claims regarding the essences of *fundamental properties*. In contrast to the notion of truth-fundamentality, however, there is no general consensus about how we should understand this notion. In this paper, I will restrict attention without further argument to two options that I take to be particularly promising in the case of DE.[7] That being said, I do think that all the different extant proposals for accounts of property fundamentality are in principle amenable to nominalist reconstruction, and that restriction to these two options is thus merely for purposes of presentation. The first promising way to understand the notion of property fundamentality is to regard the notion as a primitive, along the lines of e.g. David Lewis' (1983) and Ted Sider's (2011) accounts of perfect naturalness and perfect structuralness, respectively, or Jessica Wilson's (2014) account. The second option would be to define entity fundamentality out of truth fundamentality. Going this route, we may regard a property as fundamental iff it is, so to speak, fundamentally instantiated—i.e., iff at least one truth that concerns the instantiation of this property is fundamental in the sense outlined before. Let us use '$\mathscr{F}$' as a predicate for property-fundamentality, and 'I' for 'instantiates' (or 'exemplifies'). Then this option would amount to:

$$\mathscr{F}(F\text{ness}) \text{ iff}_{\text{def}} \; \exists x \; \mathbb{F}(xIF\text{ness}).$$[8]

[7] For discussions of entity-fundamentality, see e.g. Bennett 2017, Morganti 2020, and Tahko 2018. See Wang 2019 for an argument against interpreting entity-fundamentality in the context of DE in terms of ontological independence.

[8] I am assuming here that the realist about properties thinks that predicative truths (such as the truth that some specific electron a is charged) are grounded in the corresponding truths about property-instantiations (such as that a instantiates charge). This view is commonplace among property realists, but see Dixon 2018 for arguments that the grounding goes in the opposite

With the general framework from this section at our disposal, let us now turn to the discussion of dispositional essentialism.

3 Standard Reified Dispositional Essentialism

In this section, I will present the three general claims which, I take it, form the common core of most accounts of DE that have been proposed in the literature thus far. I shall refer to the combination of these claims as 'Standard (reified) Dispositional Essentialism', or 'SDE' for short. While the claims that make up SDE are not beyond controversy, they are endorsed by the majority of dispositionalist essentialists, and can be regarded as jointly forming the bare bones for a paradigmatic account of DE. In addition to presenting SDE's general claims in abstraction, I shall also illustrate their application on a concrete toy example, in order to provide claims which will later allow me to illustrate the 'translation' of SDE into the nominalist account in a precise way. Once it is clear how the nominalist can recast the example claims discussed here, it will also be clear how they can then recast other dispositional essentialist claims.

The Ontological Claim

The first of the claims that jointly make up SDE is that there are irreducible property universals or tropes, or both of them.[9] This claim is, of course, not specific to DE, but rather, common to all realist accounts of properties.

The Essentialist Claim

The first distinctively dispositionalistic claim of SDE is that at least some of the

direction. In this case, we would plausibly instead have: $\mathscr{F}(F\text{ness})$ $\text{iff}_{\text{def}} \exists x\, \mathbb{F}(Fx)$.

[9] Here is a tentative proposal of how we might roughly understand this in more precise terms: There is no reductive analysis of all (truths involving) properties to solely (truths involving only) entities of other categories, such as e.g. sets of particulars.

fundamental properties are so-called powers, that is, properties with dispositional essences.[10] At the most general level, a dispositional essence might be characterized as an essence that 'specifies' the nomic role that the property confers on its bearers: viz. which kind of causal, counterfactual, or dispositional modalities hold of objects that instantiate the corresponding property. Let us use the symbol '$\mathscr{D}$' as a placeholder for the predicate 'is a property with a dispositional essence'. Then, the Essentialist Claim can be expressed as follows:

$\exists x(\mathscr{F}x \,\&\, \mathscr{D}x)$.[11]

I will use the case of the property of unit negative electric charge as my toy-example throughout the paper. To simplify formulations, I shall simply use the term 'charge' to denote this property, and speak of an object's 'being charged' when that object is unit negatively charged. On the counterfactual conception, an essentialist claim regarding this property might then for instance be taken to be:

> It is essential to charge that:
> If some object x is charged, then, for all objects y and magnitudes u, v:
> If x were at distance u from y and y had charge v, x would exert a force of $\epsilon\frac{e \cdot v}{u^2}$.

Let us use 'x plays role R'/'Rx' as an abbreviation for the claim that the above embedded universally quantified counterfactual modality holds of x, 'F' as a placeholder for 'is charged' and 'Fness' as a placeholder for 'charge'. Then, the aforementioned essentialist claim can be formalized as follows:

[10] Note that the qualification 'fundamental' in the characterization plays a crucial role and could not be omitted. Many philosophers without dispositionalistic inclinations would nevertheless be happy to countenance the existence of non-fundamental properties with dispositional essences such as e.g. water-solubility and fragility.

[11] Some readers might wonder why I use first-order variables to stand in for properties, rather than second-order variables. I take, however, second-order quantification to be ontologically non-committal, and first-order quantifiers to range over entities of all ontological categories. See §4.3 for more on this take on quantification.

$\Box_{Fness}\forall x(Fx \rightarrow Rx)$.[12][13]

The Explanatory Claim

The second characteristic claim of DE is that we can provide metaphysical explanations for natural modality in terms of powers.

One natural interpretation would be to regiment this claim in terms of grounding: i.e., as maintaining that natural modalities are grounded in certain truths regarding the essences and/or instantiations of powers. Now, while I think that there are in principle also other ways in which the relevant explanatory connection could be construed, I do take this grounding construal to be the natural default option. I will thus focus on it here, leaving the discussion of potential alternatives for other occasions.[14]

Here is a toy-example of how such explanations might look. In our case of charge, what is to be explained are both the truth that *every* charged object x plays role R, and the fact that *some specific* electron a (which in fact is charged) plays role R. Now, in the former general case, a plausible candidate for an explanans is the essentialist truth regarding charge on its own:

> It is essential to charge that every charged object plays role R < every charged object plays role R.

[12] While most proponents of SDE endorse essentialist claims along these lines, and merely disagree regarding the question of whether we should invoke a counterfactual, causal or dispositional modality in the essences, this idea might be challenged. Thus, for instance, conservation laws might call for essentialist truths whose embedded content is non-modal. Such an account of SDE is further developed by Yates 2013. I focus on this standard version of SDE for means of illustration, but it should be clear how the considerations presented in what follows could be adopted to other accounts. Thanks to a reviewer for raising this issue.

[13] One may think that, letting 'I' stand for 'instantiates', we instead have: $\Box_{Fness}\forall x(xIF\text{ness}\rightarrow Rx)$. Likewise, there are two ways of construing the content of R: a predicative way and a way in terms of property instantiations. Which of the two alternatives is endorsed will not make a substantive difference for anything in what follows, but see also the later footnote 29.

[14] In particular, one alternative option would be to construe the explanation in terms of essentialist explanation rather than ground (see Glazier 2017). For further alternatives and related discussion, see Emery 2019, Hildebrand 2020b and Wilsch 2021.

$\Box_{Fness}(\forall x(Fx \rightarrow Rx)) < \forall x(Fx \rightarrow Rx)$.[15]

In the particular case, by contrast, the essentialist truth will not suffice on its own to make it the case that this particular object a plays role R—we also need to invoke the fact that a is indeed charged to acquire a full explanation:

> It is essential to charge that every charged object plays role R, a is charged $<$ a plays role R.[16]
>
> $\Box_{Fness}(\forall x(Fx \rightarrow Rx)), Fa < Ra$.

How about the laws of nature? Here, matters are less straightforward, and proponents of SDE have various options at their disposal. One option would simply be to identify the laws with the relevant dispositional essentialist truths. Alternatively, they might identify the laws with certain universal generalizations that (roughly) reflect the relevant essentialist truths (Bird 2007), or with generalizations that provide the best systematization of the fundamental property distributions in either the actual or in all possible worlds (Demarest 2017, Kimpton-Nye 2017, Williams 2019). Or they might even choose to dispense with laws all together (Mumford 1998).

With this sketch of the three claims of the common, reified view of DE in the background, it is now time for us to turn to the core question of the paper: Is it possible to preserve the core tenets of DE within a nominalist setting? And if so, what is the best way of doing so?

[15] This claim would be an instance of the more general principle of *Essence Grounds Prejacents*, according to which, for any e and p, $(\Box_e p) < p$. See Dasgupta 2014, Glazier 2017, Kment 2014, Rosen 2010, Vogt Forthcoming, and Zylstra 2019 for discussion.

[16] An alternative would be to think that the essentialist truth serves not as a first-order ground, but rather as a meta-ground, i.e., as something that grounds the grounding (see Bennett 2017, chapter 7; Dasgupta 2014, Dasgupta 2019 for discussion). On such an account, we would have: $Fa < Ra$ and $\Box_{Fness}(\forall x(Fx \rightarrow Rx)) < (Fa < Ra)$. Anything that will be said in what follows could be adapted to the meta-grounding proposal in a straightforward way.

4 Austere Nominalist Dispositional Essentialism

Any account of nominalist DE has to reject the Ontological Claim of SDE according to which there are irreducible properties—after all, that this claim be rejected is the characteristic tenet of nominalism. But, nevertheless, the account has to preserve the dispositionalistic import of SDE. And, arguably, in order to do so, the account has to either preserve or mimic the two distinctively dispositionalistic claims of SDE, i.e., the Essentialist Claim and the Explanatory Claim. That is, we should expect of any 'full-blown' account of nominalist DE that it offers us nominalistically acceptable substitutes for these two claims.

As I will show in the next subsection, however, we encounter a prima facie very general difficulty when trying to find a nominalistic substitute for dispositional essence and thus keeping the Essentialist Claim. This difficulty would also seem to jeopardize the possibility of providing a substitute for the Explanatory Claim. I will begin my discussion of nominalist DE by delineating this difficulty (§4.1). Then, I will go on to propose a way out (§4.2), and subsequently construct my proposal for an account of nominalist DE, Austere Nominalist Dispositional Essentialism, on the basis of this discussion (§4.3). Finally, I will say more about how the proposed account compares to SDE and other views on natural modality in the literature (§4.4), and argue that it is immune to some crucial problems that affect Causal Nominalism, the only other extant proposal for nominalist DE (§4.5).

4.1 Recovering the Essentialist Claim: A Dilemma?

Given that nominalism eschews any commitment to irreducible properties, a nominalist has in principle two options at her disposal. First, she can endorse an austere ontology by eliminating properties entirely from her ontology. Or, second, she can opt for 'proxy' properties, that is, reconstruct properties as entities of other categories. But no matter which of the two options the proponent of nominalist DE chooses to adopt, it would seem that she is unable to offer a nominalist substitute for the Essentialist Claim.

The difficulty comes out most clearly in the case in which the nominalist adopts an austere ontology. For then, we have no properties that could serve as bearers of essence. And it does not seem that we can offer a convincing substitute of the claim by relying on the essence of non-properties. First, if we were to instead rely on the essence of representational entities such as concepts, we would not get connections 'out there in the world', as we would wish to, but merely connections regarding the way in which we conceive of the world. Nor can we take the essence-bearers to be particular objects, on pain of ending up with an entirely different view. And finally, we also cannot take them to be facts—such as the fact [a is charged] (even when leaving potential nominalist scruples about ontological commitment to facts to the side). For facts would provide us with merely particular, rather than the desired general connections. We would have a distinct essences for the fact [a_1 is charged], the fact [a_2 is charged], and so on. And if these were the only essentialist truths we had, we would lack any deeper explanation of why there is a striking regularity regarding the essence of all these facts: i.e., the regularity that it is essential to the fact [a_1 is charged] that, if it were to obtain, so would the fact [Ra_1]; that it is essential to the fact [a_2 is charged] that, if it were to obtain, so would the fact [Ra_2]; etc. A dispositionalistic account that relied on the essence of facts would thus greatly deviate from SDE, and fare substantially worse in terms of explanatory and unifying power.

It would thus seem natural to think that the way to go for the proponent of nominalist DE is to instead adopt the second option of admitting proxy properties. The common way of reconstructing properties is in terms of their (possible) instances, e.g. in the case of charge, all the (possible) charged objects. And given that the dispositional essentialist wants to connect properties with causal-nomological roles, it would seem natural to identify properties with sets of (possible) objects that play the corresponding roles.[17] For instance, on such an account, the property of charge

[17] Alternatively, we might identify properties with functions that map worlds to the sets of objects that play the relevant roles in these worlds, i.e., with sets of pairs of worlds and sets of objects. I focus on the simpler account for means of presentation, but nothing in what follows will hinge on this choice. A further proposal that has been made is to identify properties with the mereological sums, rather than the sets of their instances. However, this proposal does not look promising (cf. Rodriguez-Pereyra 2008), and the account would be subject to the same objections that I raise for the account of properties in terms of sets at a later point in this subsection.

might plausibly be taken to be the set of all (possible) objects that play role R. (And, as we will see in §4.4, this is exactly the account favored by Whittle.) At first glance, this account may look like an option that is congenial to the dispositionalistic picture. On closer examination, however, it does not allow us to preserve the Essentialist Claim: While the account would indeed imply that there are *necessary* connections between properties and causal-nomological roles, on the commonly endorsed conception of sets, it would not be able to guarantee that there are the right *essential* connections between them. To see this, let us first take a closer look at the essences of sets in general, before then turning to the case of proxy-properties DE.

On the commonly assumed conception of sets, sets are simply collections of specific objects. More precisely, on this conception, the only features that pertain to the *immediate essence* of a given set are its members, plus that it be a set. For instance, the immediate essence of the set {Barack Obama, Donald Trump} is exhausted by the fact that it contain Barack Obama and Donald Trump, and the fact that it be a set.

If we shift focus from this narrow conception of immediate essence to the broader conception of *mediate* essence, by contrast, sets may have further features that arise from the chaining of immediate essence, and, in particular, sets can 'inherit' certain essential features from their members. For instance, assuming that Donald Trump is essentially the son of Fred C. Trump, it will turn out to be mediately essential to {Barack Obama, Donald Trump} that it have a member that is the son of Fred C. Trump. And assuming that Donald Trump and Barack Obama are both essentially human, it is part of {Barack Obama, Donald Trump}'s mediate essence that it contain only human beings. But it is crucial to bear in mind that the inheritance of essential features is restricted to features that are (at least mediately) essential to the members of the relevant set. For instance, given that it is not essential to Donald Trump and Barack Obama that they be presidents in 2017, nor essential to Donald Trump that Barack Obama be president in 2017 or to Barack Obama that Donald Trump be president in 2017, it will not turn out to be even mediately essential to {Barack Obama, Donald Trump} that it contain (some/only) presidents in 2017. Of course, this does not preclude that one can *pick out* the set {Barack Obama, Donald Trump} in different terms than by its members, and, in particular, by the phrase

'the set of all the US presidents in 2017'. But that I can pick out the set in this way merely means that the description is uniquely satisfied by the set, not that this is an essential feature of it.

With these considerations in the background, let us return to the case of set-nominalist DE and the property of charge. Recall that, according to this view, the property of charge would be identified with the set of all the (possible) objects that play role R. Call this set 's'. If we translate SDE's claim that it is essential to charge that all of its instances play role R into set-nominalist terms, we arrive at the following claim: It is essential to s that all of its members play role R. But now, if we understand 'essence' in terms of *immediate* essence, then, given what was said before, this claim will turn out as straightforwardly false. For, in perfect analogy to the case of {Barack Obama, Donald Trump} the only immediately essential features of s are that it be a set and that it contain these-and-that objects: electron a, electron b, a balloon that gets charged by being rubbed by child, a hair in dry air, and so forth. The natural follow up question is then: Might being such that all of its members play role R at least be a *mediately* essential feature of s? [18]

Let me first note that, even if it were, that would be a rather poor consolation for the proponent of set-nominalist DE. For if being such that all of one's members play role R would be an essential feature that s has merely inherited from its members, the *ultimate* source of natural modality would not lie in the essences of properties, but rather, in the essences of particular objects. The proxy account would thus result in a radical shift of the view, and be a far cry from the original big picture of DE.

More importantly, however, we would plausibly not even get the intended result that s inherits the relevant essential feature—viz., that s is such that all of its members play role R—from its members. To see this, note first that it would be utterly implausible to hold that it should be essential to some of s's members that another member of s play role R, e.g. essential to one specific electron that some other specific electron play role R. The only genuine option to consider for how the inheritance

[18] I would like to thank a reviewer for suggesting the idea that proponents of set-nominalist DE might resort to the idea that sets inherit the relevant essential features from their members to me.

might work is thus that it is essential to *every* member of s that this member play role R. But while many philosophers with essentialist leanings would be happy to hold that electrons play role R essentially, for other members of s, the parallel essentialist claim looks simply implausible. Take, for instance, the balloon. That the balloon happens to be charged at some point in time due to external influences has nothing to do with what the balloon is at its very core. The balloon was not charged at some earlier point in time and it will cease to be charged in the future, we may assume, and it was possible for it to be never charged in the first place. So we can also rule out the option that s inherits the relevant essential feature from all of its members, and thereby the option that it is even mediately essential to s that all of its members play role R.

Nominalist DE thus seems to face a dilemma. If it admits proxy properties into the ontology, these properties will fail to have dispositional essences. And if it does not admit them, there are no candidates left to play the role of bearers of dispositional essence. It would thus seem that, on both horns, the Essentialist Claim cannot be salvaged, and thus no 'full-blown' account of nominalist DE can be provided. In fact, matters seem to get even worse: It would seem that any failure to account for the Essentialist Claim would threaten to further spill over to the Explanatory Claim. For, if there are no dispositional essences, how could there be any explanations of natural modality in terms of them? Thus, plausibly, if the Essentialist Claim has to go, so does the Explanatory Claim.

In what follows, however, I want to argue that there is a way out of the dilemma. The apparent difficulty of the first horn merely arises because we have a too narrow conception of essence in mind. By going beyond the nowadays common construal of essence exclusively in terms of *objectual* essence and instead invoking the notion of *generic* essence, the nominalist has an elegant and natural way to re-capture dispositional essence without any need for relying on proxy properties. The notion of generic essence has been introduced in the literature by Fabrice Correia (2006), and has recently become a subject of heightened interest in the literature (see e.g. Correia and Skiles 2019, Fine 2015, Agustin Rayo 2015).[19] Drawing on this literature,

[19]Note that the expression 'generic' here is meant in a different way than the notion of generics as discussed in philosophy of language and linguistics, which concerns sentences such as 'tigers

I will argue that there are strong independent reasons for countenancing the notion of generic essence (§4.2). I will then apply the notion to the dispositionalistic case, and develop my account of nominalist DE on its basis (§4.3).

4.2 Generic Essence to the Rescue

Traditionally, one kind of question that essence has been seen as connected to are questions such as:[20] 'What is God, at her very core?' 'What is Socrates?' 'What is singleton Socrates?' Thus, we have questions of the general form:

(O) What is a? (with 'a' a singular term).

Answers to such questions would then be, for instance: 'God is, by her very nature, almighty', 'Socrates is essentially human' and 'It is essential to singleton {Socrates} that it have Socrates as a member'. Essentialist talk of this sort is congenial to the objectual notion of essence that is common in contemporary metaphysics as described earlier. This objectual notion construes essence in terms of what is essentially true of some entity, the bearer of essence. For they can be perfectly brought into the canonical form:

(O) It is essential to a that p.[21]
$\Box_a p$.

However, questions and answers of this kind are not the only ones that have traditionally been associated with the notion of essence. Other questions that have been discussed are: 'What is it, at its very core, to be human?', 'What is it to know a proposition?', 'What is it to be wise?' Answers to these questions may then be expressed by sentences such as: 'For someone to be human essentially involves for her to be rational', 'It is essential to knowing a proposition that one justifiedly believes it', 'To be wise is, at its very core, to know how to live well'. On the face of it, questions and answers of this kind are of the following form:

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have stripes', 'mosquitoes carry malaria' and 'the dodo is extinct'.

[20] My exposition of the reasons in favor of generic essence draws on the discussion in Correia 2006.

[21] Other ways to formulate such claims include: 'It is true in virtue of the nature of a that p', 'It is part of the essence of a that p', and 'a is by its very nature such that p'.

(G) What is it to F? (with 'F' as predicate).
To F essentially involves that p.[22]

Hence, we are confronted with a variety of essentialist claims whose surface form does not match the logical form of claims of objectual essence. Now, the obvious move at this point would be to try to cast such claims in the objectual form, by re-interpreting them as claims about the essence of 'general' entities such as properties or kinds. Following this idea, one may maintain that e.g. the first of the given examples is really of the following form: 'It is essential to the property of being human that everyone who instantiates it is rational.'

A first, and rather obvious, disadvantage of this account, however, would be that, on the face of it, the sentence 'for someone to be human essentially involves for her to be rational' does not seem to 'speak about' the property of being human. The reconstruction of the essentialist claim in terms of properties would thus bring in an ontological commitment that seems to be absent in the original formulation. While this is certainly not a knock-down argument against this interpretation, it may still give us some first reason to be wary, and suggests that, other things being equal, it would be preferable to have an alternative account at our disposal. The second reason that tells against this account is more forceful. Even if we do assume a rich ontology of properties, kinds etc., we will not be able to interpret all (G)-cases in terms of them. Correia (2006) provides the example of the predicate 'is a non-self-exemplifying property'. Arguably, 'a non-self-exemplifying property, as such, is essentially many things: non-self exemplifying, a property, an abstract object, a non-self-exemplifying property, etc.' (p. 762). But we cannot assume that there is a corresponding property of being a non-self-exemplifying property, on pain of getting into Russell's paradox. Hence, no bearer of essence is available, irrespective of whether we grant an ontology of properties, kinds etc.. And thus, we have to find another way to account for such (G)-type essentialist truths.[23]

[22] Other ways to formulate such claims include: 'It is true in virtue of what it is to F that p' and 'For something to be F essentially involves for it to be such that p'.

[23] For further arguments that we cannot understand all cases of form (G) in terms of the essence of general entities, see Correia 2006 and Fine 2015. Moreover, see Correia 2006 for an argument that we cannot interpret the cases as merely reflecting the meaning of the relevant predicates.

The core idea behind generic essence is now to take (G)-type essentialist claims at face value, rather than seeking to analyze them in terms of objectual essence. Thus, the friend of generic essence countenances a form of essence that matches the (G)-type as a further form of essence in its own right, i.e. as a different form of essence that is not reducible to objectual essence.[24] In the case of generic essence, we thus have no entity of any sort (be it a particular, a property, a fact, or something else) which is the bearer of the essence. Instead, the essence concerns, so to speak, what certain ways for things to be are essentially like: that to be in a certain way essentially involves that one be thus-and-so.[25] In formal language, generic essentialist claims can then be expressed via the $\boxminus_F p$-operator, which, in contrast to the $\Box_e p$-operator, takes *predicates*—rather than singular terms—as its subscript.[26] Casting our previous example in this way will then give us:

> To be human essentially involves that one is rational.
> $\boxminus_{is\ human} \forall x(x \text{ is human} \rightarrow x \text{ is rational})$.

I take the considerations in this section to provide us with strong independent reasons for countenancing the notion of generic essence. In what follows, I will thus assume that we have this notion in our metaphysical toolkit, and construct the proposed account of nominalist DE on its basis. As we will see, endorsing the notion of generic essence allows us to provide very natural nominalist substitutes for SDE's claims, which are not affected by the difficulty sketched in §4.1.

[24] Instead of countenancing two distinct primitive kinds of essence—objectual and generic—the proponent of generic essence can alternatively analyze objectual essence in terms of generic essence. On such an account, the aforementioned claim regarding the essence of Socrates would be e.g. rephrased as: It is essential to being (identical to) Socrates that one is human. See Correia 2006 and Fine 2015 for discussion.

[25] The 'ways'-idiom here should not be understood as committing one to ways as a sort of entities, and merely serves me as a means of imitating higher-order talk in natural language.

[26] See Correia 2006 and Agustin Rayo 2015 for this formalization. For an alternative formalization in terms of a sentence-operator that binds free variables, see Fine 2015 and Correia and Skiles 2019.

4.3 The Account of Austere Nominalist Dispositional Essentialism

Here are now the four components that jointly form the account of Austere Nominalist Dispositional Essentialism ('ADE'), my proposal for an account of nominalist DE:

Austere Ontology

Following the insight that properties construed as sets of (possible) particulars would fail to have dispositional essences, the first element of the proposed account of ADE is an austere ontology with regard to properties. That is, the account does not appeal to any form of proxy properties such as sets of particulars, and rather maintains that there are no properties whatsoever.

Fundamental Predicative Truths

Moreover, the account does not incorporate only an austere ontology, but also an austere account of what I shall call 'predicative truths', that is, truths such as that that electron a is charged or that the ocean is blue.[27] ADE takes certain predicative truths—such as, arguably, the truth that electron a is charged—as fundamental, rather than seeking to provide explanations in terms of something else, such as property instantiations, set memberships or resemblances between particulars.[28]

[27] Predicative truths as understood here are thus *not* meta-linguistic truths such as the truth that the predicate 'is charged' applies to 'a'. They can be *expressed by using* predicates, but they are not *about* predicates.

[28] The austere account of predicative truths has an arguably somewhat bad reputation in the literature. It has been labelled 'Ostrich Nominalism' and accused of skirting the task set for the nominalist rather than providing a solution (see Armstrong 1978). However, the proponent of the austere view does not refuse to answer the question 'What explains certain 'basic' predicative truths such as that a is charged?', but, rather, she answers the question by saying 'nothing'. Every account has to either assume that certain truths are fundamental, or assume an infinite descending grounding chain—the latter being a position that few would be willing to endorse. To make a point against the account, one would thus have to show that predicative truths are somewhat ill-suited to play the role of fundamental truths. I personally find convincing argu-

Expressed in formal language, we may thus have:

$$\mathbb{F}(Fa).$$

It goes without saying, however, that this does not mean that the account maintains that *all* predicative truths are fundamental. A proponent of the account may plausibly want to reject the idea that truths such as that the ocean is blue or that New York is a city are fundamental, just as property realists and proponents of other forms of nominalism would.

Generic Dispositional Essence

As already hinted at in the previous subsection, instead of construing dispositional essences as objectual essences of (sui generis or proxy) properties, the proposed account invokes the notion of generic essence to account for dispositional essence. Thus, returning to our example case, instead of saying that *it is essential to the property of charge* that charged objects play role R, the account simply says that *to be charged essentially involves* that one plays role R:[29]

$$\boxminus_F(\forall x(Fx \rightarrow Rx)).$$

Hence, according to the account, there are no entities that are the bearers of dispositional essence. Instead, dispositional essence concerns what certain ways for particular objects to be essentially involve: that being thus-and-so essentially makes a particular object play a certain causal-nomological role.

In addition to a substitute for SDE's specific essentialist claims, we also need a substitute for its general claim that *at least some of the fundamental properties* possess

ments to this effect wanting, but this paper is not the place where I can discuss these issues in due detail. If readers are already convinced that the austere account of predicative truths is untenable, I will not be able to convince them otherwise here. See e.g. Armstrong 1980, Peacock 2009 and Rodriguez-Pereyra 2002, chapter 3, for arguments against the austere account, and Devitt 1980, Melia 2005, and Cleve 1994 in favor of it.

[29] Coming back to the discussion in footnote 13: If the proponent of SDE were to endorse versions of the essentialist claim that invoked 'xIF-ness' rather than 'Fx'—i.e., have $\boxminus_{Fness}(\forall x(xIFness \rightarrow Rx))$ rather than $\boxminus_{Fness}(\forall x(Fx \rightarrow Rx))$—the shift from SDE to ADE would also include a modification of the former to the latter. Likewise, if R were assumed to be given in terms of property instantiations rather than in predicative terms, we would also have to correspondingly modify R. This would make the shift slightly more extensive, but still straightforward.

a dispositional essence. In the case of property realism, we have the first-order predicates '$\mathscr{D}$' and '$\mathscr{F}$', which apply to names for properties with a dispositional essence or fundamental properties, respectively. In the nominalist case, by contrast, we will need *second-order* predicates, i.e., predicates that apply to predicates. Let us use the symbols '$\mathscr{D}_2$' and '$\mathscr{F}_2$' for this. Now, in parallel to our understanding of $\mathscr{D}$ in the first-order case, we may take $\mathscr{D}_2$ to apply to some predicate F if being F essentially confers a certain causal-nomological role on all things that are F. With regard to fundamentality, recall that I suggested two ways in which one may want to understand the claim that a given property is fundamental. First, one may adopt a primitive conception of this notion. Or, second, one may take a property to be fundamental iff at least one instantiation of it is fundamental, in the sense of ungrounded. As our nominalist analogue of the former account of fundamentality, we can simply countenance the '$\mathscr{F}_2$'-notion as a primitive.[30] And in analogy to the latter account, we may say that to F is fundamental iff there is at least one ungrounded truth of something's being F. That is, in this latter case, we would have:

$\mathscr{F}_2(F)$ iff $\exists x(\mathbb{F}(Fx))$.

We may then express the nominalist equivalent of the Essentialist Claim as follows:

$\exists X(\mathscr{F}_2(X)\ \&\ \mathscr{D}_2(X))$.

Here, it is of crucial importance, however, how we interpret the second-order quantifier in this claim. For according to one common understanding of second-order quantification, the objectual interpretation, second-order quantifiers range over certain kinds of entities, such as properties, concepts or sets of particulars. And under this interpretation, the Essentialist Claim would bring us back to either property realism or a form of proxy nominalism.

The objectual interpretation of second-order quantification is not the only one available, however, and there are independent arguments that tell against it. Here is one such argument, due to Prior 1971: Plausibly, the ontological commitment of bound variables should line up with the commitment of the expressions replaced by the variables—uses of quantifiers should commit one at most to entities of the kind denoted by the expressions that the variables stand in for. But second-order variables

[30] See e.g. Dorr & Hawthorne 2013 and Jones 2017 for this idea.

stand in for predicates, and according to a widely held view, predicates do not have the semantic function of denoting entities of any kind (be they properties, concepts, sets of objects or whatever have you).[31] Hence, the ontologically committal objectual interpretation should be rejected.[32]

The alternative option that I wish to suggest on behalf of ADE is to endorse a primitivist account of second-order quantification which does not seek to analyze second-order quantifiers in different terms, but rather countenances them as bits of primitive ideology (see Prior 1971, Agustín Rayo and Yablo 2001, Williamson 2003, and Wright 2007).[33] On this understanding, both first-order and second-order quantifiers are in essence means of generalization: devices that allow us to express more general facts about the world than we could otherwise communicate. Moreover, both kinds of quantification obey similar introduction- and elimination rules.[34] In particular, in both the first-order and the second-order case, existentially quantified sentences are implied by their instances.[35] And—pace the substitutional interpretation—in both cases, quantified sentences can be true even if the language lacks the means to express the instances. These similarities between first-order and second-order quantification notwithstanding, however, it should not come as a surprise that only first-order, but not second-order quantifiers incur ontological commitments, given that the bound

[31] Austere nominalists have to maintain that predicates are non-denoting expressions, regardless of their stance on second-order quantification, on pain of having to go error theorist/fictionalist about all predicative sentences. But also many property realists will agree that predicates do not refer, based on considerations in the philosophy of language (such as, in particular, the notorious Concept Horse Paradox). See MacBride 2006 for a discussion of predicate reference.

[32] See also Agustín Rayo and Yablo 2001 and Wright 2007 for a discussion of the argument as well as arguments in the vicinity. Here are two additional considerations that tell against the objectual interpretation. First, on the face of it, natural language seems to contain various quantificational expressions which do not seem to range over entities either, such as the 'somehow' in 'I hurt him somehow, viz., by treading his toe', and the 'however' in 'However he says things are, thus they are' (cf. Prior 1971). And second, on the objectual interpretation, the expressive power of second-order quantification would need to be severely limited, on pain of paradox (cf. Agustín Rayo and Yablo 2001 and Williamson 2003).

[33] While all the mentioned proponents of the view agree that second-order quantification is primitive in the sense of 'not analyzable in terms that do not invoke higher-order quantification', there is significant disagreement regarding the extent of this primitivity: e.g. whether the semantics and meta-logics of second-order languages must be couched in higher-order terms too and in how far we can imitate second-order quantification in natural language. See Dunaway 2013 and Turner 2015 for an overview.

[34] See Wright 2007 for further discussion of these rules.

[35] That is, both $\exists x Fx$ and $\exists X Xa$ are implied by Fa.

variables occupy different syntactic positions and perform different semantic functions in both cases.

Explanations of Natural Modality in Terms of Generic Dispositional Essence

Turning to the substitute for SDE's second core claim, the Explanatory Claim, matters prove to be even more straightforward as soon as we invoke generic essence. Starting from the account of SDE, all that we have to do is to replace objectual essence by generic essence, and leave all the rest as it stands.

To see this, recall our toy-example in the case of SDE:

> It is essential to charge that every charged object plays role $R <$ every charged object plays role R.
>
> $\Box_{Fness}(\forall x(Fx \rightarrow Rx)) < \forall x(Fx \rightarrow Rx)$.
>
> It is essential to charge that every charged object plays role R, a is charged $< a$ plays role R.
>
> $\Box_{Fness}(\forall x(Fx \rightarrow Rx)), Fa < Ra$.

By simply replacing objectual essence by generic essence, we obtain:

> To be charged essentially involves that one plays role $R <$ every charged object plays role R.
>
> $\boxminus_{F}(\forall x(Fx \rightarrow Rx)) < \forall x(Fx \rightarrow Rx)$.
>
> To be charged essentially involves that one plays role R, a is charged $<$ a plays role R.
>
> $\boxminus_{F}(\forall x(Fx \rightarrow Rx)), Fa < Ra$.

And also in the case of the laws of nature, the space of options for ADE exactly matches the space of options for SDE. Just as proponents of SDE, proponents of ADE can choose to (a) identify the laws with certain dispositional essentialist truths, (b) identify the laws with generalizations that reflect the dispositional essentialist truths, (c) identify the laws with generalizations that are explanatorily powerful and simple,

or, finally, (d) dispense with laws all together.

This concludes the exposition of the account of ADE. Note that, while my exposition invoked a rather specific regimentation of the Essentialist Claim and the Explanatory Claim, this is merely for means of presentation: in order to illustrate the 'translation' of SDE into the nominalist account in a precise way, and to be able to demonstrate that it indeed can be made to work. But in the end, nothing hinges on whether this exact form of SDE or another variant is taken as the point of departure. Thus, the proposed account of ADE affords an ultimately fully general 'translation schema' from any reified account of DE to a corresponding nominalist version.

With the view of ADE set out, in the remainder of the paper, I shall now explore the account in some more detail. In the following subsection §4.4, I will further clarify the relationship between ADE and three views on natural modality that bear important similarities to ADE, viz., SDE, primitivism about the laws of nature, and Causal Nominalism. And, finally, in subsection §4.5, I will show that ADE is immune to crucial problems that affect Causal Nominalism.

4.4 Comparison to Other Views on Natural Modality

Comparison to SDE

Both SDE and ADE invoke essentialist truths as the ultimate source of natural modality. The difference between the two views consists in the fact that proponents of SDE postulate properties that are the bearers of the relevant essences, whereas ADE invokes generic essences that do not have a bearer. When asked 'To which entity is it essential that negatively charged particles repel each other?', the proponent of SDE will answer that it is essential to the property of charge, whereas the proponent of ADE will answer that this is not essential to any entity at all. Austere nominalists can say that the given prejacent (i.e., the embedded content) is essential to what it is to be charged, but they will hasten to add that 'what it is to be charged' is

not an expression denoting an entity. The essentialist truths of ADE and SDE do not differ with regard to their prejacents, by contrast. Proponents of both SDE and ADE can endorse the same logical form of the prejacents of the essentialist claims, and have the exact same range of options available regarding the kinds of natural modalities that they take to pertain to the essences (counterfactual, causal, primitive dispositional etc.). And the explanations of natural modality offered by ADE exactly mirror those given by SDE, except for the fact that generic essence replaces objectual essence. Moreover, given that generic essence implies metaphysical modality in the same way as objectual essence does, SDE and ADE will have perfectly analogous modal implications.[36] In particular, both views will have it that an object's being charged necessitates that it plays role R, and, depending on the embedded natural modality, yield the result that the fundamental predicative truths are not freely modally recombinable.[37] SDE and ADE thus ultimately differ merely with regard to two features: first, concerning their commitment to properties, and second, with regard to the kind of essence they invoke—objectual essence in the case of SDE, and generic essence in the case of ADE.

The former difference is, I take it, one that should not come as a surprise. A nominalist account, as such, cannot incorporate any sui generis properties, but at best proxy properties. And whether an account incorporates proxy properties, that are, one might think, nothing but 'shadows' of the deeper underlying metaphysical reality, should plausibly not be seen as the hallmark of whether an account can be still considered as genuinely dispositionalistic or not. More importantly, as we have seen in §4.1, proxy properties would fail to have dispositional essences. And consequently, far from being something that turns an account into a form of DE, the incorporation of proxy properties would jeopardize the dispositionalist character of the account. Thus, if one is convinced that the commitment to properties is a necessary ingredient of DE, one is bound to regard nominalist DE as a lost cause right from the start, and there is nothing that I can do to convince them otherwise.[38] My aim here can

[36] See Correia 2006 for the idea that generic essentialist truths necessitate their prejacents in the same way as objectual essentialist truths do.

[37] See Bird 2007 for an exploration of the modal consequences of SDE's essentialist claims in the case of an embedded counterfactual.

[38] Relatedly, I will not be able here to convince the philosopher who insists that, for an account to count as genuinely dispositionalist, powers (or maybe facts that have powers as constituents),

thus be no more than to offer an account for the philosopher who *is* willing to grant me that we can, so to speak, separate the dispositionalistic aspect of SDE from its ontological one, and explore matters further from there.

But how about the second difference, the one between objectual vs. generic essence? I am happy to grant that this change is a fairly substantial one. But it is my view that this change does not compromise the dispositionalistic aspect of ADE. Just as the proponent of SDE claims that 'laws are not thrust upon properties, irrespective, as it were, of what those properties are' (Bird 2007, p. 2), the proponent of ADE will say that the laws are not thrust upon ways for things to be, irrespective of what those ways are. While, according to SDE, nomic constraints arise from what the property of charge is at its very core, the proponent of ADE will say that they arise from what to be charged is at its very core. And this is, I take it, simply the very same idea 'translated' into the nominalist framework, and exactly what we should expect when we move from a property realist to a nominalist framework. While the property realist ultimately conceives of the world as populated by particulars and properties instantiated by particulars, the nominalist sees the world as one of particulars, characterized by *how they are*. For the property realist, the relevant essence concerns essential features of properties instantiated by particulars. For the nominalist, by contrast, the relevant essence should address essential features of how particulars are: that for a particular to be thus-and-so essentially involves being so-and-so. Construing dispositional essence in terms of generic essence is thus a move that is very natural and congenial to the broader underlying nominalist big picture.

All in all, the two differences between SDE and ADE should not be considered as ones that call the dispositionalistic character of the account into doubt. The account can provide substitutes for SDE's two core tenets—the Essentialist Claim and the Explanatory Claim—that can naturally be incorporated into a nominalist framework, and that are still genuinely dispositionalistic in spirit. ADE is thus, one may say, really just SDE minus properties.

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have to act as truthmakers for statements regarding natural modality. But presupposing such an account of truthmaking would at least come close to being question-begging against the proponent of austere nominalism.

Comparison to Primitivism about the Laws of Nature

Another question concerns ADE's relationship to *primitivism about the laws of nature* (Carroll 1994, Maudlin 2007). Roughly, according to this view, lawhood is metaphysically 'bedrock' in the sense that no account of lawhood in different terms can be given. The common regimentation of the view employs a sentential law-operator, 'L', which is outfitted with an axiom to the effect that $L\phi$ necessitates ϕ.[39] The primitivist's ideology thus strikingly mirrors ADE's ideology. Both employ sentential operators (the L and the $\boxminus$-operator, respectively), such that *operator* ϕ is taken to necessitate ϕ, and to thereby impose nomic constraints on the 'mosaic' of non-modal truths. What is more, ADE and law-primitivism share the same ontological commitments, or, better, lack thereof: in contrast to SDE, neither ADE nor law-primitivism invokes properties, or any other kinds of 'lawmaking'-entities, in their accounts. And thus, one might wonder whether ADE amounts to a particular version of law-primitivism.[40]

To evaluate this question, we would need a precise criterion for what law-primitivism consists in, a matter which is not entirely clear in the literature. One possible criterion would be *ontological*: a theory of the laws of nature should be counted as a type of law-primitivism iff it is not committed to lawmaking entities.[41] This criterion would nicely line up with the common classification of a variety of anti-Humean theories of the laws of nature. It would classify law-primitivism as law-primitivism (since it is not committed to any lawmaking entities), while classifying SDE, the nomic necessitation view (Armstrong 1983, Dretske 1977,Tooley 1977) and Divine voluntarism (Foster 2004, Hildebrand and Metcalf forthcoming) as not being types of law-primitivism (since they are committed to properties/nomic necessitation relations/God). However, the criterion would erroneously classify the Humean best system theory of laws (Lewis 1983, Beebee 2000, Loewer 2012), as well as Marc Lange's (2009) account as law-primitivism. According to the Humean, the laws are those generalizations that are simple, explanatory powerful etc., and there is nothing

[39]For this regimentation, see Hildebrand 2013 and Schaffer 2016.
[40]Thanks to a reviewer for suggesting this idea to me.
[41]Thanks to the same reviewer for comments suggesting this criterion.

deeper that governs or enforces these regularities. According to Lange, there are fundamental counterfactual truths, and the laws are roughly those regularities that are stable under counterfactual variation. Since neither one of the views comes with a commitment to specific entities, both of them would meet the ontological criterion for law-primitivism.[42] However, Humeanism is commonly considered to be a paradigm of non-primitivism about laws. And while Lange's view is indeed oftentimes labeled 'primitivism', it is labeled 'primitivism *about counterfactuals*', not 'primitivism about *laws*'.

What seems to go wrong in the classification of the two accounts based on the ontological criterion is that, intuitively, neither Humeanism nor Lange take lawhood to be brute. Instead, they offer a reductive analysis of lawhood, i.e., an analysis of lawhood in terms of phenomena that bear themselves no essential or conceptual ties to lawhood: in terms of a generalization's being explanatory powerful and simple, or stable under counterfactual variation, respectively. That these analyses do not involve any further entities is of no importance; they are reductive analyses all the same.[43] Law-primitivism, by contrast, has it that no reductive analysis of lawhood can be given. These considerations suggest that we should not construe the relevant bruteness of lawhood in ontological terms, but, rather, simply in terms of a lack of reductive analysis: i.e., an account should be counted as a form of law-primitivism iff it takes lawhood not to be reductively analyzable.

In the case of ADE, as we have seen, there are basically two options for accounts of laws, apart from dispensing with laws all together: identifying the laws with (1) cer-

[42] One might think that Humeanism and Lange's account are committed to lawmaking entities, viz., to the facts in the Humean mosaic and counterfactual facts, respectively. However, neither one of the views requires a reification of facts, since the views can be equally cashed out entirely on the level of truths (by means of a sentential grounding-connective, quantification into sentence-position etc.). The question of whether a proponent of these views countenances facts in her ontology is orthogonal to the question of which account of lawhood she endorses.

[43] Broadening the focus from the debate on the laws to other areas of philosophy, we can see that parallel situations abound. To give just two examples, to my knowledge, it has never been suggested that accounts that analyze a given phenomenon, such as essence or intrinsicality, in modal terms should still be considered to be primitivist regarding the relevant phenomenon as long as they only refrain from reifying possible worlds. And the 'justified true belief'-theory of knowledge is generally regarded as non-primitivist, even if a proponent of it stops short at claiming that to know a proposition is to justifiedly truly believe it, without postulating a relation of belief between the believer and the believed proposition, a property of being true etc.

tain generalizations, or with (2) certain dispositional essentialist truths. No matter which way we go, however, lawhood will have a reductive analysis. On the former, generalizations-based approach, lawhood is analyzable in terms of whatever distinguishes the relevant regularities—such as their explanatory power and simplicity, or their reflecting a generic dispositional essence in the right way. And on the latter approach, lawhood is roughly analyzed in terms of the relevant truth's being a generic dispositional essentialist truth of the right kind. To show that all of these analyses are reductive, it is sufficient to note that it is not part of the essence/concept of generic essence that generic essence be connected to lawhood. Recall that when generic essence was introduced in §4.2, lawhood was never mentioned. Furthermore, one can have an entirely adequate understanding of generic essence and yet deny that any generic essentialist truths express laws of nature. And clearly, not all generic essentialist truths correspond to laws of nature, as examples such as '$\boxminus_{is\ human}\forall x(x$ is human $\rightarrow$ x is rational)' from §4.2 witness. It thus seems extremely plausible that any conceptual/essential connections between lawhood and generic essence pertain to the essence/concept of lawhood, rather than the essence/concept of generic essence. And thus, lawhood is not a brute status that resists analysis in different terms, and ADE does not turn out to be a form of primitivism about the laws of nature. Of course, none of this is to deny that ADE is a type of primitivism. It is. But it is primitivism about *generic essence*, not about laws. Indeed, SDE is also a form of primitivism in this sense: primitivism about *objectual essence*. So if one is not willing to sort SDE together with law-primitivism and Lange's view merely on the basis of their invoking primitive ideology in their accounts, one should feel no temptation to do so with ADE either.

Still, one might wonder in how far the big pictures of ADE and law-primitvism really differ, apart from their treatment of lawhood. So let me conclude the discussion of law-primitivism by adding a bit more on this question. In the case of law-primitivism, the 'governing' L-truths that impose a nomic order on the world are in a sense 'sui generis': *all* L-truths are laws, and the L operator's *only* metaphysical task is to account for lawhood. In the case of ADE—just as in the case of SDE—by contrast, the truths that create nomic connections are part of a broader phenomenon, viz. that of generic essence. As we have seen, not all generic essentialist truths are laws, and generic essence may serve many theoretical tasks unconnected to lawhood, such as

figuring in an analysis of metaphysical modality, underlying grounding, and providing second-order identity conditions. Another aspect in which they differ is that, in the case of law-primitivism, the laws are in an intuitive sense a 'global' phenomenon: there is no particular aspect of the world that lawhood has its source in and thus lawhood belongs, so to speak, to the world as a whole. In the case of ADE—once again just as in the case of SDE—by contrast, lawhood may be seen as a 'local' phenomenon: the laws pertain to certain ways for things to be. And this difference is also witnessed in a crucial formal difference in the views' ideologies. While the primitivst's L-operator simply requires sentences as input, ADE's and SDE's essentialist operators have an additional slot for predicates or properties, respectively. Moreover, it also has the important consequence that ADE's 'space of options' for the world's lawhood-structure is larger than that of law-primitivism. Whereas SDE and ADE would distinguish between a 'scenario' in which Coulomb's law pertains to the essence of (the property of being/what it is to be) charged vs. one in which it pertains to, say, the essence of (the property of being/what it is to be at a certain) distance, for law-primitivism these two scenarios would collapse into a single scenario in which Coulomb's law is a primitive law of nature. Metaphorically speaking, in order to figure out the complete nomic structure of the world, more work is needed in the case of ADE and SDE than in the case of law-primitivism. While the primitivist could call it a night after figuring out the embedded content, the friends of ADE and SDE would have to go on to answer the 'tagging'-question.[44]

Comparison to Causal Nominalism

Finally, let us turn to the relationship between ADE and Whittle's Causal Nominalism (2009), the only other extant proposal for a nominalist view in the vicinity of dispositional essentialism. If construed in terms of ground, Causal Nominalism can be regarded as a combination of three characteristic claims. First, as already mentioned in §4.1, Whittle adopts the strategy of identifying properties with the sets of (possible) objects that *play a certain causal/counterfactual role*. So for instance,

[44] In the parallel debate on the laws of metaphysics, Jonathan Schaffer (2017) takes this 'tagging'-question, as well as the question of how finely grained distinctions between scenarios are drawn, to be exactly the crucial difference between 'sui generis metaphysical laws' vs. essentialist truths.

we plausibly have on her account:

charge = the set of all (possible) objects which play role R.[45]

Second, Causal Nominalism maintains that predicative truths obtain in virtue of the corresponding truths regarding counterfactual roles. That is, according to Causal Nominalism, we would have:

$Ra < a$ is charged.

And third, the account takes certain counterfactual truths to be fundamental. Thus, if a is some electron, we may have:

$\mathbb{F}(Ra)$.

Causal Nominalism arguably shares SDE's idea that properties are intimately tied to causal-nomological roles. But it parts way with both SDE and ADE in two critical respects. First, as we have seen in section §4.1, properties construed as sets fail to have dispositional essences. Hence, pace Whittle, it is not the case that, on the account, 'the functional role of a property is essential to it' (p. 259). And the view does not incorporate ADE's nominalist version of the Essentialist Claim either. Causal Nominalism thus drops the idea of dispositional essence from the picture. Second, Causal Nominalism reverses the order of explanation compared to SDE and ADE. While the latter two views maintain that a plays role R (in part) *because* a is negatively charged, Causal Nominalism maintains the opposite claim that a is negatively charged *because* a plays role R (cf. p. 266). And this reversal in the order of explanation clearly constitutes a major change in the account. Moreover, by taking counterfactual modality as brute, Causal Nominalism forfeits DE's explanatory project of accounting for them in terms of dispositional essence.

All in all, although there are indeed some commonalities between Causal Nominalism on the one hand, and SDE and ADE on the other, the differences seem to prevail. While ADE might be fairly regarded as simply 'SDE minus properties', Causal Nominalism seems to provide us with an independent view of its own, which combines primitivism about counterfactuals (akin to Lange's account) with dispositionalistic

[45] Whittle also suggests a version of Causal Nominalism (p. 246ff.), in which R would be replaced by a ramsified version of it. I focus on the non-ramsified version of Causal Nominalism for the sake of simplicity, but my discussion would equally apply to the ramsified version.

tendencies.

4.5 Why ADE is Immune to the Problems that Causal Nominalism Faces

As I have already indicated in the introduction, Causal Nominalism faces objections due to Tugby 2016. And since Causal Nominalism and ADE are both nominalist accounts in the vicinity of SDE, one might wonder whether ADE is subject to the same problems. In this section, I shall conclude my discussion of ADE by arguing that it is not, and that the problems raised by Tugby should thus give us no reasons to be sceptical about the prospects of ADE. In my discussion of these problems, I will construe matters in a slightly different way than Tugby does, however, and I will also add further considerations of my own.

The problems for Causal Nominalism can best be conceived of as a dilemma. The two horns of the dilemma arise corresponding to two ways of how the fundamental counterfactual truths can be construed in more detail on Whittle's account: as *general* or as *particular*. On the general approach, we would directly take the truth 'Ra' to be fundamental, that is, a truth of the form:

> For all objects y and magnitudes u, v:
>
> If a were at distance u from y and y had charge v, a would exert a force of $\epsilon\frac{e \cdot v}{u^2}$.

On the particular understanding, by contrast, we would have various particular instances of Ra in place of Ra on the fundamental level, that is, a multiplicity of truths of the form:

> If a were at distance d_1 from b_1 and b_1 had charge c_1, a would exert a force of $\epsilon\frac{e \cdot c_1}{d_1^2}$,

where 'b_1' designates a specific electron, and 'c_1' and 'd_1' specific magnitudes of charge and distance, respectively. But no matter which of these two options are chosen, problems arise.

The problem for the general approach is rather straightforward. On such a construal, we would be confronted with a universally quantified fundamental truth, in violation of the principle that all universal generalizations are grounded in their instances plus maybe totality truths. This principle is consensus in the debate on grounding, and it is part of all formal theories of ground. Giving up on this principle would thus come at a high cost: It would mean that we would have to revise core parts of our understanding of grounding, while it is yet unclear what might replace said principle.[46]

Turning to the particular accounts, the problem that emerges is this: If we take particular, rather than general natural modalities to be fundamental, we are confronted with a striking regularity with regard to the fundamental counterfactual truths: When we have a case in which some of the instances of Ra 'come together', we typically have a case in which *all of them* do. Thus, for instance, if some object a is such that, if it were in distance d_1 to b_1 and b_1 had charge c_1, a would exert a force of $\epsilon\frac{e \cdot c_1}{d_1^2}$, a will be typically also such that, if it were in distance d_1 to b_2 and b_2 had charge c_1, a would exert a force of $\epsilon\frac{e \cdot c_1}{d_1^2}$, etc.

On the face of it, if there were no deeper metaphysical explanation for the 'clustering' of all these counterfactuals, this regularity would look like something just extremely unlikely, like a form of 'cosmic coincidence'. But now, it is unclear what would possibly explain their coming together on this particularist version of Causal Nominalism. Given that, on the proposal we are considering now, all these counterfactual truths are separate fundamental truths, we cannot account for them in terms of something further that grounds all of them. Nor can we explain the regularity in terms of the dispositionalist characterization of charge. For this characterization does not specify that, if we have one (or some) of the counterfactuals, we also have the others.

[46] Tugby raises a different worry for this horn of the dilemma: He argues that general truths of natural modality would look suspiciously like laws of nature. However, this argument strikes me as problematic in two respects. First, while the relevant counterfactuals are general in certain respects, they are still particular in the sense of concerning what would happen *to this particular electron a*—in contrast to laws of nature that are fully general. And second, even if they did, it would be unclear why it should be worse for Whittle to take laws of nature rather than more specific counterfactual truths to be fundamental: in both cases, we would not get a reduction of all natural modalities on her account.

It thus seems that the only way to go would be to just bite the bullet and claim that this is just the way it is: There is simply no deeper explanation for the truth that, in our world, counterfactuals tend to come this neatly together. We just happen to be lucky and live in a particularly regular world in this respect. And, indeed, this move is exactly what a proponent of the Humean account of natural modality would say. Borrowing this move from the Humean, however, would come at a high dialectical coast for Causal Nominalism. It would deprive the resulting account from the core advantage that DE as a view among the anti-Humean variety of accounts of natural modality is commonly taken to have: that, unlike the Humeans, they *can* provide 'genuine' explanations for the regularities regarding fundamental truths, rather than conceiving of this uniformity just as a happy coincidence.[47]

Moreover, there is a second problem for Causal Nominalism that arises at least on the latter 'particularist' horn, but potentially also on the former 'generalist'-horn, and it is this: Predications that are commonly considered as paradigm cases of intrinsic predications—such as our standard example of a's being charged—will turn out to be extrinsic on Whittle's account. For on the account, whether a is charged is not merely due to what a is like, but, rather, how other, wholly distinct, objects are: How b_1 would interact with a, how b_2 would interact with a, etc. If we want to go beyond intuitions and lend further support to the extrinsicality verdict, we may employ one of the accounts of extrinsicality that have been proposed in the literature, such as Gideon Rosen's (2010) grounding-based account. On his account, we have:

> a is F in an extrinsic fashion iff_{def} the fact that a is F is grounded in a fact that has an object y as a constituent which is not a mereological part of a.[48]

The account relies on the existence of facts, to which I do not wish to commit here, and it construes grounding in terms of a relation between facts, rather than

[47] See also Filomeno 2019 for recents arguments to the effect that the 'cosmic coincidence worry' poses a serious threat for Humeanism.

[48] I have modified Rosen's definition in two respects in order to adopt it to the case at hand. First, Rosen's account concerns property instantiations rather than predicative facts. And, second, Rosen's account defines the global notion of an extrinsic property rather than the local notion of something having a property in an extrinsic fashion. Both modifications are straightforward and common, however. Rosen's account is certainly not uncontentious, but so is any other account of extrinsicality that has been proposed thus far (cf. Marshall and Weatherson 2013).

in terms of a sentential connective. But to keep matters simple, let us play along, by assuming for heuristic purposes that we have facts in our ontology and extending our operationalist notion of grounding to a notion of fact-grounding in the obvious way.[49][50] Then, Rosen's account will yield the result that a is charged in an extrinsic fashion, as long as there is at least one object b that is not a part of a and interacts with a in the relevant way (such as, in our case, another electron which is not physically isolated from a). For in this case, the specific counterfactual 'If a were at distance d_1 from object b of charge c_1, a would exert a force of $\epsilon\frac{e \cdot c_1}{d_1^2}$' will be a partial ground for the general counterfactual Ra, which, on Whittle's account, is in turn a ground for a's being F. Hence, the specific counterfactual will also be a (mediate, partial) ground for a's being F. And thus, a will turn out to be F in an extrinsic fashion.[51]

To summarize the results from the discussion: By flipping the explanatory direction and taking counterfactual truths to be fundamental rather than to be explained by essential truths, Causal Nominalism faces severe problems. If the view takes the relevant general counterfactuals to be fundamental, it conflicts with the commonly held belief that all universal generalizations are grounded in their instances. And if it takes the particular ones to be fundamental, it fails to account for certain regularities concerning natural modalities, and predications that are commonly taken to be paradigm cases of intrinsic predications turn out as extrinsic. ADE, by contrast, evades all of these problems.

First, the proponent of ADE has a very natural explanation for the regularity with regard to the 'coming together' of the particular counterfactuals at her disposal. Recall that the account takes the general counterfactual truth Ra to be grounded in

[49] Thus, we would have: The fact f grounds the fact g iff$_{\text{def}}$: $\exists p, q((p < q)$ & $(f =$ the fact that $p)$ & $(g =$ the fact that $q))$.

[50] The reliance on facts in Rosen's account could arguably be circumvented by adopting some further modifications. Here is a tentative proposal: a is F in an extrinsic fashion iff$_{\text{def}}$ $\exists p, \exists b$ $(p <^{par} Fa$ & $\neg(b \sqsubseteq a)$ & $b \triangleleft p)$. Here, '$<^{par}$' stands for partial grounding, '$\sqsubseteq$' for (proper or improper) mereological parthood, and '$b \triangleleft p$' for a notion that might be understood along the lines of 'b occurs in p' or 'p is about b'. This latter notion might be in turn either taken as primitive, or as defined as: $\exists F$(For p to be the case just is for Fb to be the case).

[51] Does the problem also arise on the generalist horn of the dilemma? This is not clear, I think. On Rosen's account, it crucially depends on whether we maintain that a universally quantified claim has all objects whatsoever as its constituents or not, which is a contentious issue.

the two truths $\boxminus_F(\forall x(Fx \rightarrow Rx))$ and Fa taken together. But now, it should be clear that the two truths $\boxminus_F(\forall x(Fx \rightarrow Rx))$ and Fa together not only provide an explanation for Ra, but also for all its instances, i.e., the particular counterfactuals. And consequently, the account can provide us with an explanation for the 'clustering' of these particular counterfactuals which, so to speak, is an explanation along the lines of a 'common cause'-explanation: all of the counterfactuals are grounded in the very same two truths.

Second, the view does not give rise to a violation of the principle that all universal generalizations are grounded in their instances. It is indeed true that, on the account, the general counterfactual truth Ra—which has the form of a universal generalization—is immediately grounded in something else than in its instances—viz., in the two truths $\boxminus_F(\forall x(Fx \rightarrow Rx))$ and Fa taken together. But all that we have to say in order to preserve harmony with grounding orthodoxy is that Ra is not merely fully grounded in the two truths $\boxminus_F(\forall x(Fx \rightarrow Rx))$ and Fa taken together, but *also* fully grounded in its particular instances (plus maybe a totality truth). For the standard view is not that the *only* full ground for a universal generalization is given by its instances (plus maybe totality truths), but only that *one* full ground is.[52]

And third, it is straightforward to see that ADE does not yield the result that a is charged in an extrinsic fashion. On the proposed account, a's being charged is taken to be a fundamental truth, that is, not grounded in anything. And *eo ipso*, it is not grounded in a truth that 'involves' an object that is not part of a. a thus turns out to be charged in an intrinsic fashion, just as it should be.

All in all, there is thus no need to worry that, as an account of nominalist DE,

[52] See e.g. Rosen 2010 for the idea that universal truths can be grounded in other truths than merely their instances, and, in particular, in essentialist truths. One might worry that the proposed account gives rise to metaphysical overdetermination. For, on the account, the general counterfactual truth Ra would be taken to be both immediately grounded in the truths $\boxminus_F(\forall x(Fx \rightarrow Rx))$ and Fa taken together, and mediately grounded in them 'via' the instances of Ra, plus maybe a totality truth. Be that as it may, similar cases of grounding-overdetermination are in fact widespread, and should thus not be regarded as worrisome. For a particularly simple case, take any truth of the form $(p \wedge q) \vee p$. Any such truth is both immediately grounded in p, and mediately grounded in p and q taken together.

ADE is automatically also subject to the problems for Causal Nominalism raised by Tugby. These problems are not consequences of combining nominalism with dispositionalistic elements as such, but, rather, merely consequences of the specific way in which Whittle sets up her account. Hence, they should not deter us from adopting ADE.

5 Conclusion

What I hope to have shown in this paper is that the combination of dispositional essentialism with nominalism is a perfectly coherent and tenable position that deserves further exploration. Abstracting away from the details of my discussion, we can recognize a simple and straightforward 'construction-plan' for devising a nominalist account out of a reified account of dispositional essentialism. Roughly, all that we have to do is to replace the objectual dispositional essences of properties with the corresponding generic dispositional essences, and to preserve the common explanatory hierarchy. The resulting account does not give rise to any of the problems faced by Whittle's Causal Nominalism, preserves the core tenets of dispositional essentialism, and carries no commitment to anything but particulars. Thus, contrary to first appearance, dispositional essentialism can be combined with nominalism. The dispositional essentialist is free to choose whether she wants to countenance properties in her ontology, or to make do without them.

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2

Dispositional Essentialism and the Connections Between Essence, Dependence and Ground

On a natural construal, Dispositional Essentialism ('DE') consists in a combination of an essence-claim and a grounding-claim. First, at least some of the fundamental properties are powers, viz., properties that essentially confer certain nomic roles on their bearers. And, second, instantiations of powers ground the corresponding natural modalities. In the recent literature, it has been argued that DE's essence- and grounding-claim give rise to problematic patterns of dependence and ground, and thus cannot be jointly upheld (Coates 2020, Jaag 2014, Kimpton-Nye 2021, Tugby 2020). My aim in this paper is to defend DE against this Argument from Essential Dependence.

All objects that are negatively charged play a certain nomic role: they would repel other negatively charged particles if in their vicinity, attract positively charged particles if in their vicinity, and so on.[1] According to most views on natural modality, the connection between charge and this 'charge-role' is loose: it is merely contingent, and due to 'external extra factors' such as primitive laws of nature, relations

[1] In this introduction, I simplify matters by ignoring magnitudes of properties. But see the next section for a more detailed example.

of nomic necessitation between charge and other universals, or patterns of regularity in the actual and other possible worlds. *Dispositional Essentialism* ('DE') yields the opposite picture to this common view. According to DE, properties are inherently tied to their nomic roles. On a natural construal of the view, DE can be seen as characterized by two claims. According to DE's *grounding-claim*, certain natural modalities are grounded in the instantiations of properties. Thus, for instance, a proponent of DE may hold that the fact that Eddie, the electron, would repel other negatively charged particles if in their vicinity is grounded in the fact that Eddie is negatively charged. And according to DE's *essence-claim*, the connection between properties and the nomic roles that they confer on objects pertains to the very nature of the properties. Thus, a proponent of DE may hold that it is essential to charge that any charged object would repel negatively charged objects in its vicinity.[2]

At first glance, DE's essence- and grounding-claim seem to go neatly hand in hand and provide the basis for an attractively unified account of both the metaphysics of properties and the sources of natural modality. But in recent years, scepticism about the co-tenability of DE's two claims has grown. This scepticism has become the driving force behind a current major shift in the debate, the move of many proponents of DE towards the so-called Grounding Powerful Qualities View, which keeps DE's grounding-claim but forsakes its essence-claim.[3] The most influential and well-developed way of cashing out the scepticism against DE's combination of claims is an argument that may be labelled the Argument from Essential Dependence (Coates 2020, Jaag 2014, Kimpton-Nye 2021, Tugby 2020). Here is a rough and ready sketch of the argument (but I will provide more details later on): If certain natural modalities were to pertain to the essences of properties, these natural modalities would help to make the properties the very properties that they are; they would

[2]The arguably most influential recent defense of DE is provided by Bird 2007. For accounts that fall broadly in the camp of dispositional essentialism, see e.g. Harré and Madden 1975, Ellis 2001, Molnar 2003, Mumford 2002, Shoemaker 1980, Swoyer 1982, Williams 2019. Admittedly, most of these accounts do not state their claims explicitly in this way, but this regimentation in terms of essence and ground is a natural way of rendering DE's claims more precise. See e.g. Azzano 2020 and Jaag 2014 for discussion.

[3]See e.g. Azzano 2020, 2019, Coates 2020, Kimpton-Nye 2021, Tugby 2022a, 2022b, and Vetter 2020 for the Grounding Powerful Qualities View, and Jacobs 2011 and Tugby 2012 for predecessor views in the close vicinity. See also Tugby 2020 for a compilation and comparison of various other options for views in the vicinity of DE.

help to fix the essences of the properties. And thus, the properties would depend for their essences on the corresponding modalities. But this, or so the proponents of the argument contend, excludes that instantiations of properties can give rise to these very natural modalities — nothing can ground that which it essentially depends on.

My aim in this paper is to defend DE against the Argument from Essential Dependence. My discussion will be primarily focused on Siegfried Jaag's (2014) presentation, which is the first and most detailed presentation of the argument, and has become the standard reference in the debate. But I shall additionally take into account the discussion provided by Ashley Coates (2020), who offers a different defense of the core premise of the argument.[4] After some stage-setting (§1), I shall argue that — pace Jaag — DE's essence-claim does not imply the essential dependence that is required for the argument to work. I shall suggest a modification of the argument on behalf of its defenders, which would give us the desired dependence, but which relies on a contentious extra-principle regarding the inheritance of essence from properties to facts (§2). As I will then go on to argue, however, even if this inheritance-principle was granted, the resulting pattern of grounding and essential dependence should not be considered a worrisome result. First, on closer examination, neither Coates' (§3) nor Jaag's (§4) argument for the viciousness of the pattern is compelling. And, second, there are plausible other cases that exhibit the same pattern (§5). Therefore, in the absence of further argument, we have no good reasons to worry about this pattern in the case of DE either. I end with a short summary of the results of the discussion (§6).

1 The Argument from Essential Dependence

Let us start by further clarifying DE's essence- and grounding-claims, so as to have precise versions at hand that will allow us to render the considerations in what follows more precise. Let '$\Box_x$' stand for 'x is essentially such that'; let '$\mathcal{F}$' serve

[4] Tugby and Kimpton-Nye do not offer substantive material on the Argument From Essential Dependence that would go beyond Jaag's discussion.

as a placeholder for the name of a property, such as 'the property of (unit negative electric) charge'; and let 'F' serve as a placeholder for a corresponding predicate, such as 'is (unit negatively electrically) charged'.[5] Finally, let '$\phi(x)$' serve as a placeholder for a description of a nomic role that $\mathcal{F}$ confers on objects that instantiate it. For instance, in the case of charge, '$\phi(x)$' may be taken to stand in for counterfactual conditionals such as: 'if x were at a distance $5.3 \cdot 10^{-11}m$ from a particle with a charge of $1.6 \cdot 10^{-19}C$, it would exert a repulsive force of magnitude $8 \cdot 10^{-8}N$'.[6] But, depending on the account of DE under consideration, it may also stand in for e.g. causal or primitively dispositional modalities rather than a counterfactual.[7]

Jaag assumes the following general schemas for DE's essence- and grounding-claims:

ESSENCE: $\Box_{\mathcal{F}}(Fx \rightarrow \phi(x))$.[8]
GROUND: Fx grounds $\phi(x)$.

ESSENCE corresponds to the idea that properties essentially confer certain nomic roles on their bearers. More precisely, the instance of this schema for some object o has it that it is essential to property $\mathcal{F}$ that, if o were to instantiate $\mathcal{F}$, a certain natural modality that involves o would hold. In our example of charge, one instance of ESSENCE for o would e.g. yield that it is essential to charge that, if o is charged, then, if o were at a distance $5.3 \cdot 10^{-11}m$ from a particle with a charge of $1.6 \cdot 10^{-19}C$, o would exert a repulsive force of magnitude $8 \cdot 10^{-8}N$. And the corresponding instance of GROUND would have it that o's instantiating property $\mathcal{F}$ grounds that o plays the corresponding nomic role. For instance, the fact that Eddie, the electron, is charged, grounds that, if Eddie were at a distance $5.3 \cdot 10^{-11}m$ from an object with a charge of $1.6 \cdot 10^{-19}C$, Eddie would exert a repulsive force of magnitude $8 \cdot 10^{-8}N$. In this paper, I shall grant Jaag both schemas for the sake of argument, subject to one

[5] To simplify expression, I shall simply speak of 'charge' and 'being charged' instead of 'unit negative electric charge' and 'being unit negatively electrically charged' in what follows.

[6] The full dispositional essence of charge would then correspond to the conjunction of multiple such counterfactuals, plus potentially other things.

[7] See e.g. Bird 2007 for the counterfactual account, Shoemaker 1980 for the causal one, and Mumford and Anjum 2011 for the 'primitive dispositional modality' one.

[8] Instead of the common Finean '$\Box_x$'-notation, which takes a singular term x and an (open) sentence as inputs, Jaag expresses the essence-claim in terms of a newly introduced '$\mathcal{E}_X$'-operator, which takes a *predicate* and an (open) sentence as its input. As he makes clear on p. 4, however, the resulting claims are meant to express a claim about the objectual essence of the property corresponding to the predicate, and can thus be regimented as suggested in the main text.

clarification and one modification.

The clarification concerns the question of whether GROUND is to be understood in a strong sense as concerning *full* ground, or in a weaker sense as concerning *(at least) partial* ground. Now, certainly, one plausible way to go for proponents of DE would be to maintain that property instantiations yield full grounds for the corresponding natural modalities, and that the essence-facts merely 'back' this relationship of ground by grounding the grounding. But this is not the only plausible way to go for them: Proponents of DE may just as well maintain that the natural modalities are grounded in property instantiations *taken together with the relevant essence-facts*. This view would seem to be equally in the spirit of DE. And in the debate on ground, the question of whether essence-facts enter into grounding-explanations as parts of the full ground or as something that underlies the grounding (or both) is controversial.[9] Thus, I take it that the proponent of the ARGUMENT FROM ESSENTIAL DEPENDENCE is well advised to base their argument on the weaker interpretation of GROUND in terms of (at least) partial ground. For otherwise, proponents of DE could simply evade the argument by opting to include the essence-facts into the grounds. In what follows, I shall assume that GROUND is interpreted in the weaker way as concerning (at least) partial ground, and use the expression 'ground' for (at least) partial ground unless specified otherwise.

The modification that I adopt may look minor, but will become crucial in what follows. It concerns the interpretation of the open variable x in ESSENCE. The schematic principle ESSENCE effectively corresponds to a wide-scope essence-claim, viz., to:

(ES') $\forall x \Box_{\mathcal{F}}(Fx \rightarrow \phi(x))$.

But there is also an alternative way of construing DE's essence-claim in the close vicinity of (ES') — the narrow-scope variant:

(ES) $\Box_{\mathcal{F}} \forall x(Fx \rightarrow \phi(x))$

In our case of charge, the narrow-scope claim (ES) has it that it is essential to charge that any object, if charged, plays the charge-role. The second, wide-scope

[9] See e.g. Bennett 2017, chapter 7, and Dasgupta 2014, 2019 for discussion.

claim (ES'), by contrast, has it that, for any specific object, it is essential to charge that *this* specific object, if charged, plays the charge-role. That is, according to (ES'), what is essential to charge is a multiplicity of *de re* claims, such as:

$\Box_{\mathcal{F}}(F(\text{electron Eddie}) \rightarrow \phi(\text{electron Eddie}))$.
$\Box_{\mathcal{F}}(F(\text{positron Penny}) \rightarrow \phi(\text{positron Penny}))$.
$\Box_{\mathcal{F}}(F(\text{the Eiffel Tower}) \rightarrow \phi(\text{the Eiffel Tower}))$.

We can further bring out the consequence of this reading of DE's essence-claim by drawing on Kit Fine's (1995a, 1995b, 2000) account of essential dependence, which, as we will see in due course, the Argument from Essential Dependence is also based on.[10] On the Finean account, essential dependence is a relation between entities (from all ontological categories, including, particulars, properties and facts). An entity a is taken to essentially depend on another entity b iff, as Fine puts it, 'b is a constituent of a proposition that is true in virtue of the nature of a', that is, iff there is a proposition that is essential to a and which is *de re* about b.[11] That demand then translates into the condition that there is a p, such that $\Box_a p$ and 'p' contains a constant or unbound variable that refers to b. We can thus see that the wide-scope claim (ES') would imply that charge essentially depends on all particular objects whatsoever (even on ones that do not instantiate charge, such as positron Penny and the Eiffel Tower). The narrow-scope claim (ES), by contrast, does not have this consequence, since it is not a *de re* claim about particular things. To use Fine's gloss, in order for (ES) to be true, the nature of charge does not need to 'know about' any specific objects. This reasoning gives us, I take it, strong reasons to adopt (ES), as opposed to (ES'), as DE's essence-claim. For the idea that charge should essentially depend on all particulars whatsoever is extremely implausible. And there

[10] Fine's account of dependence given in the 1995a paper differs to some degree from the one he gives in the 1995b and 2000 papers: While the 1995a account primarily works with the narrow notion of constitutive essence, the 1995b, 2000 account works with the broader notion of consequential essence (cf. Fine 1994b on the distinction). More precisely, the relevant notion of consequential essence is taken to be closed under a restricted form of logical consequence that, so to speak, allows for logical inferences that do not bring in new objects. Note that this restriction on the closure conditions is crucial and could not be dropped, since otherwise, every object would turn out to trivially essentially depend on every object whatsoever. In this paper, I shall work with the 1995b, 2000 account, which is elaborated in more detail. But nothing crucial will hinge on this choice.

[11] The 'true in virtue of the nature of'-formulation is somewhat misleading, in that it would suggest that the nature of a grounds the truth of the sentence. But this grounding-reading of the idiom is, as Fine clarifies, not intended.

are no independent reasons to think that proponents of DE should be committed to this claim.[12] In what follows, I shall thus assume the narrow-scope essence-claim (ES) as DE's essence-claim.

With these clarifications in place, let us now turn to the Argument from Essential Dependence. The argument purports to show an incompatibility between DE's essence- and grounding-claims: if some instance of the essence-claim is true, then the corresponding instance of the grounding-claim must fail. Here is the argument, adopting the modification of the essence-claim suggested before:

> (ES) $\Box_{\mathcal{F}} \forall x(Fx \rightarrow \phi(x))$.
>
> (DEP) If $\Box_{\mathcal{F}} \forall x(Fx \rightarrow \phi(x))$, then Fx is essentially dependent on $\phi(x)$.
>
> (DG) If Fx is essentially dependent on $\phi(x)$, then it is not the case that $\phi(x)$ is grounded in Fx.
>
> Conclusion: It is not the case that $\phi(x)$ is grounded in Fx.

Instances of (DEP) correspond, according to Jaag, to a direct application of the Finean criterion of essential dependence appealed to before. Jaag takes (DG) to be the core premise of the argument, and offers substantive further reasoning in favor of its generalization, viz., the principle:

> Dependence Excludes Ground: If a essentially depends on b, then a does not ground b.

Coates (2020) offers a different reasoning in support of Dependence Excludes Ground. The discussion, and rejection of Dependence Excludes Ground will be the core aim of this paper (§3 - §5). Before we can come to this, however, we first need to turn attention to a much more basic issue: as it stands, the argument is not well-formed, and, pace Jaag, (DEP) is not an application of the Finean criterion. And thus, the argument stands in need of modification.

[12] In fact, also the passage from Bird 2007 that Jaag crucially draws on to motivate Essence suggests a narrow-scope reading rather than a wide-scope reading of the quantifier.

2 Modifying the Argument

Essential dependence is commonly, and, as we have seen, also on the Finean account, conceived as a relation between entities. For (DEP) and (DG) to be well-formed, the embedded claims regarding essential dependence would thus have to be of the form 'then o_1 is essentially dependent on o_2', with o_1 and o_2 as singular terms. Moreover, for (DEP) to come out as an application of the criterion for essential dependence, the subscript of the essentialist operator (which designates the bearer of the essence), would have to be o_1, and o_2 would have to occur in the statement of the essentialist proposition. But clearly, as the argument stands, these demands are not met. Instances of the expressions 'Fx' and '$\phi(x)$' are sentences rather than denoting terms and the bearer of the essence is denoted by '$\mathcal{F}$' rather than 'Fx'. Moreover, there is a further, more subtle issue with the open variable x, that connects back to our previous discussion of Essence. This issue can be highlighted by considering a specific instance of the schematic premise (DEP), say, for electron Eddie:

> If $\Box_{\mathcal{F}}\, \forall x(Fx \rightarrow \phi(x))$, then F(Eddie) is essentially dependent on ϕ(Eddie).

While the essence-claim does not *de re* 'speak of' Eddie, the premise's consequent postulates a dependence that *de re* 'involves' Eddie.

For the first problem, there is an obvious move proponents of the Argument from Essential Dependence might make: simply reify the schematic sentential expressions 'Fx' and '$\phi(x)$' into expressions whose instances denote 'alethic entities' such as facts, states of affairs or propositions. In what follows, I shall opt for facts, but nothing will hinge on this choice in the context of the paper. Moreover, it will help us to see things more clearly if we focus on specific instances of Jaag's argument, rather than the general schematic form. I shall focus on the instance in the case of electron Eddie, using the constant 'e' for Eddie and the common square-brackets notation for facts. Adopting these modifications, we arrive at the following new version of the argument:

> (ES*) $\Box_{\mathcal{F}}\, \forall x([Fx] \text{ obtains} \rightarrow [\phi(x)] \text{ obtains})$.
>
> (DEP*) If $\Box_{\mathcal{F}}\, \forall x([Fx] \text{ obtains} \rightarrow [\phi(x)] \text{ obtains})$, then, $[Fe]$ is essentially dependent on $[\phi(e)]$.

(DG*) If $[Fe]$ is essentially dependent on $[\phi(e)]$, then it is not the case that $[\phi(e)]$ is grounded in $[Fe]$.

Conclusion: It is not the case that $[\phi(e)]$ is grounded in $[Fe]$.

Now, one might worry that (ES*) looks somewhat artificial, and that it is not entirely clear that proponents of DE have to buy into this 'reified' claim. But let us leave this issue aside, since we still face the much more pressing other problems noted before: that the essence-bearer is property $\mathcal{F}$, while the consequent of (DEP*) features a fact as the dependent entity, and that the fact does not *de re* appear in the essence.

In reaction, the defender of the Argument from Essential Dependence might propose that we can acquire the consequent of (DEP*) in a more complex way, due to a chain of essential dependence, from the fact $[Fe]$ via the property $\mathcal{F}$ to the fact $[\phi(e)]$. Here is how one might think such an argument could go. For property realists, the following schematic principle about the essence of facts might arguably look plausible:

Essence of Facts: $\Box_{[\mathrm{Yx}]}([Yx]$ obtains iff x instantiates $\mathcal{Y})$.

Essence of Facts would have the implication that the fact $[Fe]$ essentially depends on property $\mathcal{F}$. And, in addition, one may think that, due to (ES*), $\mathcal{F}$ essentially depends on all facts of the form $[\phi(x)]$, and, in particular, on $[\phi(e)]$. Combining the two dependence claims, and granting that essential dependence obeys chaining (i.e., is transitive),[13] we would then arrive at the result that $[Fe]$ essentially depends on $[\phi(e)]$ — and that we thus obtain (DEP*) after all. However, even granting Essence of Facts, the reasoning is flawed. It is flawed since (ES*) does not give us that $\mathcal{F}$ depends on $[\phi(e)]$. (ES*) would only yield a dependence of $\mathcal{F}$ on $[\phi(e)]$ if the essence of $\mathcal{F}$ would include a *de re* claim about $[\phi(e)]$. But just as (ES) does not make *de re* claims about specific objects, the modified version (ES*) does not make a *de re* claim about specific facts. And it better not do so. For if $\mathcal{F}$ were to depend on all facts of the form $[Fx]$, such as $[Fe]$, by Essence of Facts and the chaining of essence, $\mathcal{F}$ would turn out to essentially depend on all objects whatsoever, or at least on all

[13] That essential dependence is transitive means that, for any x, y, z, if x depends on y and y on z, then x depends on z. Assuming transitivity corresponds to a mediate, as opposed to immediate notion of essential dependence. In Fine's account, essential dependence is transitive.

objects that are F (depending on the existence conditions of facts). So we would find ourselves back to a claim that we have already ruled out as an interpretation of DE in our discussion of (ES') in the last section. And, indeed, even without embarking on this further reasoning via Essence of Facts, we can simply note that it seems highly implausible that $\mathcal{F}$ should depend on all these facts.

Proponents of the Argument from Essential Dependence thus need to go a different route to motivate the essential dependence of facts such as $[Fe]$ on facts such as $[\phi(e)]$ to make the argument get off the ground. The strategy that I wish to suggest on their behalf is to maintain that facts 'inherit' essential connections from the properties that figure in them, along the lines of the following schematic principle:

> Inheritance: If $\Box_{\mathcal{Y}} \forall x(Yx \rightarrow \mu(x))$, then $\Box_{[Yx]}([Yx]$ obtains $\rightarrow [\mu(x)]$ obtains).

Inheritance captures the idea that if it is essential to some property $\mathcal{Y}$ that all objects that are Y fulfill a certain condition μ, then, it is essential to any fact of the form $[Yx]$ that, if this fact obtains, so does the fact $[\mu(x)]$. This principle would allow the defender of the Argument from essential Dependence to directly move from the original essence-claim (ES) to claims such as:

$\Box_{[Fe]}([Fe]$ obtains $\rightarrow [\phi(e)]$ obtains).

And thus, a *de re* about $[\phi(e)]$ is essential to $[Fe]$. So we get the desired essential dependence of $[F(e)]$ on $[\phi(e)]$, without thereby incurring problematic dependencies of property $\mathcal{F}$. More generally, with Inheritance, the following modified argument becomes available:

> (ES) $\Box_{\mathcal{F}} \forall x(Fx \rightarrow \phi(x))$.
>
> Inheritance
>
> Intermediary Conclusion: $\Box_{[Fe]}$ ($[Fe]$ obtains$\rightarrow [\phi(e)]$ obtains).
>
> (DEP**) If $\Box_{[Fe]}$ ($[Fe]$ obtains$\rightarrow [\phi(e)]$ obtains), then, $[Fe]$ is essentially dependent on $[\phi(e)]$.
>
> (DG*) If $[Fe]$ is essentially dependent on $[\phi(e)]$, then it is not the case that $[\phi(e)]$ is grounded in $[Fe]$.

Conclusion: It is not the case that $[\phi(e)]$ is grounded in $[Fe]$.

Now, while I take this route to be the best shot for proponents of the Argument of Essential Dependence, its reliance on Inheritance weakens the argument's force to a significant degree. For Inheritance does not follow from the Finean account of essential dependence (even if further principles that would support the inference, such as Essence of Facts, were added), nor does it look like a principle that is obviously true.[14] Hence, in the absence of further reasoning in favor of Inheritance, proponents of DE could in principle block the modified Argument from Essential Dependence simply by rejecting Inheritance. That being said, while Inheritance is not an uncontentious principle, it has certainly some intuitive appeal. So if the only way of blocking the Argument from Essential Dependence consisted in rejecting Inheritance, proponents of DE would arguably still find themselves in an uncomfortable spot. The question is thus: Is there a way to defend DE against the Argument from Essential Dependence, even if Inheritance is granted?

In the remainder of the paper, my aim is to argue that there is: we have good reasons to resist (DG*), the third, and core premise of the argument. In my discussion, I shall focus on the generalized version of (DG*), that is, on the following principle:

> Dependence Excludes Ground: If a essentially depends on b, a does not ground b.

This focus on Dependence Excludes Ground rather than (DG*) is warranted since the motivation for endorsing (DG*) provided by Jaag and Coates stems purely from general considerations regarding the connections between essential dependence and ground. Hence, if Dependence Excludes Ground fails, it is hard to see why (DG*) should be in better standing. In §3, I shall argue that the reasoning in favor of Dependence Excludes Ground suggested by Coates is wanting, and in §4 that the reasoning provided by Jaag likewise is. Finally, in §5, I shall argue that, not only do we have no positive reasons to endorse Dependence Excludes

[14] Inheritance does not hold on the Finean account precisely because it implies additional dependencies. And Fine's logic of essence allows only for essence-inheritances that are, so to speak, conservative with regard to dependence: inferences that do not 'bring in' additional dependencies that were not 'already there'.

Ground, but there are also prima facie reasons for thinking that it fails. For there are plausible examples of cases that violate Dependence Excludes Ground just as DE does.

3 Against Coates' Argument for Dependence Excludes Ground

The argument for Dependence Excludes Ground suggested by Coates (2020) rests on the idea that both ground and essential dependence are forms of ontological dependence, and that there cannot be any circles of dependence, i.e., that ontological dependence is asymmetric.[15] The argument can thus be seen as consisting of the following three premises:

(C1) If a essentially depends on b, a is ontologically dependent on b.

(C2) If a grounds b, b is ontologically dependent on a.

(C3) Ontological dependence is asymmetric.

Taken together, these premises imply Dependence Excludes Ground in a straightforward way. For suppose that a essentially depends on b. Then, by (C1) and (C3), b is not ontologically dependent on a. And by (C2), this entails that a does not ground b. Coates does not offer further reasoning in favor of the argument's premises, however. So let us take a closer look at extant theories of ontological dependence to be found in the literature to see whether the premises of the argument are plausible.

Ontological dependence is commonly thought of as family of various more specific relations between entities.[16] For, as Tahko and Lowe (2020, p. 1) put it: '[T]here are various ways in which one being may be said to depend on one or more other beings, in a sense of 'depend' that is distinctly metaphysical in character [...]' Paradigm candidate cases of ontological dependence (henceforth simply 'dependence') include

[15] Coates merely sketches the argument. I take the argument provided here to be the most natural and charitable reconstruction of her line of argument.

[16] See e.g. Correia 2008, Holtje 2013, Koslicki 2012, Rydéhn 2018, Tahko and E. J. Lowe 2020, and Schnieder 2006 for this point.

the dependence of wholes on their parts, of sets on their members, of events on their participants, of boundaries on their 'hosts', and of tropes on their bearers.[17] While there has been, to my knowledge, no analysis of what unifies the different relations of dependence offered yet, there are still some rough characteristics that relations of ontological dependence are commonly taken to have. Thus, ontological dependence is usually taken to mark 'a certain form of ontological 'non-self-sufficiency": A dependent object 'is an object whose ontological profile, e.g. its existence or its being the object that it is, is somehow derivative [...]' (Correia 2008, p. 1). Moreover, it is commonly held that '[w]hen some x ontologically depends on some y, x in some metaphysical sense 'requires' or 'presupposes' y.' (Kovacs 2018, p. 1).

For many years, it had been usual to interpret (the most basic form of) ontological dependence in terms of *modal existential dependence*, where a depends on b in this sense iff necessarily, if a exists, so does b.[18] Modal existential dependence certainly captures a sense in which one objects 'requires' or 'presupposes' another object for its existence, given that, if a depends on b in this sense, a cannot exist without b. Yet it is rather hard to see in which sense such modal connections would make the ontological profile of the object derivative. And indeed, modal existential dependence comes in a sense rather for cheap. Thus, for instance, on the common assumption that sets exist in the worlds where all their members do, Socrates modally existentially depends on his singleton set. Or, to take another example, any entity turns out to modally existentially depend on all necessary objects whatsoever.[19] Such considerations prompted the introduction of more fine-grained notions of dependence in the literature, based on the notions of essence and ground, conceived as hyperintensional phenomena:[20] the notion of essential dependence, as well as two more demanding

[17] Which is, of course, not to say that everyone agrees on these dependence claims.

[18] See e.g. Simons 1987 for this account. Variations of this notion of dependence arise by taking time into account (i.e., by distinguishing whether a's existence at some point in time requires b's existence at the same point in time, or b's existence at some earlier point in time etc.), and by considering generic forms of dependence (where a generically modally existentially depends on the Gs iff a requires some G for its existence). See Correia 2005 and Tahko and E. J. Lowe 2020 for an overview.

[19] For these and other similar cases, see Fine 1995a and E. Lowe 1998, chapter 6.

[20] For a long time, it was common in metaphysics to construe essence in modal terms. On such a construal, for Socrates to be essentially human would simply be for him to be necessarily human, or necessarily human if existent. See, however, Fine 1994a against this modal construal of essence and in favor of a construal of essence as a primitive, hyperintensional phenomenon.

notions of existential dependence, *essential existential dependence* and *explanatory existential dependence*. On the former existential notion, a depends on b iff it is essential to a that it exists only if b does. And on the latter, a depends on b iff necessarily, a's existence is at least partially grounded in a fact about b.[21] Just as modal dependence, these relations capture the idea that the dependent entity 'requires' the entities it depends on.[22] But in contrast to modal existential dependence, these notions seem to do justice to the idea that the ontological profiles of dependent entities are derivative, and they avoid problem cases such as the ones of singleton Socrates and necessary existents, given that merely modal connections do not imply connections of essence or ground. Focusing on the singleton-case for means of presentation: While the existence of Socrates necessarily goes together with the existence of his singleton set, nor does the singleton plausibly pertain to the essence of Socrates, nor is such that facts about it help to ground the existence of Socrates. Hence, Socrates does not turn out to depend of his singleton on these hyperintensional accounts of dependence.

The common classification of essential dependence as a form of ontological dependence supports premise (C1) of Coates' argument. But how about grounding, and thus about premise (C2)? In the literature on ground, ground is in fact often called a form of dependence.[23] But in works with a focus on ontological dependence, this

Grounding is standardly taken to be a hyperintensional phenomenon.

[21] For essential existential dependence, see Fine 1995b and Fine 1995a. For explanatory existential dependence, see Correia 2005 and Schnieder 2006. I am simplifying matters here to some degree and ignore specific differences in the ways the accounts are spelled out in more details. Note also that, just as in the case of modal existential dependence, there are different variants of these dependence-idioms that arise by taking time into account and by considering generic variants.

[22] Making the common assumption that essentiality entails necessity, essential existential dependence entails modal existential dependence and thus goes along with 'requiring' in the modal-existential sense. Moreover, the explanatory existential account is oftentimes spelled out in a more refined way which has the consequence that, assuming that grounds necessitate what they ground, explanatory existential dependence also entails modal existential dependence. Finally, on a widely held view, entities can only exist if all the entities that pertain to their essences do. On this assumption, essential dependence would also imply modal existential dependence. However, the issue is controversial, since e.g. disjunctive facts or impure (i.e., 'object-involving') properties may provide potential counterexamples (see e.g. Correia 2005). Nevertheless, even if the modal existential sense of requiring is rejected, there still seems to be a good other sense in which an entity requires the entities that pertain to its essence for its ontological profile, viz., in order for it to have the nature that it has.

[23] See e.g. Clark and Liggins 2012, Rabin 2018, Schaffer 2009, Rabin 2018, Rosen 2010, Trogdon 2013, Wilson 2012.

classification is rare.[24] And there are good reasons for this, I take it. A first thing to note is that ground cannot simply be equated with one of the 'standard' forms of dependence (or a restriction of them to facts or other alethic entities such as propositions). I shall provide a somewhat simplified discussion here, based on the assumption that facts exist iff all of their constituents do, but a more careful elucidation and examples based on other conceptions of facts can be found elsewhere.[25] For a case of grounding without one of the other forms of dependence, consider the fact [Someone is a philosopher]. It is widely accepted in the debate on ground that this fact is grounded in the fact [Quine is a philosopher]. Yet it seems fairly implausible to hold that [Someone is a philosopher] should depend on [Quine is a philosopher] on one of the standard notions of dependence. Thus, [Someone is a philosopher] would still exist in worlds where e.g. Socrates is a philosopher but Quine was never born (i.e., modal existential dependence fails). And in such worlds, plausibly no fact about [Quine is a philosopher] could help to ground the existence [Someone is a philosopher] either (i.e., explanatory existential dependence fails). Finally, the fact [Quine is a philosopher] arguably does not figure in the essence of the fact [Someone is a philosopher] — as Fine (2012) puts it, the latter fact 'knows nothing' about any specific philosopher (i.e., essential dependence and essential existential dependence fail).[26] For an example in the opposite direction, consider the fact [[Quine is a philosopher] was never mentioned in a Donald Duck comic]. This fact arguably depends on all the standard notions of dependence on the fact [Quine was a philosopher], and yet, it seems highly implausible that it should (even merely partially) be grounded in the fact [Quine is a philosopher].

Now, this leaves of course still open that ground might be another *sui generis* form of dependence alongside the other forms of dependence. However, there are good reasons to resist this classification. Thus, while the obtaining of grounded facts may indeed be said to be derivative upon their grounds, grounded facts do (at least typically) not 'require' or 'presuppose' any of their grounds. Our previous example of the fact [Someone is a philosopher] nicely illustrates this. As we have seen, while

[24] See e.g. Correia 2008, 2021, Holtje 2013, Tahko and E. J. Lowe 2020, Koslicki 2012. See, however, Schnieder 2020b for a classification of ground as a *sui generis* type of dependence.

[25] See Correia 2021c, Rydéhn 2018 and Schnieder 2020b. My examples here are variations of cases presented in Schnieder 2020b. Rydéhn's discussion also covers generic forms of dependence.

[26] See however, Correia 2013 for an opposing view.

this fact is grounded in the fact [Quine is a philosopher], it does not need this fact to determine or fix its nature, nor for it to obtain — any other fact of the form [x is a philosopher] would do just as well. And it is hard to see for what other feature of its 'ontological profile' would require its grounds. In fact, there is some sense in which the direction of 'requiring' goes in the opposite direction. For, on a commonly held view, full grounds necessitate what they ground, and thus, [Quine is a philosopher] requires the obtaining of the fact [Someone is a philosopher] for its own obtaining in the modal sense.[27] This opposite direction of 'requiring' yields, I take it, good reasons to classify ground not as a relation of dependence, but merely as something that can be used to analyze certain notions of ontological dependence out of it.[28] All in all, we can observe that the classification of ground as a form of dependence is certainly not uncontentious, and a point where the defender of DE may well get off Coates' argument for Dependence Excludes Ground.

However, even if it *is* granted that ground is a form of ontological dependence, there is no need for the defender of DE to worry about the argument. For there are also good reasons to reject the remaining premise (C3) of the argument, according to which ontological dependence is asymmetric. To start, if modal existential dependence were classified as a form of ontological dependence, (C3) would clearly fail, given that e.g. Socrates and his singleton set mutually depend on each other on this notion. That being said, given that many think that modal existential dependence does not correspond to a genuine form of dependence, we may plausibly take (C3) to be restricted to the hyperintensional, genuine forms of dependence. But also with this restriction in place, there are plausible cases of mutual dependence. And, most strikingly, there are arguably cases of mutual *essential* dependence.[29] Thus, for instance, Elizabeth Barnes (2018) argues that certain events, such as World War II and the evacuation of Dunkirk, as well as numbers (at least on structuralist,

[27] See, however, Baron-Schmitt 2021, Leuenberger 2014 and Skiles 2015 against the claim that grounds necessitate what they ground. But even foes grounding-necessitarianism can agree that grounds necessitate what they ground conditional on certain background conditions (cf. Baron-Schmitt 2021, p. 4), and thus, that there is a slightly looser sense in which grounds may be said to require what they ground.

[28] See Kovacs 2018 and Correia 2021c for the suggestion that ground should be instead classified as a relation of determination and that a mix-up of determination and dependence might underly the erroneous classification of ground as a form of dependence.

[29] Jaag also mentions this fact in a different context.

but perhaps also on other accounts in the philosophy of mathematics) are mutually essentially dependent. Fine (1995a) suggests that fictional characters from the same story, such as Sherlock Holmes and Dr. Watson, may mutually essentially depend on another. Other potential examples are given by things and their haecceities, which may be taken to mutually essentially depend on one another. And, indeed, it is commonly thought that DE's essence-claim gives rise to cases of mutual essential dependence among properties. So it would seem that, if mutual dependence was impossible, DE could be ruled out purely on the basis of its essence-claim, and there would be no need to embark into the Argument from Essential Dependence in the first place.

Moreover, for Coates' argument to work, what is needed is not merely *intra-relational* asymmetry, i.e., that every dependence-relation is individually asymmetric, but also *inter*-relational asymmetry: i.e., that there can be no cases in which some entity a depends on another entity b for one dependence relation and b on a for another dependence relation. This opens up space for further inter-relational counterexamples to (C3) in addition to the previous intra-relational ones. Thus, Fabrice Correia (2005) provides the example of a Leibnizian god, who is, by her very nature, such that her existence grounds the existence of the actual world. God thus conceived essentially depends on the world. Yet, at the same time, the world explanatorily existentially depends on the Leibnizian god. For a non-religious example, consider the case of colonial organisms suggested by Benjamin Schnieder and Jonas Werner (2021). Such organisms consist of further smaller organisms, zooids, which specialize in constituting colonial organisms. As Schnieder and Werner argue, it is at least coherent to assume that a given zooid is essentially a constituent organism of its specific colonial organism, and thus essentially dependent on it. But given that the existence of the colonial organism is arguably necessarily grounded in facts about the constituent zooids (such as their behavior and functional integration), the colonial organism explanatorily existentially depends on our zooid. And on closer reflection, the demand of inter-relational asymmetry also raises theoretical doubts against (C3) in addition to the example-driven ones. For, even if it was the case that every dependence relation was itself asymmetric, why should this give us reasons to believe that dependence should be asymmetric *as a whole*? Given the variety of different dependence relations it would be indeed a rather surprising fact if all of these relations

turned out to be coordinated in this sense.

All in all, the argument provided by Coates fails to make a convincing case for Dependence Excludes Ground. First, it is already dubious whether ground should be admitted among the relations of ontological dependence. And, second, there are strong reasons to doubt the asymmetry of ontological dependence. Let us thus turn to the second argument for Dependence Excludes Ground, which is provided by Jaag.

4 Against Jaag's Argument for Dependence Excludes Ground

Jaag defends Dependence Excludes Ground based on two premises which postulate a connection between grounding and priority/fundamentality on the one hand, and essential dependence and priority/fundamentality, on the other:

> (J1) If b is grounded in a, then a is metaphysically prior to/more fundamental than b.
>
> (J2) If a is essentially dependent on b, then it is not the case that a is metaphysically prior to/more fundamental than b.

Now suppose that a is essentially dependent on b. Then, by (J2), it is not the case that a is metaphysically prior to/more fundamental than b. And by (J1), this entails that a does not ground b. That is, Dependence Excludes Ground follows.

In defense of (J1), Jaag (p. 11) maintains that '[i]t is widely accepted that 'grounding' marks a kind of non-causal metaphysical priority', and that it is an 'apparent platitude' 'that the grounding entity or fact is metaphysically prior to or more fundamental than the grounded entity or fact'. And regarding (J2), he writes that 'even if one holds that two distinct entities can be reciprocally essentially dependent or that essential self-dependence is allowed, it seems to be utterly incoherent to claim that the depender is metaphysically prior to the dependee.' Jaag suggests that there are only two motivated ways of rejecting (J1) and/or (J2). First, one could adopt simple

modal accounts of ground and/or essence, thus collapsing ground into necessitation and essential dependence into modal existential dependence — notions which fail to be connected to priority/fundamentality. Or, second, one could deny the asymmetry of ground, in which case (J1) would become untenable. However, according to Jaag, adopting one of these options would deprive the former notions of much of their appeal and theoretical usefulness. So, to reject the argument, 'some fairly contentious and far-reaching assumptions have to be made' (p.12).

I agree with Jaag that denying the asymmetry of ground or, even adopting purely modal notions of essence and ground would be a high price to pay, which many — including myself — would not be willing to pay in order to salvage DE.[30] However, as I shall argue in what follows, no such thing is needed in order to defend DE: the argument can be blocked in a motivated way, without having to rely on any contentious assumptions. To put it in a nutshell, I shall argue that Jaag's argument faces a dilemma. Either, (J1) and (J2) concern different notions of fundamentality/priority, or they concern the same notion. In the first case, the premises enjoy some plausibility, but the argument becomes a fallacy of equivocation: The premises 'talk past each other', and the conclusion does not follow. And in the second case, there is simply no good motivation to endorse both (J1) and (J2).

Let me make two preliminary comments. First, Jaag seems to use the expressions 'is prior to' and 'is more fundamental than' interchangeably, and so do many other authors in the debate. I shall do so too here, but use only the expression 'fundamentality' for means of uniformity. Secondly, in line with what I argued in §3, I shall assume that grounding is not a type of dependence. As should become clear, however, my argument would work all the same, and, in fact, become simpler if ground was classified as a type of dependence.

Ground and dependence are certainly widely held to be connected to fundamentality.[31] As Ricky Bliss and Graham Priest (2018, p. 1) put the common picture:

[30] See, however, Thompson 2016 against the asymmetry of ground, and Jenkins 2011 against the irreflexivity of ground (which would imply a failure of asymmetry).

[31] See, however, Barnes 2012, Fine 2001 and Wilson 2014 for primitivism about fundamentality, and Sider 2011 for a construal of fundamentality in terms of joint-carvingness.

> '[F]acts about economies and crimes reside at a higher level than facts about biological systems, which reside at a higher level than facts about chemical systems and so on. Or perhaps we might prefer to say that economic systems are further up the Great Chain of Being than ecosystems, which are further up the chain than carbon compounds. This picture, or something very much like it, looms large over contemporary analytic metaphysics: a picture according to which reality is hierarchically arranged with chains of entities ordered by relations of ground and/or ontological dependence terminating in something fundamental.'

As a minimal structural requirement, the 'is more than fundamental than'-locution is commonly taken to be asymmetric and transitive, and hence also irreflexive. The 'is equally fundamental as'-locution can then be defined out of the former locution in a natural way: a and b are equally fundamental iff for all c, (i) a is more fundamental than c iff b is, and, (ii), a is less fundamental than c iff b is. Given the asymmetry and transitivity of 'is more fundamental than', this relation is guaranteed to be an equivalence relation, and the resulting equivalence classes are then naturally conceived as the layers/levels of reality.[32] Note however, that these structural features do not yet guarantee that all entities a and b are comparable with regard to fundamentality: For all that has been said thus far, there may very well be entities a and b such that it is neither the case that a is more fundamental than b, nor that b is more fundamental than a, nor that a and b are equally fundamental. The assumption that there be no such 'incommensurable' entities is a further substantive claim, which is often made, but not universally accepted. I shall thus remain neutral about it here.[33] In addition to this comparative notion of relative fundamentality, there is also the notion of absolute fundamentality: an entity is (absolutely) fundamental iff no other entity is more fundamental than it.

[32] A relation is an equivalence relation iff it is reflexive, transitive, and symmetric.

[33] If there are no incommensurable entities, we can define a derivative strict total order on the layers in the obvious way: layer A is is more fundamental than layer B iff some member of A is more fundamental than some member B (which, given that the layers are equivalence classes, guarantees that the same holds for all other members of A and B too). If there are incommensurable entities, by contrast, no natural total ordering of their layers seems available. And thus, the layers are only layers in some weak sense of the word.

Now, it is fair to say that premise (J1) is indeed a principle that a large number of authors in the debate on ground do not merely subscribe to, but regard as more or less obviously true.[34] And the principle certainly enjoys intuitive appeal.[35] For (J2), by contrast, the situation is more complicated. It is not usual to explicitly endorse (J2) in this form. (In fact, I am not aware of any other passages in the literature which do.) A principle that does enjoy some popularity, on the other hand, is a stronger version of (J2) parallel to (J1):

> (J2*) If a depends on b, b is more fundamental than a (for 'genuine' forms of dependence, excluding merely modal notions).[36]

But (J2*) becomes clearly untenable as soon as the possibility of non-asymmetric relations of dependence is acknowledged — which is precisely the reason why Jaag opts for the weaker principle (J2) instead. In the absence of further reasoning, however, going for the 'fallback option' (J2) while still sticking to (J1) might look rather ad hoc. Thus, why not instead think that cases of mutual dependence should give us reasons to entirely abandon the idea that relationships of dependence bear connections to fundamentality? Or, alternatively, why not think that, if depender and dependee can be on the same level or incommensurable, so can ground and groundee? Without a broader story in the background, the combination of (J1) and (J2) would thus look like something that is just tailor-made to avoid problems with mutual dependence while still allowing the conclusion to follow.

However, I think that there is a story for Jaag to tell against this worry.[37] Thus, in the recent literature, it has been suggested that only cases in which an entity stands *one-sidedly* in a 'fundamentality conducive' relation give rise to different levels of fundamentality (where a is one-sidedly R-related to b iff a is R-related to b and not the other way around). In cases of two-sided dependence, by contrast, neither one of the two entities is more fundamental than the other: in this case, the two entities, so to speak, 'enter reality jointly'.[38] Let us use the word 'F-relations' for all the relations

[34] See e.g. Correia 2018, Koslicki 2015, Moran 2018, Rabin 2018, Raven 2012, Rosen 2010.
[35] But see later footnote 44.
[36] See e.g. Schnieder 2020a and Tahko 2018.
[37] If the reader thinks that the amended story that I am going to tell looks still ad hoc, then all the better for me — then the reader would seem to have good reasons to reject Jaag's argument even independent from my argumentation in what follows.
[38] See e.g. Correia 2021c, Giannotti 2021, and Rabin 2018 for this idea.

that are taken to 'matter for fundamentality', such as, on Jaag's view, at least the 'is grounded in'-relation and the 'is essentially dependent on'-relation, but plausibly also all the other genuine dependence relations. Then, adopting the aforementioned idea, both (J1) and (J2) may be taken to be motivated by the following unified, more general principle:

> (J3) For any F-relation $\mathcal{R}$: If a is R-related to b and not the other way around, b is more fundamental than a. If a is R-related to b and b is R-related to a, neither a nor b is more fundamental (i.e., a and b are either equally fundamental or incommensurable).[39][40]

Given the asymmetry of ground, it will never be the case that b is grounded in a and the other way around. Hence, if a grounds b, the relationship is guaranteed to be one-sided, and thus, by (J3), a will turn out to be more fundamental than b. So (J1) follows from (J3). In the case of essential dependence, there can be both cases of one-sided and of two-sided dependence, and thus, by (J3), both cases in which the dependent entity is less fundamental than the entity it depends on, and cases in which neither one of them is more fundamental. But, in both cases, the dependent entity is not more fundamental than the entity it depends on, and thus, (J2) follows. The route to (J1) and (J2) via (J3) is, I take it, the best option to motivate both (J1) and (J2) in a unified way. (J3) provides us with a single (albeit conjunctive) principle for all F-relations, rather than with separate principles for dependence and ground. And seen from this perspective, the structural difference between (J1) and (J2) — viz., that (J1) has it that the grounded entity is *less* fundamental than the entity that grounds it, while (J2) merely has it that the dependent entity is *not more fundamental than* the entity it depends on — arise in a natural way from the

[39] Alternatively, one may strengthen the principle further and demand that a and b be equally fundamental in cases of two-sided relatedness.

[40] Note that (J3) rests on the assumption that all F-relations are transitive. For otherwise, problem cases such as the following one could arise: (i) a is R-related to c and not the other way around, (ii) c is R-related to b and not the other way around, (iii) a is not R-related to b, and (iv) b is R-related to a. Then, in the presence of (i), (J3) would demand that c be more fundamental than a, and (ii) that b be more fundamental than c. Hence, by the transitivity of fundamentality, b would be more fundamental than a. Yet, in the presence (iii) and (iv), (J3) would dictate that a be more fundamental than b. With transitivity in place, by contrast, such cases cannot occur, since (i) and (ii) would then imply the negation of (iii). If some F-relation were not transitive, a variant of (J3) could still be adopted in which all occurrences of 'is R-related' would be replaced by 'stands in a chain of R-relations with' (i.e., by replacing the relevant R-relation by its transitive closure).

underlying structural features of the relevant relations.

At first glance, it would seem as if, as soon as (J1) and (J2) were granted, the conclusion of Jaag's argument, viz., Dependence Excludes Ground, would immediately follow. However, in fact, this is not the case. For the argument relies on a further crucial implicit background assumption — that I have also presumed when describing how the conclusion follows from the premises in the beginning of the section: viz., the assumption that the two occurrences of 'fundamental' in the two premises track *the same notion of fundamentality*. But if, with (J1) and (J2), both ground and the various relations of dependence are taken to be F-relations, the natural way to go is to maintain that each F-relation gives rise to its *own* notion of fundamentality: fundamentality$_{ground}$, fundamentality$_{essential\ dependence}$, fundamentality$_{explanatory\ existential\ dependence}$, and so on.[41] And thus, the word 'fundamentality' is ambiguous between these various closely related but distinct notions. An analogous view is suggested by Karen Bennett (2017), who postulates a multiplicity of what she calls 'building relations', among them grounding, composition, and constitution. Bennett maintains that each of these building relations is individually asymmetric, but that different building relations can go in opposite directions. She endorses a principle parallel to (J1) for each of these relations, while stressing that every building relation comes with its own corresponding notion of fundamentality. As Bennett puts it, 'fundamental' has to be always taken to be implicitly indexed to the relevant building relation. While, according to Bennett, each of the particular fundamentality-relations is asymmetric, nothing rules out that one entity a be more fundamental than another entity b on one fundamentality relation, while being less fundamental on another. And, indeed, this should not come as a surprise, given the failure of inter-relational asymmetry of the building relations on the account. Clearly, the situation in our case is structurally relevantly analogous to the situation in Bennett's case, and the pluralist take thus equally pertinent.[42]

[41] Strictly speaking, the claim made should be more carefully formulated as there being various 'packages' of notions of fundamentality, such as the grounding package which includes 'is absolutely fundamental$_{ground}$', 'is more fundamental$_{ground}$ than', 'is equally fundamental$_{ground}$' as, etc., the essential dependence package, and so on.

[42] For other accounts that suggest a similar pluralist approach to fundamentality (with varying views on what relations count as F-relations), see e.g. Audi 2012, Correia 2021c, Koslicki 2012, 2015, and Tahko 2018.

Let us take a look at two concrete example cases to further illustrate and motivate the pluralist view. First, consider the case of the Leibnizian god from §3. Is god more fundamental, or the actual world? On the one hand, it seems natural to say that god is, for the actual world explanatorily existentially depends on her (and plausibly not the other way around). But, on the other hand, one may also feel tempted to say that the world is, for god is essentially dependent on the world (and, or so it might be at least coherently added, not the other way around). The pluralist approach can naturally accommodate both intuitions. It allows one to say that, in one sense of 'fundamental', god is more fundamental, and yet in another, the world is. This result neatly follows from (J3) if we take the 'fundamental' in the principle to be indexed to the relevant F-relation $\mathcal{R}$, i.e., if we understand the principle as follows:

> (J3*) For any F-relation $\mathcal{R}$: If a is R-related to b and the other way around, b is more fundamental$_R$ than a. If a is R-related to b and b is R-related to a, neither a nor b is more fundamental$_R$.

For another example, consider some ungrounded fact, such as, say, perhaps the fact that Eddie exists. Is this fact fundamental? On the one hand, by our assumption, this fact is ungrounded. And this would imply that it be fundamental, as soon as the following, widely accepted principle regarding the connections of ground and (absolute) fundamentality were adopted:

> (FG) A fact is fundamental iff it is ungrounded.

Yet, at the same time, plausibly, the fact that Eddie exists essentially depends on its constituent Eddie and not the other way around. Hence, by (J3), the fact would turn out to be less fundamental than Eddie, and thus, not absolutely fundamental. If one were to maintain that the notions of fundamentality in the two verdicts are the same, one would be thus forced to either reject (FG) or (J3). (FG) is, however, an extremely popular principle. Indeed, the principle is so common that a large number of authors move freely back-and-forth between talk of ungroundedness and absolute fundamentality without even pausing to clarify the underlying assumption. And principle (J3) is, as I argued, the best way of motivating the combination of (J1) and (J2). Dropping this principle would seem to significantly weaken the case for these premises, and throw us back to the issue that their combination may look rather ad hoc. If we go the pluralist route, by contrast, no problems arise. On the pluralist account, (FG) is naturally understood as:

(FG*) A fact is fundamental$_{ground}$ iff it is ungrounded.

The fact that Eddie exists can then be regarded as fundamental$_{ground}$, while non-fundamental$_{essential\ dependence}$, which is in perfect harmony with both (J3*) and (FG*). And, indeed, this combination of claims enjoys, I take it, a high degree of independent plausibility: The way in which the fact seems 'derivative', qua essentially dependent, has a quite different flavor to its 'basicness' qua being ungrounded.

In defense of the pluralist take, note moreover that a pluralist about fundamentality does not need to conceive of all the fundamentality notions as on a par. A pluralist is perfectly free to maintain that, for instance, fundamentality$_{ground}$ is the most central notion of fundamentality for philosophical inquiry, as long as she only thinks that at least one other notion can be also perspicuously classified as a type of fundamentality. Thus, in fact, the pluralist view comes with a great flexibility and can accommodate a wide spectrum of views.

All in all, it seems that, if one wants to maintain both (J1) and (J2), adopting a pluralist take on fundamentality is the natural way to go. But if so, Jaag's argument becomes a clear fallacy from equivocation. For then, the two premises read:

(J1*) If b is grounded in a, then a is more fundamental$_{ground}$ than b.

(J2*) If a is essentially dependent on b, then it is not the case that a is more fundamental$_{essential\ dependence}$ than b.

And from these two premises, it cannot be inferred that if a essentially depends on b, a cannot ground b. For a may very well be more fundamental$_{ground}$ than b, and yet less fundamental$_{essential\ dependence}$ than b: While every notion of 'being less fundamentality than' is individually asymmetric, there is no reason to think that different notions of fundamentality cannot go in opposite directions. Adopting a pluralist take on fundamentality is thus a plausible and independently motivated way of blocking Jaag's argument.

Still, one might wonder whether going the pluralist route is the *only* way out of the argument. So it will be instructive to consider alternative, non pluralist approaches to fundamentality, and see how the argument fares on such views.

One possible position would be to maintain that, contrary to what we have assumed thus far, there is in fact only one F-relation. Thus, some think that ground is metaphysically privileged in the strong sense of being the only relation that matters for fundamentality. On such a grounding-monistic view, the problem that, as we have seen, Jaag's argument faces on the pluralist account clearly does not arise. However, on this view, premise (J2) could readily be rejected: If fundamentality were merely tied to ground, but not to dependence, there would be no reason to think that relationships of essential dependence should come with differing levels of fundamentality. And analogously, on a view which ties fundamentality purely to essential dependence, (J1) would be no longer plausible.

The second non-pluralist option that I can see would be to maintain that there is a single notion of fundamentality which is tied to both ground and dependence. Now, at first glance, this 'non-partisan monistic' view would seem to already ban cases of inter-relational mutual dependence, such as the case of the Leibnizian god. For we would then seem to be forced to say that god is both more and less fundamental than the actual world — which clearly cannot be the case, if the notion of fundamentality in both verdicts is the same. However, recall that, in order to accommodate cases of *intra*-relational mutual dependence, we resorted to the idea that only one-sided cases of dependence give rise to differing levels of fundamentality, while in cases of two-sided dependence, the entities occupy the same level of fundamentality. And if one does not go the pluralist route, the natural thing to do would be to adapt the same strategy in cases of *inter*-relational mutual dependence. Thus, on the non-partisan monistic view of fundamentality, the natural thing to say would be that, given that the Leibnizian god and the actual world mutually depend on one another — albeit for different relations of dependence — none of them should be regarded as more fundamental than the other. And if this much is granted, then it would seem natural to not stop halfway and employ the one-sidedness strategy just to all relations of dependence, but rather apply it to *all F-relations* in general. We can cash out this idea in the following way:

> (J4) If a stands in some (chain of) F-relation(s) to b, and b does not stand in some (chain of) F-relation(s) to a, b is more fundamental than a. If a stands in some (chain of) F-relation(s) to b, and b stands in some

(chain of) F-relation(s) to a, neither b nor a is more fundamental.[43]

(J2) follows from (J4): If a essentially depends on b, it is either one-sidedly or two-sidedly dependent on b. And, in both cases, by (J4), a is no more fundamental than b. But (J1) does not follow from (J4): If b is grounded in a, but a stands also in another (chain of) F-relation(s) to b, the relationship of a and b will be two-sided, and hence, neither a nor b will be more fundamental. That is, (J1) fails. More concretely, (J4) is perfectly compatible with a case in which a grounds b and yet a is essentially dependent on b: it will simply dictate that neither a nor b be more fundamental than the other in such a case.

Now, the proponent of Jaag's argument might try to insist that we should not adopt (J4), but merely the aforementioned principle restricted to dependence relations, and combine this principle with (J1). On such an account, Jaag's argument would still work. However, at least in the absence of further reasoning, this move looks utterly unmotivated. In particular, the combination of these two principles is much more complicated and less unified than principle (J4). Alternatively, the proponent of Jaag's argument might try to get off earlier and reserve the 'one-sidedness'-strategy exclusively for cases of intra-relational mutual dependence, while not employing it to cases of inter-relational mutual dependence such as the one of the Leibnizian god. But this would have the consequence that all cases of inter-relational dependence would come out as incoherent alongside DE. Moreover, it is hard to see what should motivate such an asymmetric treatment of the cases which, in fact, would amount to regarding cases of mutual intra-relational dependence as benign, but cases of inter-relational dependence as vicious. Another option would be to stop right at the beginning and drop the one-sidedness strategy entirely. But without the one-sidedness strategy in the background, (J1) and (J2) would, as I have argued, look rather artificial and ad hoc. Finally, one could drop the one-sidedness strategy and strengthen (J2) to (J2*) (viz., a principle for essential dependence analogous to (J1)) as suggested before. Then, one could also unify (J1) and (J2*) to a stronger, more

[43] One might wonder why we could not instead adopt the following simpler principle: (J4') If a stands in some F-relation to b, and b does not stand some F-relation to a, b is more fundamental than a. If a stands in some F-relation to b, and b stands in some F-relation to a, neither a nor b is more fundamental. However, such a principle would be problematic for reasons parallel to those given in footnote 40.

general single principle: If b stands in a (chain of) F-relations to a, then b is less fundamental than a, full stop. This principle would certainly be simple and uniform, but it would additionally exclude all cases of mutual intra-relational dependence — cases which, as I argued in §3, seem to abound, and which even Jaag himself does not wish to rule out. All in all, in the absence of further reasoning, the situation seems to be this: If one wants to adopt a non-partisan monistic account and is not prepared to rule out all cases of mutual dependence whatsoever — be they inter- or intra-relational — the only motivated way to go is to adopt the one-sidedness-strategy across the board.

To summarize the results of the discussion in this section: (J1) and (J2) seem to only enjoy some plausibility if a pluralist take on fundamentality is adopted. But in this case, the premises have to be indexed to different F-relations in the two premises (ground and essentially dependence, respectively), and thus no longer imply the conclusion. On this pluralist view, if a grounds b and a essentially depends on b, a will turn out to be more fundamental than b in one sense, and less fundamental in another. If one does not wish to go the pluralist route, there seem to be broadly two motivated alternatives. First, one may maintain that there is just one F-relation. In this case, however, (at least) one of (J1) or (J2) becomes implausible. Depending on which relation is taken to be the metaphysically privileged one, it will merely be the case that a is more fundamental than b and not the other way around, or that b is more fundamental than a and not the other way around, or maybe even none of the two. Second, one may hold that there is a single notion of fundamentality that is 'sensitive' to both ground and dependence. In this case, however, the account that naturally suggests itself will invalidate (J1), and neither a nor b will turn out to be more fundamental. Importantly, however, no matter which of these views is chosen, we have a plausible and independently motivated way of blocking Jaag's argument for Dependence Excludes Ground. And we have such a way despite the fact that we came indeed substantially Jaag's way by granting him that something in the vicinity of at least one of (J1) and (J2) *is* true.[44] Moreover, none of these options

[44] While I grant Jaag this assumption here, let me note that I do not regard it as something that is obviously true. Clearly, it will not do to simply turn (some of) the discussed principles into biconditionals. To use a variation of an example from Bennett (2017), the existence of electron Eddie in say, Berlin, should come out as more fundamental than the existence of some kangaroo in Australia, even though, plausibly the two do not stand in any relationship of dependence/ground

comes with the costs that Jaag associates with a rejection of his argument: Clearly, none of the suggested options forces one to adopt a modal account of ground and/or essence, or to deny the asymmetry of ground, or to endorse non-standard views on ground that deprive it of its theoretical appeal. And in consequence, the proponent of DE does not need to worry any more about Jaag's argument for Dependence Excludes Ground than about Coates'.

5 Against Dependence Excludes Ground: Counterexamples

Finally, in this section, I want to argue that, not only is the case for Dependence Excludes Ground wanting as it stands, but there are also reasons that tell against this principle. For there are plausible example cases that violate this principle just as DE does — at least if the Inheritance principle from §2 is taken on board. Recall that this principle says that:

If $\Box_{\mathcal{Y}}\forall x(Yx \to \mu(x))$, then $\Box_{[Yx]}([Yx]$ obtains $\to [\mu(x)]$ obtains$)$.

Since, as we have seen, the Argument from Essential Dependence needs to rely on this principle, the defenders of the argument find themselves in a dilemma: Either they reject Inheritance, in which case their argument gets blocked, or they accept it, in which case they face the counterexamples. I start out with two cases

to one another. And on more elaborated accounts, it is not obvious that we will indeed get any of the principles discussed. Thus, for instance, it may be maintained that the layers of fundamentality are rather coarse-grained, and correspond, for instance, to the levels of science (see Correia 2021a for an account roughly along these lines, and Oppenheim and Putnam 1958 for an influential defense of the levels of science view). On such a view, also purely one-sidedly related entities will be often in the same layer, pace all the combinations of principles considered here. Another consideration stems from accounts that assign levels of fundamentality based on, roughly, the minimal amount of steps of immediate ground that it takes to arrive at the fact from the fundamental level (Correia 2021b, Werner 2020). Now, consider the disjunction of a fundamental fact f_1 and an unrelated, highly non-fundamental fact f_2. On common views regarding the grounds of disjunctions, $[f_1 \vee f_2]$ will be grounded in f_2. Yet, on the account, $[f_1 \vee f_2]$ will be more fundamental than f_2, since one can arrive at it in just one step of immediate ground from the fundamental fact f_1, while, by assumption, it takes many steps to arrive at f_2. Assuming that a similar account can be provided that also captures dependence, we would have an account that invalidates all the combinations of principles considered here.

which rest on an application of Inheritance. I then go on to present two further example cases which require a bit more of argumentative work and are arguably somewhat more controversial, but make do without an application of Inheritance. If these latter cases are granted, they support a more general case against Dependence Excludes Ground, independent of the Argument from Essential Dependence. To be perfectly clear, my claim in this section is not that any of the examples makes a decisive case against the Argument from Essential Dependence all by itself. There are always ways of resisting specific example cases, and the examples in this section are no exception to this. That being said, I take the fact that there is a variety of cases that seem to be prima facie in tension with Dependence Excludes Ground to put significant pressure on the principle. In combination with the lack of theoretical support that the principle seems to enjoy, this should give us strong reasons to be sceptical about the principle.

Case 1: Determinates and determinables. The first case I present is a classic: the relationship between determinables and determinates. It is commonplace in the debate on ground to maintain that instantiations of determinates ground the corresponding instantiations of determinables, and that we thus e.g. have:

(RG) [The rose is scarlet] grounds [The rose is red].

At the same time, orthodoxy has it that determinates and determinables are essentially tied to one another, and that this connection pertains purely to the determinates, as opposed to the determinables: While the property of being scarlet is essentially linked to redness, redness 'knows nothing' of any specific shades of red. Now, how should this essential connection be cashed out in more detail? One natural option that, I take it, enjoys a high degree of intuitive appeal is that it is essential to the property of being scarlet that anything that is scarlet is red:

(RE') $\Box_{\textit{the property of being scarlet}} \forall x(x \text{ is scarlet} \rightarrow x \text{ is red})$.

Clearly, (RG) and (RE') do not provide us with a counterexample to Dependence Excludes Ground yet. But by applying Inheritance to (RE'), we obtain:

(RE) $\Box_{\text{[The rose is scarlet]}}$ ([The rose is scarlet] obtains $\rightarrow$ [The rose is red] obtains).

(RE) has the consequence that [The rose is scarlet] essentially depends on the fact

[The rose is red]. And, yet, according to (RG), the former fact grounds the latter. We thus encounter a case that violates Dependence Excludes Ground: a case in which a certain fact a essentially depends on another fact b, and yet grounds a.[45]

Case 2: Aristotelian universals. The second case concerns Aristotelian universals. On a natural construal of the Aristotelian account, the existence of Aristotelian universals is grounded in their instances. On such a view, we thus e.g. have:

(BG) [The ocean is blue] grounds [Blueness exists].

At the same time, plausibly, it is essential to blueness that it exists if something instantiates it:

(BE') $\Box_{blueness} \forall x(\text{Blue}(x) \rightarrow \text{blueness exists})$.[46]

Applying Inheritance to (BE'), we obtain:

(BE) $\Box_{\text{[the ocean is blue]}}$ ([the ocean is blue] obtains $\rightarrow$ [blueness] exists obtains).[47]

And (BG) and (BE) again jointly form a counterexample to Dependence Excludes Ground.

Case 3: Promises. The third case concerns promises. Promises incur obligations.[48]

[45] A similar, but more partisan example case arises in connection to 'knowledge first'-accounts (cf. Williamson 2000), according to which knowledge is a way of knowing. Adopting such an account, it would be arguably plausible to maintain that remembering something grounds knowing it. Thus, we have: [a remembers ϕ] grounds [a knows ϕ]. At the same time, it seems also plausible that remembering something essentially involves knowing it, and that we thus have: $\Box_{[a\ remembers\ \phi]}$([$a$ remembers ϕ] obtains $\rightarrow$ [a knows ϕ] obtains).

[46] One may think that instead, what is essential to blueness is $\Box_{blueness}(\exists x\ \text{Blue}(x) \rightarrow$ blueness exists), or maybe a biconditional version thereoff. But at least if we work with a notion of essence that is closed under a restricted version of logical consequence that does not bring in further objects (like the one given in Fine 1995b, 2000 that I am assuming here), (BE') immediately follows from these alternative claims.

[47] This inference may look like an application of Inheritance that is in a certain sense 'degenerate', since the variable x does not appear in the antecedent. Be this as it may, it is an application of the principle all the same. Note that Correia 2013 takes an inference very similar to the one from (BE') to (BE) to cast doubt on a principle in the vicinity of Inheritance, since he maintains that the Aristotelian can consistently endorse a claim in the vicinity of (BE') while rejecting one in the vicinity of (BE). I wish to remain neutral here, however, with regard to the question of whether or not Inheritance should be given up as a result.

[48] It may be thought that the incurred obligations are merely *pro tanto* ('other things equal') obligations. Alternatively, it may be said that promises generate *practical reasons* for actions

If I promise to bring a cake to the party, then I must bring a cake to the party. And I must bring a cake (at least in part) *because* I made the promise to bring one. The 'because' marks, moreover, arguably a genuinely metaphysical sense of explanation rather than a merely causal one.[49] We can readily see this if we contrast the explanation of the obligation via the promise with a causal explanation that may be given in addition. Thus, adding a bit to the story, we may imagine my friend asking whether I will bring something to the party and succeeding in her effort to make me promise to bring a cake. In this extended story, we may also say that I have the obligation to bring the cake because my friend asked me. But this causal 'because' has a quite different flavor when compared to the 'because' in the explanation in terms of the promise: it merely tells a story about the causal history that led to the obligation, rather than stating the basis in virtue of which the obligation obtains. And if it is granted that the obligation is metaphysically explained by the promise, the natural default way of interpreting the explanation is as a grounding-explanation:[50] facts about promises ground the corresponding obligations.[51] Hence, in the case of the cake:

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which fall short of being obligations. These alternative construals of the case will not make any difference in what follows, and the reader should feel free to replace 'obligation' with their favorite term.

[49] One might think that the explanation is a *sui generis* type of normative explanation backed by normative as opposed to metaphysical grounding, and that Dependence Excludes Ground merely holds for metaphysical grounding. See Fine 2012 for the idea that there are (at least) three types of grounding, viz., metaphysical, normative and natural grounding. However, if such a pluralist approach to grounding and a corresponding restriction of Dependence Excludes Ground was adopted, plausibly, the proponent of DE could equally maintain that her explanations should be construed in terms of natural as opposed to metaphysical grounding, thus evading the argument. See, moreover, Berker 2018 against the idea that we should countenance separate notions of normative and natural grounding in addition to metaphysical grounding.

[50] To be clear, I am not claiming here that every metaphysical explanation is a grounding-explanation. While this view is indeed popular in the debate, it has recently been argued that there are other forms of metaphysical explanations as well, such as, in particular, *essentialist explanation* (Glazier 2017) and *metaphysical explanation by constraint* (Bertrand 2019). Be this as it may, grounding-explanation is certainly the default-type of metaphysical explanation, and the proposed explanation does not have the right form to be classified as either an essentialist explanation à la Glazier or as a metaphysical explanation by constraint à la Bertrand.

[51] Recall that the expression 'ground' is taken to stand for (at least) partial ground in this paper (cf. §1). Depending on one's meta-ethical views, one might think that the absence of further countervailing reasons must be added to obtain a full ground. Alternatively, however, it might be thought that this absence forms a background condition, rather than part of the ground (parallel to the role that totality facts are sometimes taken to play). Or it might be thought that we can avoid both by weakening the claim to one about pro tanto reasons.

(PG) [Lisa promises to bring a cake to the party] grounds [Lisa has an obligation to bring a cake to the party.]

At the same time, this connection between a promise and the obligation that comes with it seems to be one that is not, so to speak, external to the promise. Instead, promises seem to be tied to (pro tanto) obligations *by their very natures*: that it incurs a certain obligation to bring a cake is part of what my promise to bring a cake is at its very heart. In our cake-example, we thus plausibly also have:

(PE) $\Box_{\text{[Lisa promises to bring a cake to the party]}}$ ([Lisa promises to bring a cake to the party] obtains $\rightarrow$ [Lisa has an obligation to bring a cake to the party] obtains).

(PG) and (PE) also provide a counterexample to Dependence Excludes Ground — and this time one whose motivation is independent of an application of Inheritance.[52][53]

Case 4: Baptisms. Another similar case concerns baptisms. Beings acquire names in baptisms. And they do not do so merely accidentally: baptisms *make* beings officially have the names that they have; they *confer* names on things. Thus, for instance, the ship Queen Mary 2 plausibly has officially the name 'Queen Mary 2' *because* Queen Elizabeth II baptized it 'Queen Mary 2'. And just as in our previous example of the promise, this 'because' seems to express a distinctively metaphysical, as opposed to merely causal connection. We can again bring this out by contrasting the relevant explanation with a causal one. Thus, we may imagine the director of the shipping company dreaming of a beautiful journey on a ship called 'Queen Mary 2'. And this dream, we may imagine, leads them to pick the name 'Queen Mary 2' for the actual ship. Then, there is a good sense in which the ship has the name 'Queen Mary 2' because the director dreamed of this name. But this causal sense

[52] To be clear, I do not wish to claim here that the combination of (PG) and (PE) is utterly uncontroversial, but merely that it is a natural and prima facie plausible combination of claims. See Searle 1964 and Owens 2012 for views in the vicinity of (PG) and (PE).

[53] A structurally similar, but theoretically more involved case arises on Michael Bratman's (1987) account of intentions. On this account, we plausibly have that someone's intending to ϕ makes it the case that the person is committed to ϕ-ing, and that at the same time it is essential to intending that it comes with this commitment. So, plausibly, we both have: [a intends to ϕ] grounds [a is committed to ϕ-ing], and $\Box_{[a \textit{ intends to } \phi]}$([$a$ intends to ϕ] obtains $\rightarrow$ [a is committed to ϕ-ing] obtains).

of 'because' has a quite different, much more loose flavor than the 'because' in the explanation via the baptism. And, once again, the natural default interpretation of the 'because'-claim seems to be in terms of ground:

> (BG) [Queen Elizabeth II baptizes the ship 'Queen Mary 2'] grounds [The ship has the name 'Queen Mary 2']

Moreover, the connection between a given baptism and the baptized thing's having the name that is has seems to be one that stems from the very essence of the baptism: conferring names is what baptisms do by their very natures. Thus, we plausibly also have:

> (BE) $\Box_{\text{[Queen Elizabeth II baptizes the ship on the name 'Queen Mary 2']}}$ ([Queen Elizabeth II baptizes the ship on the name 'Queen Mary 2'] obtains $\rightarrow$ [The ship has the name 'Queen Mary 2'] obtains)

We thus have again a case that violates Dependence Excludes Ground.[54]

6 Conclusion

In this paper, I have argued that, contrary to first appearance, the Argument from Essential Dependence fails to make a convincing case against DE. First, as we have seen, the argument needs to rely on an additional principle regarding a *sui generis* inheritance of essence from properties to facts to even get off the ground. And while this principle enjoys some plausibility, it is not obvious that it holds. Second, even if this principle is granted, the argument can be defused. For the argument crucially relies on the principle of Dependence Excludes Ground, according to which nothing can something that it essentially depends on. But, as we have seen,

[54] A further potential case would arise if the principle of Ground by Status — according to which status truths, such as essence-truths, modal-truths and law-truths ground their prejacents (and instances thereof) — were adopted (cf. chapter 4). Focusing on the case of essence for means of illustration, Ground by Status would dictate that, for any e and ϕ such that $\Box_e\phi$, $[\Box_e\phi]$ grounds $[\phi]$. Yet, it seems highly plausible that essence-truths are essentially factive, i.e., that we have $\Box_{[\Box_e\phi]}([\Box_e\phi]$ obtains $\rightarrow [\phi]$ obtains) (or, alternatively, $\Box_{[\Box_e\phi]}([\Box_e\phi]$ obtains and e exists $\rightarrow [\phi]$ obtains). This combination of claims would again conflict with Dependence Excludes Ground. However, as I will also argue in chapter 4, there are independent reasons to be sceptical about Ground by Status.

neither Coates' argument for this principle via the asymmetry of dependence, nor Jaag's argument via connections to fundamentality is convincing. Moreover, there seem to be other plausible example cases that violate Dependence Excludes Ground in the same way as DE does. Hence, unless a more persuasive case for the viciousness of its characteristic combination of grounding- and essence-claims is made, there is no need to worry for proponents of DE about the combination of their claims.

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3

Two Problems for Zylstra's Truthmaker Semantics for Essence

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In his article 'Making semantics for essence' (*Inquiry*, 2019), Justin Zylstra proposed a truthmaker semantics for essence and used it to evaluate principles regarding the explanatory role of essence. The aim of this article is to show that Zylstra's semantics has implausible implications and thus cannot adequately capture essence.

In recent years, truthmaker semantics has become an increasingly popular tool in various areas of metaphysics and the philosophy of language. In particular, the truthmaker framework is commonly used to devise semantics for ground.[2] The application to the closely related field of essence, however, has remained largely unexplored. In a recent article in this journal ('Making semantics for essence', 2019), Justin Zylstra offers the first proposal for a truthmaker semantics for essence. He then demonstrates how the account can help to illuminate the explanatory role of essence: By providing us with a joint semantic framework for essence and grounding, it allows us to investigate principles regarding the grounds and groundees of essentialist statements.

[1]DOI: 10.1080/0020174X.2021.1899044.
[2]See Correia (2010, 2016), Fine (2012a, 2012b, 2017b) and Krämer (2018).

In particular, Zylstra's semantics would establish one main result: That the thesis of Essence Grounds Prejacents—according to which an essentialist claim of the form 'it is essential to α that ϕ' grounds its prejacent ϕ—turns out to be false. Essence Grounds Prejacents is a quite natural seeming claim that looms large in the debate and has recently become a matter of increasing controversy.[3] Apart from this application, Zylstra's semantics would also promise to open up the possibility for further semantic research on the connections between essence and various other phenomena of metaphysical interest, and especially on the connections between essence and metaphysical modality.

In this article, however, I will argue that the proposed semantics should not be adopted. The semantics implies results that are highly implausible, and in tension with all common views on essence. It thus does not afford us with a perspicuous way of formally representing essence.

I start out by introducing Zylstra's proposed semantics in Section 1. In the core part of the paper, Sections 2 and 3, I demonstrate the way in which the semantics allows us to derive problematic results. While the results obtained in Section 2 suggest that the conditions that Zylstra imposes on verifiers of essentialist statements are in a sense too weak, the results in Section 3 suggest that they are too strong in another. I end with some concluding remarks in Section 4.

1 Zylstra's semantics for essence

Zylstra's proposed semantics for essence builds on the truthmaking framework as developed by Kit Fine (2017a, 2017b). While the common possible worlds semantics associates sentences with the possible worlds at which they are true, truthmaker semantics associates sentences with the states that exactly verify them.

States can be complete (of the 'size' of a whole world) or incomplete ('smaller' than

[3]For the recent discussion, see in particular Kment (2014) and Rosen (2010) in favour of Essence Grounds Prejacents, and Glazier (2017) against it.

a world), and consistent or inconsistent. Some examples for states are the state of *snow's being white*, the state of *1 + 1 = 5*, the state of *Barcelona's being in Spain and Geneva's being in Switzerland*, and the actual world-state. States stand in relationships of parthood to another and fuse to larger states. Thus, the state of *Barcelona's being in Spain and Geneva's being in Switzerland* has the states of *Barcelona's being in Spain* and of *Geneva's being in Switzerland* as parts, and is the fusion of these two states.

The intuitive idea behind the notion of exact verification is that some state s exactly verifies ϕ iff s's obtaining would guarantee ϕ's truth, and moreover, s would be wholly relevant for ϕ's truth. (I shall drop the 'exact'-qualification in what follows.) Thus, *Barcelona's being in Spain and Geneva's being in Switzerland* would not count as a verifier of 'Barcelona is in Spain', since it does not meet the relevance-condition. Importantly, verification is not factive: False, and even inconsistent sentences can still have verifiers. For instance, the false sentence 'Barcelona is in Switzerland' would nevertheless have the state of *Barcelona's being in Switzerland* as a verifier.

To account for essence, Zylstra adds two elements to the standard truthmaking framework: First, a *set of items*, which represents the realm of potential bearers of essence and may include, e.g. Socrates, the singleton Socrates, and the number two. And, second, an *essence-making function*, which, intuitively, pairs sets of items with the propositions that express their collective constitutive essence.[4] Within this framework, Zylstra devises verification conditions for essentialist statements. Adopting Fine's (2017b) account for grounding, he then shows Essence Grounds Prejacents to fail.

In Zylstra's semantics, *essence-making models* are construed as quintuples $\langle S, \mathcal{I}, \sqsubseteq, \mathcal{M}, |\cdot| \rangle$, whereby:

- S is the *set of states*.
- $\mathcal{I}$ is the *set of items*.

[4]See Fine (1994a) on collective essence, and Fine (1994b) on constitutive essence.

- $\sqsubseteq$ is the *parthood relation* on S, a partial order.

  The *fusion* of a set $T \subseteq S$ is defined as the least upper bound of T with regard to parthood. That is, T's fusion has all members of T as parts and is part of every state that has all the members of T as parts. The fusion of the members of a set T is denoted by '$\bigsqcup T$', and the fusion of some states $s_1, s_2, ...$ by '$s_1 \sqcup s_2 \sqcup ...$'. It is required of all models that every subset of S has a fusion, that is, each $T \subseteq S$ has a least upper bound.

  Zylstra adopts a so-called *regular unilateral conception of propositions*, i.e. he identifies propositions with sets of states $P \subseteq S$ that fulfil the following two conditions:

  - Closure Under Fusion: P is closed under fusion, i.e. for every nonempty $T \subseteq P$, $\bigsqcup T \in P$.
  - Convexity: P is convex, i.e. for all $s_1, s_2, s_3 \in S$, if $s_1 \sqsubset s_2 \sqsubset s_3$ and $s_1, s_3 \in P$, then $s_2 \in P$.

  As Zylstra notes, however, it has been argued in the recent literature on grounding that one should drop the assumption of Convexity and merely demand of propositions that they be closed under fusion.[5] Moreover, Zylstra's semantics is independent of Convexity—the semantics could be set up in an entirely parallel way and would exhibit the same relevant features if Convexity was not assumed. To show that my arguments do not hinge on Convexity and would equally apply to a version of Zylstra's semantics that dropped it, I will remain neutral with regard to Convexity here. That is, I shall work with both candidate conceptions of propositions whenever the difference will matter, adopting the relevant definitions in the non-convex case from Fine (2017a, 2017b). I will use the following notation: For some set of states $T \subseteq S$, the symbol 'T_f ' stands for T's closure under fusion (i.e. the smallest set that contains T and is closed under fusion), and the symbol 'T_f^c' for T's regular closure (i.e. the smallest set that contains T and is both closed under fusion and convex). The symbol '$T*$' serves as a placeholder for T_f^c under the assumption of Convexity and for T_f otherwise. The symbol '$\mathcal{S}$' stands for the set of

[5] See Krämer and Roski (2015) and Correia (2016). Fine (2017b) remains neutral, but largely adopts Convexity for technical reasons.

propositions on the relevant conception.

- $\mathcal{M}$ is the *essence-making function* from subsets of $\mathcal{I}$ to subsets of $\mathcal{S}$, i.e. from sets of items to sets of propositions. Two conditions are imposed on $\mathcal{M}$:
  - Upward Closure: If $P, Q \in \mathcal{M}(I)$ for some $I \subseteq \mathcal{I}$, then: $P \wedge Q \in \mathcal{M}(I)$ and $P \vee Q \in \mathcal{M}(I)$.
  - Downward Closure: If $P \wedge Q \in \mathcal{M}(I)$ for some $I \subseteq \mathcal{I}$, then: $P, Q \in \mathcal{M}(I)$.[6]

  Where: $P \wedge Q := \{s \mid s = s_1 \sqcup s_2 \text{ for some } s_1 \in P, s_2 \in Q\}*$, $P \vee Q := \{s \mid s \in P \text{ or } s \in Q\}*$.

- $|\cdot|$ is the *valuation function*. $|\cdot|$ maps every (singular or plural) name in the language to a subset of $\mathcal{I}$, i.e. to a set of items. And $|\cdot|$ maps every sentential constant to some proposition $P \in \mathcal{S}$, its set of *verifiers*.

For ease of presentation, Zylstra restricts himself to toy language fragments that include conjunction and disjunction as truth-functional connectives, but not negation. As Zylstra notes, however, his account could be extended to languages with negations in the common way.[7]

To account for conjunction and disjunction, the range of the valuation function $|\cdot|$ gets extended from the sentential constants to truth-functionally complex sentences in the following way:

$$|\phi \wedge \psi| = \{s \mid s = s_1 \sqcup s_2, \text{ for some } s_1 \in |\phi|, s_2 \in |\psi|\}*.$$

[6] These two conditions ensure that essentialist claims exhibit the inferential behaviour that one would pre-theoretically expect them to have. For instance, Downward Closure has the effect that its being essential to α that $\phi \wedge \psi$ entails that it is essential to α that ϕ, in the sense of 'entailment' relevant within truthmaker semantics (see p. 5 of this article).

[7] For this, a bilateral rather than unilateral account of propositions would have to be adopted, i.e. an account on which each sentence would be associated with both a set of verifiers and a set of falsifiers, rather than merely with a set of verifiers (see Fine 2017a). This modification, however, would have no bearing on the relevant features of the account and make the presentation substantially more lengthy. Since the problems I present here already arise for the negation-free case and would obviously transfer to the more complex case, there is no need for us to go into these additional complications.

$$|\phi \vee \psi| = \{s \mid s \in |\phi| \text{ or } s \in |\psi|\}*.$$

The core of Zylstra's semantics is given by the proposed verification conditions for statements of constitutive essence. These statements are taken to be of the form $\Box_\alpha \phi$, where α is a (singular or plural) name, ϕ a sentence, and $\Box.\cdot$ the essence-operator.[8] The conditions are:

If $|\phi| \notin \mathcal{M}(|\alpha|)$, $|\Box_\alpha \phi| = \emptyset$.

If $|\phi| \in \mathcal{M}(|\alpha|)$, $|\Box_\alpha \phi| = \{\bigsqcup |\phi|\}$.

That is, if $|\phi| \notin \mathcal{M}(|\alpha|)$, $\Box_\alpha \phi$ has no verifiers in the model. If, by contrast, $|\phi| \in \mathcal{M}(|\alpha|)$, then $\Box_\alpha \phi$ has exactly one verifier: $\bigsqcup |\phi|$, the fusion of all verifiers of ϕ, called the *subject-matter* of ϕ.

Zylstra adopts Fine's (2017b) truth-conditions for statements of ground. Say that a proposition P *entails* another proposition Q iff $P \subseteq Q$. Correspondingly, say that a sentence ϕ entails another sentence ψ iff $|\phi|$ entails $|\psi|$, that is, iff all verifiers of ϕ are also verifiers of ψ. Say that a proposition P or sentence ϕ is *verifiable* iff P is non-empty or iff $|\phi|$ is non-empty, respectively. Using '$<$' as a symbol for (worldly, full, strict, non-factive) grounding, we have:[9]

$M \models \phi_1, \phi_2, ... < \psi$ iff, in M:

(i) Verifiability: $\phi_1, \phi_2, ...\psi$ are verifiable.

(ii) Entailment: $\phi_1 \wedge \phi_2, ...$ entails ψ.

(iii) Containment: $\bigsqcup |\phi_1| \sqsubset \bigsqcup |\psi|$, $\bigsqcup |\phi_2| \sqsubset \bigsqcup |\psi|$,... .[10]

[8] While Zylstra allows for the embedding of any kind of sentence under the essence-operator, statements of ground should arguably be excluded from the range of embeddable sentences: Since, on the assumed account of grounding, statements of ground are not associated with verifiers, $|\chi_1, \chi_2, ... < \mu|$ and consequently also $\bigsqcup |\chi_1, \chi_2, ... < \mu|$ would be left undefined.

[9] See Fine (2012a, 2017b) on the relevant notion of grounding.

[10] Assuming Convexity, Fine (2017b) originally provides the following condition (iii)* in place of (iii), but then proves the equivalence of (ii) & (iii) and (ii) & (iii)*:

(iii)* For all ϕ_i: There are no propositions $Q_1, Q_2, ...$ such that: $|\psi| \wedge Q_1 \wedge Q_2 \wedge ....$ entails $|\phi_i|$.

Here is a proof that the equivalence also holds if Convexity is not assumed. First, note that the following holds:

(L) For all $P, Q \in \mathcal{S}$: If $\bigsqcup P \not\sqsubseteq \bigsqcup Q$, then there are no $P_1, P_2, ... \in \mathcal{S}$ such that $P \wedge P_1 \wedge P_2 \wedge ...$ entails Q.

It is straightforward to see that, on the combined semantics, Essence Grounds Prejacents fails, as Zylstra wishes to show. That is, there are no models of the semantics in which $(\Box_\alpha\phi) < \phi$ turns out to be true. If $|\phi| \notin \mathcal{M}(|\alpha|)$, Verifiability fails, since, in this case, $\Box_\alpha\phi$ has no verifiers. If $|\phi| \in \mathcal{M}(|\alpha|)$, by contrast, Containment fails: We then have that $\bigsqcup|\Box_\alpha\phi| = \bigsqcup\{\bigsqcup|\phi|\} = \bigsqcup|\phi|$. Hence, the subject matter of $\Box_\alpha\phi$ is identical to the subject matter of ϕ, rather than being a proper part of it—as would be required for grounding.

In the remainder of the paper, however, I will show that proponents of Essence Grounds Prejacents need not worry about this result: We have independent reasons to reject the proposed semantics for essence. The semantics allows us to derive results that are highly implausible, and incompatible with any common views on essence. These results suggest that the conditions that Zylstra provides for verifiers of essentialist statements are inadequate and that the semantics cannot capture essence in a convincing way.

2 The first objection

Let us start out by considering a set of plausibly satisfiable conditions on essence-making models. I will then show that, in any model M that meets these conditions, Zylstra's semantics allows us to derive implausible grounding-claims:

(C1) M contains two states $s_1, s_2 \in S$ which are not parts of one another, and

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Here is why: Let $P_1, P_2, ... \in \mathcal{S}$ and $s_1 \in P_1, s_2 \in P_2, ...$ be arbitrary. Now, we have that $\bigsqcup P \sqsubseteq \bigsqcup P \sqcup s_1 \sqcup s_2 \sqcup ....$ So, if $\bigsqcup P \not\sqsubseteq \bigsqcup Q$, also $\bigsqcup P \sqcup s_1 \sqcup s_2 \sqcup ... \not\sqsubseteq \bigsqcup Q$, and thus $\bigsqcup P \sqcup s_1 \sqcup s_2 \sqcup ... \notin Q$. At the same time, we have that $\bigsqcup P \sqcup s_1 \sqcup s_2 \sqcup ... \in P \wedge P_1 \wedge P_2 \wedge ....$ Hence, $P \wedge P_1 \wedge P_2 \wedge ...$ does not entail Q.

(iii) & (ii) → (iii)*: Suppose that $\bigsqcup|\phi_i| \sqsubset \bigsqcup|\psi|$. This implies that $\bigsqcup|\psi| \not\sqsubseteq \bigsqcup|\phi_i|$. Then, by (L), there are no $P_1, P_2, ...$ such that $|\psi| \wedge P_1 \wedge P_2 \wedge ...$ entails $|\phi_i|$.

(iii)* & (ii) → (iii): By contraposition: Suppose that $\bigsqcup|\phi_i| \not\sqsubset \bigsqcup|\psi|$. This leaves us with two options: (a), $\bigsqcup|\phi_i| \not\sqsubseteq \bigsqcup|\psi|$, or, (b), $\bigsqcup|\phi_i| = \bigsqcup|\psi|$. If (a), by (L), there are no $P_1, P_2, ...$ such that $|\phi_i| \wedge P_1 \wedge P_2 \wedge ....$ entails $|\psi|$—pace (ii). If (b), by contrast, we get that $|\psi| \wedge \{\bigsqcup|\phi_i|\}$ entails $|\phi_i|$—pace (iii)*. To see the entailment, consider some arbitrary $s \in |\psi| \wedge \{\bigsqcup|\phi_i|\}$. Then, $s = s' \sqcup \bigsqcup|\phi_i|$ for some $s' \in |\psi|$. Since $s' \in |\psi|$, $s' \sqsubseteq \bigsqcup|\psi| = \bigsqcup|\phi_i|$. And therefore, $s = s' \sqcup \bigsqcup|\phi_i| = \bigsqcup|\phi_i| \in |\phi_i|$. □

some items $\boldsymbol{a} \subseteq \mathcal{I}$. s_1 is the only verifier of ϕ_1 and s_2 the only verifier of ϕ_2. α designates $\boldsymbol{a}$.

Here is an example of a real-life case that would arguably exhibit this structure—that is, a case which, when implemented into the semantics, would yield an essence-making model that fulfils (C1): Let e be some electron. Like all electrons, e has a (rest) mass of $m := 9.10938356(11) \cdot 10^{-32}$ kg, and a charge of $c := -1.6021766208(98) \cdot 10^{-19}$C. Let's assume that it is essential to e that it has mass m and charge c. Let ϕ_1 stand for 'e has mass m' and ϕ_2 for 'e has charge c'. Now, it seems plausible that the only states that should be taken to verify ϕ_1 and ϕ_2, are the states of *e's having mass* m, and of *e's having charge* c, respectively.[11] Moreover, these two states plausibly are not parts of one another. So, arguably, the case would be one which would be represented by essence-making models that fulfil the (C1)-conditions.

Now, let us return to the general abstract case of (C1). In any model M that fulfils (C1), Zylstra's semantics would yield the following result:

(R1) $M \models \phi_1, \phi_2 < \Box_\alpha(\phi_1 \wedge \phi_2)$.

That is, Zylstra's semantics would imply that, in (C1) cases, the relevant essentialist statement with a conjunctive prejacent is fully grounded in the two conjuncts taken together.

Proof. For (R1), we need to show Verifiability, Entailment and Containment.

Verifiability: Obvious for ϕ_1 and ϕ_2. That $\Box_\alpha(\phi_1 \wedge \phi_2)$ has a verifier follows from

[11] Note that if we were to assume that ϕ_1 and ϕ_2 express fundamental truths, we would automatically get the intended result that they have one single verifier each. This is since an ungrounded proposition can never have more than one verifier. To see this, consider an arbitrary proposition P with more than one verifier. Then, P will have $\bigsqcup P$ as a verifier, plus at least one other verifier $s \sqsubset \bigsqcup P$. $\{s\}$ entails P and $\{s\}$'s subject-matter is a proper part of P's, so $\{s\}$ grounds P. The assumption that ϕ_1 and ϕ_2 express fundamental truths, however, is not needed to set up a case of form (C1), because propositions with a single verifier can still fail to be fundamental. As an example, take, e.g. a proposition $Q = \{s_1 \sqcup s_2\}$ with s_1 and s_2 non-overlapping. Clearly, Q has only one verifier and is grounded in the two propositions $\{s_1\}$ and $\{s_2\}$ taken together.

the fact that $|\phi_1 \wedge \phi_2| = \{s_1 \sqcup s_2\} \in \mathcal{M}(|\alpha|)$.

ENTAILMENT: $|\phi_1 \wedge \phi_2| = \{s_1 \sqcup s_2\}$ and $|\Box_\alpha(\phi_1 \wedge \phi_2)| = \{\bigsqcup |\phi_1 \wedge \phi_2|\} = \{\bigsqcup\{s_1 \sqcup s_2\}\} = \{s_1 \sqcup s_2\}$. So, every verifier of $\phi_1 \wedge \phi_2$ is also a verifier of $\Box_\alpha(\phi_1 \wedge \phi_2)$.

CONTAINMENT: $\bigsqcup |\phi_1| = s_1 \sqsubset (s_1 \sqcup s_2) = \bigsqcup\{s_1 \sqcup s_2\} = \bigsqcup |\Box_\alpha(\phi_1 \wedge \phi_2)|$. For the proper parthood between s_1 and $s_1 \sqcup s_2$, recall that it was stipulated that s_1 and s_2 are not parts of one another. It follows that, since $s_1 \sqcup s_2$ has s_2 as a part while s_1 does not, $s_1 \sqcup s_2$ and s_1 cannot be identical. The case of $\bigsqcup |\phi_2| \sqsubset \bigsqcup |\Box_\alpha(\phi_1 \wedge \phi_2)|$ is entirely analogous. □

(R1), however, is obviously a result that we do not want our semantics to yield. Returning to our example of the electron, the mere two facts that electron e has mass m and that e has charge c taken together should not already provide us with a full ground of e's having essentially mass m and charge c. While these two facts taken together do provide us with a metaphysical explanation for the fact that e has mass m and e has charge c, they do not explain that e has this mass and charge *essentially*. The essentialist truth is something that goes beyond the mere material truth. And thus, it asks for a different pattern of explanation. Plausibly, it requires either that different or at least further material be present in the explanans, or, alternatively, that the essentialist claim be considered a fundamental truth that demands for no metaphysical explanation in the first place. By ruling out both of these options in the case at hand, Zylstra's semantics turns out to be incompatible with all common accounts that have been proposed in the literature of essence thus far, be they primitive or reductive. For no account in the literature proposes that essentialist statements could be simply fully grounded in the grounds for their prejacents, and only few accounts would take them to be even partial grounds. Rather, commonly, reductive accounts take the grounds of essentialist statements to include (the grounds for) its *necessitated* prejacent, plus further conditions such as naturalness or intrinsicality.[12]

[12] For reductive accounts, see, e.g. Cowling (2013), Denby (2014) and Wildman (2013). Depending on one's views on reductions, one may want to distinguish between accounts that are reductive in the strict sense—that is, provide us with a reductive analysis/real definition of essentialist statements—and accounts that merely state the grounds for essentialist statements. Arguably, however, reductive analysis/real definition requires (at least conceptual) grounding (cf. Rosen 2010, 2015; Fine 2015; Correia 2017).

(R1) thus suggests that Zylstra's semantics cannot correctly capture the considered case—and, more generally, all cases that fulfil (C1)—and hence cannot provide a convincing account of essence.

3 The second objection

One way of seeing the objection that I have presented in the last section is this: Zylstra's semantics provides conditions on verifiers of essentialist statements that are, in a sense, too easily satisfiable. States verify essentialist statements thus too easily, allowing us to infer unacceptable claims about the grounds of certain essentialist statements. The objection that I wish to present in this section might be seen as showing that the verification- conditions proposed by Zylstra are in another respect too strong. This leads to implausible entailments from essentialist statements to other statements and ultimately allows us to derive further unacceptable results.

More precisely, the problem is this: Zylstra's semantics has it that whatever verifies an essentialist statement with an embedded disjunction also verifies the corresponding conjunction. That is, in every model M:

(R2) $\Box_\alpha(\phi \vee \psi)$ entails $\phi \wedge \psi$.

Proof. We show that $\bigsqcup|\phi \vee \psi| = \bigsqcup|\phi| \sqcup \bigsqcup|\psi|$. (R2) then directly follows: On Zylstra's semantics, the only potential verifier of $\Box_\alpha(\phi \vee \psi)$ is $\bigsqcup|\phi \vee \psi|$. Moreover, due to Closure Under Fusion, $\bigsqcup|\phi|$ verifies ϕ, and $\bigsqcup|\psi|$ verifies ψ. Hence, $\bigsqcup|\phi| \sqcup \bigsqcup|\psi| = \bigsqcup|\phi \vee \psi|$ verifies $\phi \wedge \psi$.

Note first that, for every $T \subseteq S$, $T^c_f = \{s \mid s' \sqsubseteq s \sqsubseteq \bigsqcup T \text{ for some } s' \in T\} =: U$. It is evident that U contains all elements of T, is convex and closed under fusion. To see that it is also minimal in this respect, let $\hat{T}$ be some arbitrary set that (i) contains all elements of T, is (ii) convex and (iii) closed under fusion. Due to (i) and (iii), $\hat{T}$ contains $\bigsqcup T$. And due to this, (i) and (ii), $\hat{T}$ must contain any state that lies between some element of T and $\bigsqcup T$, i.e., all elements of U.

We thus have that, for every $T \subseteq S$ and $s \in T_f^c$, $s \sqsubseteq \bigsqcup T$. And since $\bigsqcup T_f^c$ is part of every state that has all elements of T_f^c as parts, we get that $\bigsqcup T_f^c \sqsubseteq \bigsqcup T$. Moreover, clearly, $\bigsqcup T \sqsubseteq \bigsqcup T_f \sqsubseteq \bigsqcup T_f^c$. Thus $\bigsqcup T_f^c = \bigsqcup T_f = \bigsqcup T$. Hence, $\bigsqcup |\phi \vee \psi| = \bigsqcup \{s \mid s \in |\phi| \text{ or } s \in |\psi|\}* = \bigsqcup \{s \mid s \in |\phi| \text{ or } s \in |\psi|\}$.

What remains to be seen is that $\bigsqcup |\phi| \sqcup \bigsqcup |\psi|$ is the fusion, i.e., the least upper bound of $\{s \mid s \in |\phi| \text{ or } s \in |\psi|\} =: V$. That is, (a), that every element of V is part of $\bigsqcup |\phi| \sqcup \bigsqcup |\psi|$, and, (b), that $\bigsqcup |\phi| \sqcup \bigsqcup |\psi|$ is part of every state that has all elements of V as parts.

(a) Let $s \in V$. If $s \in |\phi|$, then $s \sqsubseteq \bigsqcup |\phi| \sqsubseteq \bigsqcup |\phi| \sqcup \bigsqcup |\psi|$. If $s \in |\psi|$, then $s \sqsubseteq \bigsqcup |\psi| \sqsubseteq \bigsqcup |\phi| \sqcup \bigsqcup |\psi|$.

(b) $\bigsqcup |\phi| \in |\phi|$, and hence $\bigsqcup |\phi| \in V$. Analogously, $\bigsqcup |\psi| \in V$. $\bigsqcup |\phi|$ and $\bigsqcup |\psi|$ are thus parts of every state that has all elements of V as parts. And since $\bigsqcup |\phi| \sqcup \bigsqcup |\psi|$ is part of every state that has $\bigsqcup |\phi|$ and $\bigsqcup |\psi|$ as parts, (b) follows via the transitivity of parthood. □

But (R2)—that $\Box_\alpha(\phi \vee \psi)$ entails $\phi \wedge \psi$ in every model—is clearly a problematic result. Intuitively, given that the embedded sentence is *disjunctive*, a state that renders $\Box_\alpha(\phi \vee \psi)$ true should not thereby automatically render the *conjunction* $\phi \wedge \psi$ true. It should be possible for a state to verify a sentence of the former kind without verifying a sentence of the latter kind. To see this more clearly, let us again consider concrete cases. Zylstra himself provides an example of an essentialist statement with a disjunctive prejacent: It might be essential to the event of the 90th Academy Awards that Frances McDormand either won the best actress for Three Billboards or lost. Or, to borrow a different example from Glazier (2017), it might be essential to some binary Boolean variable in a computer program that it takes either value 0 or takes value 1. Clearly, both examples provide cases of disjunctive essence in which only one of the two disjuncts is actually the case. In fact, McDormand only won and did not also lose the prize. And, plausibly, our Boolean variable can have only either value 0 or value 1 at any given time, but not both of them. Schematically, we are thus confronted with cases in which we have that:

(C2) $\Box_\alpha(\phi \vee \psi)$ is true and $\phi \wedge \psi$ is false.

And thus, Zylstra's semantics is intuitively in tension with the two example cases: A state that verifies the *true* essentialist claims in these cases should not automatically also verify the *false* corresponding conjunctive claims. But (R2) would demand precisely that.

To show that Zylstra's semantics is strictly incompatible with the two cases, however, a little bit more has to be said. For what would be needed for this would not be our previous result (R2), but, rather, the slightly different result that in every model M:

(R2*) If $\Box_\alpha(\phi \vee \psi)$ is true, so is $\phi \wedge \psi$.

The combination of Zylstra's and Fine's semantics provides us exclusively with truth-conditions for statements of ground. For the relevant sentences $\Box_\alpha(\phi \vee \psi)$ and $\phi \wedge \psi$, by contrast, we are merely provided with verification-conditions. Thus, as yet, (R2*) does not even enter the picture. It is straightforward to see, however, that we would get (R2*) as soon as we were to devise truth-conditions for the relevant sentences in the standard way, based on the assumed verification-conditions for these sentences. For this aim, we would have to include a distinguished set of *obtaining* states in every model, and let a sentence be true in a model iff the model contains an obtaining verifier of the sentence.[13] And, clearly, since (R2) dictates that every verifier of $\Box_\alpha(\phi \vee \psi)$ is also a verifier of $\phi \wedge \psi$, a model could not include an obtaining verifier of the former claim without also including one of the latter claim. That is, (R2*) would follow from (R2). Hence, on the natural way of construing truth-conditions out of verification-conditions, Zylstra's semantics turns out to be strictly incompatible with any cases with the same structure as those of the 90th Academy Awards and the Boolean variable—cases that seem perfectly coherent, and that are acknowledged by Zylstra himself.[14]

[13] See Correia (2010) for an account to this effect. Note that we clearly could not adopt the simpler truth-conditions that a sentence is true in a model iff the model contains a verifier of the sentence. Our models have to include non-obtaining and even inconsistent states in order for them to yield the correct verdicts for grounding-statements. And, clearly, the existence of an inconsistent state that verifies a statement should not guarantee the truth of the statement.

[14] One might wonder whether it would be a theoretical option for Zylstra to bite the bullet and maintain that these standard truth-conditions simply could not be added to his framework. In particular, one might wonder about the following alternative condition in the case of essentialist

4 Conclusion

Taking stock, Zylstra's semantics allows us to derive untenable results: As we have seen in Section 2, the semantics implies that, in certain classes of models, conjunctive essentialist statements are fully grounded in the two conjuncts taken together. Thus, we might, for example, get the result that the two facts that some electron has mass m and that it has charge c taken together provide us with a full ground of its having essentially mass m and charge c. And as we have seen in Section 3, essentialist statements with a disjunctive prejacent entail the conjunction of the disjuncts. Under the standard way of construing truth-conditions out of verification- conditions, this renders it impossible that some disjunctive essentialist statement could ever be true and yet one of the disjuncts be false, thereby ruling out cases such as that of the 90th Academy Awards and the Boolean variable.

The obvious question to ask at this point is this: Are there any ways of modifying the specific way in which things are set up in Zylstra's semantics, while still preserving its core underlying idea—viz., the combination of the essence-making function with independent verification-conditions for the essentialist claims? What might naturally come to mind would be to identify the verifiers of $\Box_\alpha\phi$ simply with those of ϕ if $|\phi| \in \mathcal{M}(|\alpha|)$. However, clearly, such a modification would not help us with the first

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statements: $M \models \Box_\alpha\phi$ iff $|\phi| \in \mathcal{M}(|\alpha|)$. However, separating the truth-conditions of essentialist statements in this way from their verification-conditions is in tension with the guiding idea of truthmaker semantics. Moreover, it is also possible to derive implausible results from (R2) without relying on the addition of further truth-conditions (although in a slightly less direct way), and rejecting this addition would thus not suffice to eliminate the problem. We have the following as a consequence of (R2) in every model M:

> (R2**) For any verifiable ϕ, ψ, μ with $\bigsqcup|\mu| \not\sqsubseteq \bigsqcup|\phi \vee \psi|$: If $|\phi \vee \psi| \in \mathcal{M}(|\alpha|)$, then $M \models (\Box_\alpha(\phi \vee \psi)) < ((\phi \wedge \psi) \vee \mu)$.

Proof. Verifiability is clear, and Entailment a direct consequence of (R2). Containment: Entailment gives us that $\bigsqcup|\Box_\alpha(\phi\vee\psi)| \sqsubseteq \bigsqcup|(\phi\wedge\psi)\vee\mu|$. Moreover, we have that $\bigsqcup|(\phi\wedge\psi)\vee\mu| = \bigsqcup|\phi \wedge \psi| \sqcup \bigsqcup|\mu|$ (cf. the proof for (R2)), and hence that $\bigsqcup|\mu| \sqsubseteq \bigsqcup|(\phi \wedge \psi) \vee \mu|$. Since $\bigsqcup|\mu| \not\sqsubseteq \bigsqcup|\phi \vee \psi| = \bigsqcup|\Box_\alpha(\phi \vee \psi)|$, it follows that $\bigsqcup|\Box_\alpha(\phi \vee \psi)| \neq \bigsqcup|(\phi \wedge \psi) \vee \mu|$. □

(R2**) would e.g. yield the result that it's being essential to the Boolean variable that it has value 0 or has value 1 fully grounds the following: The variable has value 0 and the variable has value 1, or snow is purple. And this is obviously an untenable result. The essentialist truth is not enough to guarantee the truth of the conjunction, and it is entirely irrelevant for the added disjunct.

objection as discussed in Section 2 and, in fact, make matters even worse: On the proposed modification, we would get that, for any model in which $|\phi| \in \mathcal{M}(|\alpha|)$, whatever grounds ϕ also grounds $\Box_\alpha\phi$. So this modification looks like a clear non-starter. And it is hard to see how else one could modify the condition so as to circumvent the problems raised. For instance, taking the verifiers of $\Box_\alpha\phi$ to be all states that are parts of the subject-matter of ϕ would obviously not allow us to solve the first problem and, rather, give rise to results that are even worse than those of the accounts previously discussed. For, then, even more states would count as verifiers of $\Box_\alpha\phi$, and so it would be even easier to find counterexamples.

Thus, neither the semantics originally proposed by Zylstra, nor the modifications that would naturally come to mind can provide us with a convincing account of essence. While I cannot prove that there are no other options at Zylstra's disposal, I think that we have strong reasons to be sceptical. This suggests that the source of the difficulties goes deeper than the specific details of Zylstra's account: The very strategy of pairing an essence-making function with independent verification-conditions for essentialist statements looks unpromising, and it seems that we have to look elsewhere for a truthmaker semantics for essence.

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4

Ground by Status and the Logic of Ground

What is the explanatory role of 'status-truths' such as essence-truths, necessity-truths and law-truths? One principle that naturally comes to mind and has been suggested by various authors in the literature is a principle which I shall label 'Ground by Status'. According to Ground by Status, status truths ground their prejacents, and, if the prejacents are general truths, instances of them. Martin Glazier (2017, 2021) and Yannic Kappes (2021, forthcoming) have recently argued, however, that Ground by Status conflicts with intuitively compelling and widely accepted principles regarding the logic of ground, and should thus be rejected. The aim of this paper is to show that their argument is wanting as it stands and to suggest an enhanced argument that overcomes the shortcomings of the original one.

Consider the following statements:

> It is essential to singleton Socrates that it have Socrates as a member.
>
> By metaphysical necessity, there is a first moment in time.
>
> It is a law of metaphysics that any two objects compose another object.

These statements can be seen as ascribing a certain 'robust', not merely accidental, status to their embedded claims, their prejacents: the status of pertaining to the essence of some entity, holding with metaphysical necessity, or being a metaphysical law, respectively.[1] Let us, following Yannic Kappes (forthcoming), call the truths ex-

[1]Here and in what follows, the expressions 'necessarily', 'necessity' etc. are reserved for the case

pressed by true such statements 'status truths'. Apart from the cases mentioned, the category of status truths also includes truths regarding logical and natural necessity, as well as logical and natural laws.

Status truths are factive: In all cases in which a status truth holds, so does its prejacent. But more than that: many philosophers have been drawn to the idea that status truths do not merely correlate with the truth of their prejacents, but *explain* them.[2] And indeed, our explanatory practises seem to accord with this idea. If asked 'Why is it that singleton Socrates contains Socrates?', one natural response seems to be: 'That is just what singleton Socrates *is*—it has Socrates as a member by its very essence'. When confronted with the question 'Why is there a first moment in time?' some philosophers may feel tempted to reply 'Well, it just could not have been otherwise, there simply *has to be* a first moment in time'. And a metaphysician who countenances universal composition as a law of metaphysics may want to answer 'because it is a law of metaphysics that any objects do so' when called upon to explain how it comes that her laptop and mug compose another object. Assuming that status truths explain their prejacents, a natural next step would then be to understand these explanations in terms of ground. After all, the relevant explanations seem to be distinctively metaphysical in character, and grounding-explanations are commonly taken to be paradigmatic cases of metaphysical explanations and are sometimes even equated with metaphysical explanations *tout court*. Putting these considerations together, we arrive at a thesis that I shall label Ground by Status. According to this thesis, status truths ground their prejacents and if the prejacents are universally quantified (such as in the case of the law of universal composition), also instances of their prejacents.

Ground by Status looks like the natural default theory of the explanatory role of status truths. The principle offers a straightforward, simple and uniform account of the connection between status truths and their prejacents. The account does not de-

of metaphysical necessity, unless mentioned otherwise.

[2]For the case of necessity, this claim traces back to Leibniz (1714) and has been defended by e.g. Block and Stalnaker 1999, Biggs 2011, Hill and McLaughlin 1999, Rundle 2004 and van Inwagen and Lowe 1996. For the case of essence and law-truths, its advocates include Dasgupta 2014, Glazier 2017, Kment 2014, Lange 2009, and Rosen 2010. This list is mainly drawn from Kappes forthcoming.

mand the introduction of any novel resources, but makes do with the well researched notion of ground. In the recent literature, however, Martin Glazier and Yannic Kappes have made a forceful case that Ground by Status has to be rejected for all kinds of status-truths: for essence-truths (Glazier 2017), necessity-truths (Glazier 2021, Kappes 2021), and law-truths (Kappes 2021, Kappes forthcoming). Glazier and Kappes present various considerations that tell against this principle, such as examples of cases that seem to conflict with the principle, considerations from explanatory relevance, and considerations regarding the viciousness of infinite descent of ground. One argument that is at the very core of both Glazier's and Kappes' case against Ground by Status, however, is an objection that I shall label 'the argument from the logic of ground', or, for short, 'the LG-argument' in what follows. The gist of this objection is that, granting the existence of certain plausible candidates for essence-truths, Ground by Status violates an intuitively plausible and widely held view on ground: the view that the grounding of disjunctions has to be 'mediated via' the disjuncts, in a sense to be specified later on.[3] Granting that status truths metaphysically explain their prejacents in one way or another, the ultimate upshot of these considerations thus is a form of explanatory pluralism: ground is but one kind of metaphysical explanation among others. The LG-argument thus has implication that go far beyond the case of status truths. If successful, it supports the rejection of the simple and unified picture on which all metaphysical explanation is grounding-explanation and demonstrates the need for further research on other kinds of metaphysical explanation and their relationship to ground.[4]

The aim of this paper is to put the tenability of Ground by Status under closer scrutiny. I shall argue that our currently best theories of ground indeed give us

[3]Glazier (2017) also develops a parallel argument for the case of existential generalizations. See also Zylstra 2019 for an argument against Ground by Status, based on the introduction of a novel truthmaker-semantics for essence, and see the third thesis chapter for a response to Zylstra.

[4]This is, of course, not to say that considerations in connection with Ground by Status are the only reasons that may tell in favor of a pluralistic take on metaphysical explanation. Thus, for instance, Michael Bertrand (2019) has recently argued that we should countenance a form of metaphysical explanation distinct from grounding-explanation that he calls *metaphysical explanation by constraint*. Karen Bennett (2017) contends that the grounding-relation is just one instance of the broader category of what she calls *building relations*. Assuming that also other building relations can underly metaphysical explanations, this view implies that there are metaphysical explanations distinct from grounding-explanations.

reasons to be sceptical about Ground by Status, but ones that are more complex than the ones presented by Glazier and Kappes. I start out by presenting the LG-argument in more detail (§1). I then show that the principle regarding the grounds of disjunctions that the LG-argument rests upon is only tenable if a so-called representational conception of ground is assumed, but is incompatible with a so-called worldly conception of ground. Since there are no good reasons to construe Ground by Status in terms of representational rather than worldly ground, the argument fails to make a convincing case against Ground by Status on its own. In order for the argument to succeed, an additional case would need to be made that also worldly accounts of ground conflict with Ground by Status (§2). In the remainder of the paper, I shall then present such a case. It rests on considerations regarding the semantics as opposed to the logic of ground. I shall argue that if we draw on extant proposals for the semantics of worldly ground, we can derive a principle regarding the grounds of disjunctions which provides a basis for a novel argument against Ground by Status for the case of worldly ground (§3 and appendix).

1 The Argument from the Logic of Ground

Let me start out with some clarifications about the notion of ground. In order to remain neutral with regard to the question of whether ground is to be understood as a relation between entities, I will take grounding claims to be officially regimented in terms of a sentential operator '$<$' in what follows. Here, '$A < B$' may be approximated by formulations such as 'it's being the case that A makes it the case that B' or 'B because A' in natural language. Despite officially using the operationalist framework, I shall often nevertheless speak as if grounding was a relation between truths to facilitate formulations in natural language. I presume a factive understanding of ground, i.e., one on which for '$A < B$' to be true, both A and B have to be true. Moreover, I shall use the word 'ground' in the sense of 'full ground'.

As indicated in the introduction, the goal of the LG-argument is to show that Ground by Status is in conflict with an intuitively compelling and widely endorsed principle about the grounds of disjunctions and should thus be rejected: the

principle that any ground for a disjunction has to be 'mediated through' the disjuncts. Here is how Glazier motivates and further develops this principle (p. 5f.):

> 'Suppose we have a disjunctive fact $A_1 \vee A_2$. When will an arbitrary fact ground this disjunction? An immediate first thought is that a fact can ground a disjunction only if it is a true disjunct of the disjunction. But this condition cannot be right. For a disjunction $A_1 \vee A_2$ can be grounded not just in its true disjuncts but in the grounds of those disjuncts, and such grounds will not in general themselves be disjuncts of $A_1 \vee A_2$. All the same, we naturally think that the grounds of a disjunction will bear *some* connection to its true disjuncts. The grounding of a disjunction, we want to say, must 'proceed by way of' or be 'mediated through' its true disjuncts. In Fine's (2012a, 63) phrase, the true disjuncts are the conduit through which truth to the disjunction should flow.'

These considerations would suggest that the only grounds for a disjunction $A_1 \vee A_2$ are its disjuncts, as well as truths that ground one of the disjuncts.[5] As Glazier goes on to argue, however, one may want to understand the idea that the grounding has to be mediated via the disjuncts in a slightly more permissive way and further loosen the principle in two ways. First, one might think that also truths that ground the conjunction of the disjuncts, while not grounding any one of the disjuncts, should still count as grounds for the disjunction. Secondly, following Kit Fine (2012a,b), one might think that a disjunction can also be grounded in truths which stand neither in a relationship of identity nor of ground to one of the disjuncts or the conjunction, but something which, to put it crudely, also encompasses cases 'in between' the two. The thought here is that there might be cases in which one truth is distinct, but yet so closely connected to another truth that the former truth can, so to speak, do all the grounding work of the latter truth: whatever the latter truth can ground, the former can too. Let us say that in these cases, the former truth 'subsumes the grounding-role' of the latter truth. That is, A subsumes the grounding-role of B iff, for any $C_1, C_2, ...$ and D, if $B, C_1, C_2, ...$ ground D, then

[5] Kappes employs this principle in his argument, rather than the more liberal principle employed by Glazier (see below). I focus on Glazier's principle, but given that Kappes' principle implies it, everything what will be said against Glazier's principle in what follows applies to Kappes' principle as well.

$A, C_1, C_2, ...$ ground D. Thus, for instance, one might think that the truth that the cat is on the mat is so closely related to the truth that the mat is under the cat that the former can ground whatever the latter can ground and thus subsumes its grounding-role. Note that any truth automatically subsumes the grounding-role of itself and that, given the transitivity of ground, any truth that grounds another truth also subsumes the grounding-role of this truth. Now, if there can indeed be cases of grounding-role subsumption that are distinct from both identity and ground, they should be accommodated, by replacing 'grounds or is identical to' with 'subsumes the grounding-role' in the principle regarding the grounds of disjunctions. If there are no such cases, the modification is harmless, since then the principle phrased in terms of grounding-role subsumption will simply collapse into the original one phrased in terms of identity and ground. Incorporating these two modifications, we thus arrive at the following principle:[6]

> DISJUNCTIONS: If B grounds $A_1 \vee A_2$ then either (a) A_1 is true and B subsumes the grounding-role of A_1, or (b) A_2 is true and B subsumes the grounding-role of A_2, or (c) $A_1 \& A_2$ is true and B subsumes the grounding-role of $A_1 \& A_2$.

As Glazier notes, DISJUNCTIONS is incorporated in Fine's (2012a,b) influential logic for ground. And indeed, various other logics of ground that have been suggested later on incorporate principles that imply DISJUNCTIONS too (see Correia 2017a, Correia 2018, Krämer 2018 and Krämer 2019).[7] Prima facie, there are thus strong

[6] Strictly speaking, we first arrive at the principle: DISJUNCTIONS*: If B grounds $A_1 \vee A_2$ then B subsumes the grounding role of a disjunct of $A_1 \vee A_2$ or a conjunction of disjuncts of $A_1 \vee A_2$. DISJUNCTIONS follows from this if we adopt the common understanding of disjuncts, on which the only disjuncts of $A_1 \vee A_2$ are A_1 and A_2. See, however, 22 for a discussion of an construal of DISJUNCTIONS* on an alternative understanding of disjunctions.

[7] Ignoring complications due to factive vs. non-factive notions of ground: some but not all of these systems allow for (c) as an option. In all these systems, the elimination rules are stated in terms of the notion of a *weak ground*. While the notion of weak ground is understood in somewhat different ways in the systems, in all of them, weak ground implies grounding-role subsumption. Thus, in Fine's and Krämer's systems, the following conditional holds as a matter of definition: (C1) If A grounds B, then (a) A weakly grounds B and (b) there are no $C_1, C_2, ...$ such that $B, C_1, C_2, ...$ ground A. And it can be shown that, by Reflexivity and Cut (principles that weak ground obeys in their systems), this implies that, if A weakly grounds B, A subsumes the grounding-role of B. In Correia 2018, both ground and weak ground are analyzed in terms of modality and relative fundamentality in such a way that (C1) follows in a straightforward way. Finally, in Correia 2017a, we have: (C2) A weakly grounds B iff A

reasons to adopt Disjunctions: it is suggested by intuitive considerations when trying to precisify the idea that the grounds for disjunctions have to be mediated via their disjuncts, and it is backed up by its incorporation into these broader formal theories.

Disjunctions conflicts with Ground by Status, however, given the existence of certain status truths which have a *disjunction* as their prejacents. In the case of essence, Glazier and Kappes offer the example of the essence of a specific Boolean variable `foo` in a computer program. `foo` has essentially value 0 or value 1. But it has neither one of these values essentially—if the data input in the program differed, `foo` could have a different value than it actually has, and `foo` changes it value over the course of time as the program executes, or so we may assume. To fix ideas, let us assume that `foo` actually has value 1. But combining Disjunctions and Ground by Essence (the restriction of Ground by Status to the case of essence), a conflict arises in the aforementioned case of the Boolean variable `foo`. Letting '$\Box_e$' stand for 'it is essential to e that', we have:

(E) $\Box_{\texttt{foo}}$ (`foo` has value 0 or `foo` has value 1).

By Ground by Essence, (E) grounds:

(D) `foo` has value 0 or `foo` has value 1.

Disjunctions in turn dictates that (E) subsumes the grounding-role of the true disjunct, viz., of:

(D1) `foo` has value 1.

But this cannot be the case. For (D1) grounds, among others, contingent truths, such as plausibly the following one:

(D1') `foo` has value 1 or Biden is US president in 2022.

If (E) were to subsume the grounding-role of (D1), it would thus have to ground (D1') as well. Given that grounds necessitate what they ground, however, whatever is grounded in a necessary truth will be itself necessary.[8] And in consequence, necessary

grounds B or A and B are propositionally equivalent. Given that propositional-equivalence implies substitutability salva veritate in all ground-theoretical contexts in the system, (C2) also directly implies Disjunctions.

[8]Grounding necessitarianism is the common view in the debate on ground, but see Baron-Schmitt

truths such as (E) can never ground contingent truths such as (D1'). In other possible worlds in which `foo` has value 0 and someone else is US president in 2022, (E) still obtains, but (D1') does not—which would, if (E) were to ground (D1') violate grounding necessitarianism.[9]

Abstracting away from the specific example case of `foo`, we can see the more general pattern of the argument:

> (P1) Disjunctions.
> (P2) There are cases of essence-truths with a disjunctive prejacent, such that none of the disjuncts is necessarily true.
> (P3) Essence-truths are necessarily true, and grounds necessitate what they ground.
> (Conclusion) Ground by Essence is false.

The argument directly generalizes from the case of Ground by Essence to other cases of Ground by Status, provided that two conditions are met: First, the relevant status-truths are metaphysically necessary. And, second, there are status-truths of the right form, i.e., with a (universally quantified) disjunctive prejacent such that every actually true (instance of a) disjunct is contingent. Arguably, the first condition is fulfilled for the cases of metaphysical and logical necessity, as well as for the laws of metaphysics and logics. On most accounts of natural necessity and

2021, Leuenberger 2014 and Skiles 2015 for a critique of the view. Note, however, that even in the absence of grounding-necessitarianism, it would be highly implausible to claim that the essentialist-truth should be able to ground (D1'). For foes of grounding-necessitarianism can still agree that grounds necessitate what they ground *given that certain background conditions* hold. For instance, foes of grounding-necessitarianism may want to hold that a given universal generalization is fully grounded in all of its instances and that, while these instances do not necessitate the universal generalization, they still necessitate it *relative to the background condition that they are all the instances.* And there simply is no plausible background condition relative to which the essentialist truth would necessitate (D1'). So while incorporating the assumption of grounding-necessitarianism allows for a more smooth and clear-cut argument, the success of the argument does not ultimately hinge on it. The same will hold in all the other cases where grounding-necessitarianism will be employed in what follows.

[9] As noted in footnote 5, Kappes invokes a stronger principle in place of Disjunctions, which has it that the only grounds of disjunctions are the disjuncts and grounds of the disjuncts. And thus, his argument is much more straightforward than Glazier's at this point: instead of going through the reasoning explained in the main text, he simply relies on the plausible assumption that (E) is neither identical to nor grounds one of the disjuncts, which suffices to create a conflict.

the laws of nature, by contrast, it fails. For commonly, natural necessity is taken to be a weaker form of necessity than metaphysical necessity, and the laws of nature are taken to be merely naturally but not metaphysically necessary.[10] However, an amended version of the argument is still available in this case which simply replaces metaphysical necessity with natural necessity. For on the common view that everything that is metaphysically necessary is also naturally necessary, grounds also naturally necessitate what they ground. And thus, we obtain the relevant modified version of (P3).[11] Turning to the second condition, in the case of the laws of logic, we have the law of excluded middle, according to which, for any p, $p \vee \neg p$. This law and its instances yield also examples in the cases of metaphysical and logical necessities. Moreover, provided that essence implies necessity, the example of `foo` provides us with an additional example in the case of metaphysical necessity. The case of the laws of nature and metaphysics, as well as in the case of the natural necessities, by contrast, are trickier. When discussing the case, Kappes does not provide examples, and I do not have convincing examples to offer either. So I will have to leave the question of whether the argument generalizes to this case conditional on the existence of relevant examples.[12]

In the following section, my aim will be to challenge the LG-argument against Ground by Status. My objection will neither touch upon the existence of relevant example cases, which I find myself plausible, nor on the modal principles employed

[10] An exception are some (albeit not all) dispositional essentialist accounts of the natural laws, according to which the natural laws do hold with metaphysical necessity (see e.g. Bird 2007).

[11] Note, however, that for the amended argument, the demand set by (P2) becomes slightly stronger, since the relevant disjunctive status truths then need to be such that all of the actually true (instances of the) disjunctions have to be naturally rather than merely metaphysically contingent.

[12] Here is a more abstract consideration that might tell in favor of the existence of disjunctive laws of nature with contingently true disjunct, though: One may think that some, or even all laws of nature are of the form of a universally quantified conditional, where the antecedent 'picks out' the relevant systems/entities and the consequent then 'says' what holds for these systems/entities (see e.g. Friend 2016 for a defense of this idea). Assuming that conditionals can be replaced with the disjunction of the negated antecedent and the consequent within the scope of the 'it is a law of nature that'- operator, this would give us laws of nature of the right form. And under the additional and very plausible assumption that the laws of nature are naturally necessary, we would also be provided with examples for the case of natural necessity. Note also that the 'substitutability of conditionals'-assumption might give rise to further examples of disjunctive essence-truths, namely if (some or all) prejacents of essence-truths were to make claims conditional on the existence of the relevant entity, such as: it is essential to Socrates that he be human *if he exists*.

in the argument, which I am happy to grant.[13] Instead, my only target in what follows will be the principle Disjunctions. For while, at first glance, this principle enjoys a high degree of intuitive appeal and theoretical support, at second glance, proponents of Ground by Status can resist it.

2 Against the Argument from the Logic of Ground

In a nutshell, the argument to be developed in this section will be this. On closer examination, the principle of Disjunctions turns out to be incompatible with a natural and popular conception on ground, according to which ground is a *worldly* phenomenon. Disjunctions is only compatible with the alternative so-called *representational* conception of ground. But there are no good reasons to think that proponents of Ground by Status should conceive of ground along representational rather than worldly lines, and thus the LG-argument fails to make a convincing case against Ground by Status.

The argument will proceed in a number of steps. To start, consider the following grounding claim (assuming that Emma, Chris and Mary are independent emerald, crimson and maroon objects, respectively):

> (G) Emma is emerald or Chris is crimson $<$ Emma is emerald or (Chris is crimson or Mary is maroon).

This grounding claim is incompatible with Disjunctions. For, according to Disjunctions, (G) could only be true if the putative ground, viz.,

> (2) Emma is emerald or Chris is crimson,

were to subsume the grounding-role of one the groundee's disjuncts or their conjunction, viz., one of:

> (3) Emma is emerald.
> (4) Chris is crimson or Mary is maroon.

[13] And, as we have seen in footnote 8, the argument could still be run without the assumption of grounding-necessitarianism.

(5) Emma is emerald and (Chris is crimson or Mary is maroon).

And this cannot be the case. For (3), (4) and (5) all ground truths that (2) does not ground, such as, plausibly:

(3') Emma is emerald or Biden is US-president in 2022.
(4') (Chris is crimson or Mary is maroon) or Biden is US-president in 2022.
(5') (Emma is emerald and (Chris is crimson or Mary is maroon)) or Biden is US-president in 2022.

That (2) should ground (3') or (4') can be ruled out since grounds have to be fully relevant for what they ground. Since (2) is in part about the color of Chris—which has no bearing on the color of Emma or Biden's presidency—it is not fully relevant for (3'). And likewise, since (2) is in part about the color of Emma—which has no bearing on the color of Chris or Mary, or Biden's presidency—it is not fully relevant for (4'). In order to rule out that (2) should ground (5'), we can draw again on the consideration that grounds necessitate what they ground. For, clearly, (2) fails to necessitate (5'). In possible worlds in which Emma is still emerald, but Chris is, say, canary yellow, and the US-president in 2022 is, say, Bernie Sanders, (2) will still be true, but (5') will not. All in all, (G) is incompatible with Disjunctions.

But now, consider the following plausible grounding claim which is in perfect harmony with Disjunctions:

(G*) Emma is emerald or Chris is crimson $<$ (Emma is emerald or Chris is crimson) or Mary is maroon.

The only difference between (G*) and (G) consists in the way in which the sentence-atoms are arranged in terms of brackets. Starting from the groundee in the case of (G*) we can arrive at the one in (G) simply by moving the brackets. Granting the truth of (G*), Disjunctions thus implies that this operation fails to preserve ground-theoretic status. That is, Disjunctions conflicts with the following principle (where 'GE' stands for 'ground-theoretical equivalence'):

GE-Associativity: For any A, B and C: $(A \vee B) \vee C$ and $A \vee (B \vee C)$

are ground-theoretically equivalent.[14]

Hence, if we wish to uphold Disjunctions, GE-Associativity has to go.

Abandoning GE-Associativity has, however, severe consequences for the way in which one may conceive of ground. For there are strong reasons to think that, for it to be the case that $(A \vee B) \vee C$ *just is* for it to be the case that $A \vee (B \vee C)$. That is, the difference between any sentence of the form $(A \vee B) \vee C$ and the corresponding sentence of the form $A \vee (B \vee C)$ is plausibly a purely representational one. While the two sentences differ with regard to their syntactical form, they still express the same 'chunk of reality out there': they represent reality as being the very same way, only under different representational guises. In the recent literature, there has been a surge of interest in the 'just is'-idiom, and various accounts of it have been proposed (see e.g. Correia 2010, Correia 2016, Dorr 2016, Elgin forthcoming, Linnebo 2014, and Rayo 2013). And while there is indeed substantial disagreement regarding the logic governing this idiom, all of the extant accounts have it that for it to be the case that $(A \vee B) \vee C$ just is for it to be the case that $A \vee (B \vee C)$. Let us say that two sentences A and B are 'worldly equivalent' if for A to be the case just is for B to be the case in this sense.[15] Then, the claim can be expressed as follows (where 'WE' stands for 'worldly equivalence'):

> WE-Associativity: For any A, B and C: $(A \vee B) \vee C$ and $A \vee (B \vee C)$ are worldly equivalent.

Provided that WE-Associativity holds, however, it directly follows that, in order to reject GE-Associativity, one has to maintain that worldly equivalent truths can still come apart with regard to their ground-theoretic roles. That is, one has to reject:

> Worldliness of Ground: Worldly equivalence implies ground-theoretical

[14] Here is a more rigorous definition of ground-theoretical equivalence, using '$\approx$' as a symbol for it: $A \approx B$ iff (a) for any $C_1, C_2, ..$: $C_1, C_2, ... < A$ iff $C_1, C_2, ... < B$, and, (b) for any $C_1, C_2, ...$ and $D : A, C_1, C_2, .., < D$ iff $B, C_1, C_2, ... < D$.

[15] Note that, as one's official idiom, one should have a sentential operator to express 'just is'-claims. I use the relational predicate 'is worldly equivalent to' between sentences in order to facilitate formulations in natural language, but nothing will hinge on that.

equivalence.

Thus, one cannot uphold a view on which ground is purely sensitive to what reality is like in itself. Instead, one is forced to endorse a more fine-grained view on which ground is also sensitive to the particular ways in which we conceptualize reality. Following the common terminology of the debate on ground, let us call a conception of ground that countenances Worldliness of Ground a 'worldly conception' of ground, and a conception that does not a 'representational' (or 'conceptualist') conception of ground.[16] Accounts of ground that either explicitly state that they concern the worldly conception of ground or which endorse grounding-principles that correspond to a worldly conception include Audi 2012a, Audi 2012b, Correia 2010, Correia and Skiles 2019, Fine 2017b and Lovett 2020. Accounts of ground on the representational conception include Correia 2017a, Correia 2017b, Correia 2018, Krämer 2018, Krämer 2019, Rosen 2010 and Schnieder 2010. In the case of Fine 2012a, the logic corresponds to a representational conception, but indeed, as will become relevant later on, the semantics corresponds to the worldly conception.[17] To be perfectly clear, an account of ground counts as representational iff it holds that *some* purely representational feature or other is relevant for difference in ground-theoretic status. But this does not mean that representationalists need to conceive of *all* representational features as relevant for ground-theoretic status. And thus, although virtually all accounts of representational ground do conceive of the arrangement of brackets as relevant for ground-theoretical status and thus reject GE-Associativity, they

[16] See e.g. Correia 2010 and Fine 2017b on the distinction. One way of fleshing out the difference that might initially look compelling would be in terms of the relata of ground. Following this idea, one might think that a conception of ground is worldly iff it takes the relata of ground to be worldly entities, such as states of affairs, and a conception is representational iff it takes the relata of ground to be representational entities, such as propositions. This way of construing the distinction is merely an approximation, however. First, the distinction between the worldly and the representational conception also arises on an ontologically non-committal understanding of ground that does not countenance relata of ground. Secondly, even if relata of ground are countenanced, it is not guaranteed that the ontological distinction lines up with the one in terms of ground-theoretical equivalence. For instance, it would be an in principle tenable (although arguably not very compelling) view to take the relata of ground to be propositions and yet to take propositions that correspond to the same state(s) of affairs to play the same ground-theoretical role (see Correia 2020 for this point and further discussion).

[17] One might wonder how this can be the case, given that Fine 2012b proves the system to be sound and complete. But the logical system in the 2012b paper is merely a fragment of the one in the 2012a paper that does not cover the logical connectives. And thus, the difference between worldly vs. representational ground does not become pertinent in the 2012b paper.

need not do so.[18] My point here is thus merely that, *if* an account of ground is worldly, it has to endorse GE-Associativity (on pain of having to give up on WE-Associativity), not that only worldly accounts may endorse this principle.

Let me further illustrate the distinction between worldly and representational ground by some example cases. On a worldly conception of ground, the following three claims of ground have a great plausibility:[19]

> (G2) Emma is emerald or Chris is crimson $<$ Emma is green or Chris is red.
> (G3) Emma is emerald or Chris is crimson $<$ Something is emerald or crimson.
> (G4) Something in emerald $<$ Something is green.

On representational accounts that incorporate Disjunctions, by contrast, these claims turn out to be problematic. For (G2) proves incompatible with Disjunctions, following a reasoning parallel to the one in the case of (G). And (G3) and (G4) would be ruled out by a principle analogous to Disjunctions for the case of existential generalizations, according to which the only grounds for existential generalizations are truths that subsume the grounding-role of instances plus possibly totality truths, and conjunctions thereof.[20] But there are also grounding claims where the situation is reversed: claims that have a high degree of plausibility on a representational conception of ground but are arguably to be rejected on a worldly conception. Thus, on a representational conception, it is commonplace to maintain that every true disjunction is grounded in each of its true disjuncts, and every true conjunction in all its conjuncts taken together. And, as limiting cases, this yields:

[18] The only potential exception that I know of is the account sketched in Correia 2017b, which, under plausible assumptions, yields GE-Equivalence. This is so since, on Correia's account, representational differences only matter insofar as one representation is more joint-carving than the other. And, arguably, different positions of brackets in disjunctions do not give rise to differences in joint-carvingness.

[19] (G2) would come out as true on the semantics of worldly ground to be discussed in the next section and the appendix, incorporating plausible assumptions about the verifiers of the component sentences. For (G3) and (G4), we would need to add the verification conditions for quantified sentences proposed in Fine 2017c.

[20] As mentioned before, Glazier (2016) develops an objection parallel to the LG-argument for the case of existential generalizations. His argument is based on precisely this principle and is thus equally subject to the objection that I raise here.

(G5) Emma is emerald $<$ Emma is emerald and Emma is emerald.

(G6) Emma is emerald $<$ Emma is emerald or Emma is emerald.

On a worldly conception, by contrast, these two claims are problematic. For, arguably, in both claims, the sentences expressing ground and groundee represent reality as being in the same way and merely differ with regard to their representational guises. Hence, on pain of getting violations of the irreflexivity of ground, the proponent of worldly ground should plausibly reject the idea that every true disjunction is grounded in its true disjuncts and every true conjunction in its conjuncts taken together. Instead, she would uphold restricted versions of these principles that exclusively concern standard cases in which, to put it crudely, the disjuncts/conjuncts are suitably 'disconnected'.[21] Thus, while worldly and representational conceptions of ground agree on many standard grounding-claims, they still diverge in extension.

With these considerations in place, let us now return to the case of Ground by Status. As we have seen, the situation is this. The LG-argument against Ground by Status rests on Disjunctions. In order to endorse Disjunctions, one has to reject GE-Associativity. But making plausible assumptions about worldly equivalence, GE-Associativity is mandatory on the worldly conception on ground. Hence, the LG-argument can only be sustained on a representational conception of ground, but not on a worldly one.[22] And thus, in order for the LG-argument

[21] See e.g. Correia 2010 and Lovett 2020 for regimentations of the relevant disconnectedness in terms of conjunctive and disjunctive parthood and weak ground, respectively.

[22] Returning to the discussion in footnote 6, Martin Glazier suggested to me that the proponent of worldly ground might adopt a modified version of Disjunctions that invokes a more liberal conception of disjuncts. The proposal is that the basic principle regarding the grounds of disjunctions should not be Disjunctions, but rather Disjunctions*: If B grounds $A_1 \vee A_2$ then B subsumes the grounding role of a disjunct of $A_1 \vee A_2$ or a conjunction of disjuncts of $A_1 \vee A_2$. Different more specific principles then arise from specifying the notion of a disjunct. The proponent of representational ground who thinks that the logical surface structure of sentences matter for ground-theoretic status will adopt the common, strict notion of disjuncts, on which the only disjuncts of $A \vee B$ are A and B, and thus, for instance, the only disjuncts of $A_1 \vee (A_2 \vee A_3)$ are A_1 and $(A_2 \vee A_3)$. On this understanding of disjuncts, Disjunctions* collapses into Disjunctions. The proponent of worldly ground, however, may work with a more liberal notion of disjuncts on which the disjuncts of $A_1 \vee (A_2 \vee A_3)$ are not only A_1 and $A_2 \vee A_3$, but also $A_2, A_3, A_1 \vee A_2$ and $A_1 \vee A_3$. The idea is that, from a worldly perspective, the arrangement of brackets and order of disjuncts are mere representational artifacts that make no difference to ground-theoretic status. As a consequence, any syntactically acceptable placement of brackets and the order of disjuncts should correspond to a legitimate choice of disjuncts. This would suggest the following construal of disjuncts: B is a disjunct$_{liberal}$ of $A_1 \vee A_2$ iff there is some

to succeed, further argument would be needed that GROUND BY STATUS *has to* be interpreted in terms of representational rather than worldly ground. Such an argument might make a case that the worldly conception is inherently flawed and the representational conception is the only true conception of ground. Or, alternatively, it might make a case that, although both conceptions of ground track legitimate notions of ground, there are specific reasons that force us to interpret GROUND BY STATUS in terms of representational ground. I can see various ways in which these two strategies might be pursued. But I think that none of them is promising.

B' such that we can arrive at $B \vee B'$ from $A_1 \vee A_2$ via 'brackets-rearranging' and changing the order of disjuncts. Now, if DISJUNCTIONS* were combined with this liberal construal of disjuncts, it would be perfectly compatible with WE-EQUIVALENCE, and my argument would be blocked. Moreover, as is easy to check, this amended principle would allow one to run the LG-argument all the same. I think, however, that this modified principle is ultimately unsatisfying. First, there are arguments in the vicinity of my argument that show that this modified principle is incompatible with a worldly conception of ground (albeit they need to resort to somewhat more contentious principles than the argument in the main text). For one such argument, consider the following grounding-claim: (H) [$\lambda x.$(x is emerald $\vee x$ is crimson)] Emma $<$ [$\lambda x.$(x is green $\vee x$ is red)] Emma. One might think that (H) is true since [$\lambda x.$(x is emerald $\vee x$ is crimson)] is a determinate of [$\lambda x.$(x is green $\vee x$ is red)], and instantiations of determinates ground instantiations of determinables. Granting that non-vacuous β-transformations (cf. Dorr 2016) preserve worldly equivalence (as Dorr does), the putative groundee [$\lambda x.$(x is green $\vee x$ is red)] Emma' is worldly equivalent to 'Emma is green or Emma is red'. And if so, the proponent of worldly ground should also countenance: (H') [$\lambda x.$(x is emerald $\vee x$ is crimson)] Emma $<$ Emma is green or Emma is red. The modified disjunctions-principle suggested by Glazier would then dictate that [$\lambda x.$(x is green $\vee x$ is red)] Emma' subsumes the grounding role of either 'Emma is green' or of 'Emma is red' or of 'Emma is green and Emma is red' — which all can be shown to be false by considerations analogous to the ones at the beginning of §2. Secondly, it would seem that this notion of a disjunct is in an unstable middle spot, and that, if we wish to adopt a liberal notion of disjuncts, we should adopt an even more liberal notion. Thus, recall that the motivation for allowing for a re-arrangement of the brackets and the order of disjuncts when determining what the disjuncts of a sentence are is that they correspond to a mere representational artifact that is irrelevant for ground-theoretic status. However, on a worldly account, the arrangement of brackets and order of disjuncts is not the only representational artifact that is irrelevant for worldly status — from this perspective, *any* differences between worldly equivalent sentences are mere representational artifacts irrelevant for ground-theoretic status. This would suggest the following very liberal notion of disjuncts: B is a disjunct$_{very\ liberal}$ of $A_1 \vee A_2$ iff there is some B' such that '$B \vee B'$' is worldly equivalent to '$A_1 \vee A_2$'. However, adopting the plausible view that, for any C, $C \vee C$ is worldly equivalent to C, under this very liberal construal of disjuncts, DISJUNCTIONS* turns into an entirely trivial principle (which thus no longer allows us to run the LG-argument). For suppose that B grounds $A_1 \vee A_2$. Since grounds subsume the grounding-role of what they ground (as we have seen in §1), it then follows that B subsumes the grounding role of $A_1 \vee A_2$. But, given that $A_1 \vee A_2$ is worldly equivalent to $(A_1 \vee A_2) \vee (A_1 \vee A_2)$, $A_1 \vee A_2$ counts as a disjunct of $A_1 \vee A_2$ on the notion of a disjunct that we are considering. So B subsumes the grounding role of $A_1 \vee A_2$.

We can directly put one potential worry against worldly ground to the side, viz., the worry that the demands set for worldly ground are plainly incoherent. For if there is a conception of ground which is faced by the threat of incoherence, it is the representational and not the worldly one. Thus, the representational notion of ground is notoriously subject to various puzzles, which show that the combination of claims which look like intuitively plausible claims regarding representational grounding turn out to be inconsistent (see Fine 2010, Fritz forthcoming, Korbmacher 2015, Krämer 2013). The worldly notion, by contrast, is immune to all of these puzzles.

A line of argument that might look initially more promising starts out from grounding-principles that plausibly can only be countenanced on a representational, but not on a worldly notion: principles concerning necessary conditions on the grounds of truth-functionally complex sentences, such as DISJUNCTIONS, and principles concerning sufficient conditions on ground, such as the principle that any true disjunction be grounded in a true disjuncts and any true conjunction in its conjuncts taken together. And these principles, or so it might be claimed, have such a strong intuitive appeal that they need to be incorporated in any perspicuous account of ground. On closer examination, this line of argument is not very convincing, however. The intuitive appeal of representationalist principles regarding the mentioned sufficient conditions on ground seems to stem purely from considering standard example cases: cases such as that the truth of its being sunny or cold is grounded in the truth that it is sunny, and that the truth that it is sunny and it is cold is grounded in the truth that it is sunny plus the truth that it is cold. But example cases of this kind are countenanced by the worldly notion too. The worldly verdict only diverges in cases where ground and groundee are, so to speak, not sufficiently disconnected, such as in our example cases (G5) and (G6). But in such cases, I take it, intuitions are much less clear, and claims (G5) and (G6) certainly do not have the same ring of truth to them as the claims in the uncontroversial standard cases. Turning to representationalist principles for necessary conditions on grounds, such as DISJUNCTIONS and the corresponding principle for existential generalizations, I am happy to grant that these principles have an initial appeal. But, as we have seen, they ban other claims of ground that enjoy initial plausibility all the same, such as (G*), (G2), (G3) and (G4). And without deeper theoretical considerations in the background, it does not seem clear who should win—the individual example cases or the general principles.

All in all, our intuitions do not seem to pull firmly in the direction of one conception of ground as opposed to the other and, in particular, do not allow us to make a case against the worldly conception on their basis.

A more abstract line of argument against the worldly conception might draw on the popular idea that groundees are nothing over and above their grounds. And thus, one might think that the worldly conception goes wrong in dictating that ground and groundee be not worldly equivalent—indeed, since the groundee is nothing over an above the groundee, for the groundee to obtain *should precisely just be* for the ground to obtain, or so the reasoning might go. This line of argument is flawed, however. For the idea of nothing-over-and-aboveness has it that the groundee is *always* nothing over and above the groundee. Hence, if nothing-over-and-aboveness were to be equated with worldly equivalence, ground and groundee would need to be worldly equivalent in *all* cases of ground. But this demand would rule out a vast amount of grounding claims that are acknowledged by virtually everyone in the debate, be they proponents of the worldly or the representational conception.[23] To give just two examples, it would rule out that it's being sunny or cold is grounded in its being sunny, given that (alas!) it is not the case that for it to be sunny or cold just is for it to be sunny. And it would rule out that Emma's being green is grounded in Emma's being emerald, given that it is not the case that for Emma to be green just is for her to be emerald. So, while it may not be perfectly clear how the 'nothing-over-and-aboveness'-idea is to be understood in more precise terms, one thing that should be clear is that it is not to be equated with a worldly equivalence between ground and groundee. And thus, the reasoning fails.

This being said, a new line of argument in the vicinity opens up. Thus, one might think that, although it cannot be demanded that ground and groundee be always worldly equivalent, there are certain cases in which they do need to be worldly equivalent. For one theoretical task that one may think ground should play, and that ground has indeed been invoked to play in the extant literature, is to account for analysis—understood in a metaphysically 'heavyweight' sense akin to real defi-

[23] A further prima facie difficulty with equating nothing-over-and-aboveness with worldly equivalence would be that grounding can be many-one, while worldly equivalence is one-one. But here, a natural move would be to focus on the conjunction of the grounds.

nition/reduction, as opposed to mere conceptual analysis (see e.g. Correia 2017b, Rosen 2015, Skiles 2014). And yet, plausibly, for the analysans to obtain just is for the analysandum to obtain, which precludes a relationship of worldly ground between the two. Now, in difference to the arguments discussed before, I do take this argument to provide reasons for countenancing the representational notion of ground. But the argument can do only so much: it does not provide us with reasons that we should countenance *only* the representational notion. Rather, it is very well compatible with a pluralist take on ground that embraces both a representational and a worldly notion of ground. And even if understood in this weaker way, the force of the argument is rather limited. For, granting that analysis goes indeed together with worldly equivalence, other options naturally arise of how analysis should be accounted for: in terms of worldly equivalence plus some further priority-integredient, such as essence (cf. Skiles 2014) or joint-carvingness (cf. Correia 2017b).[24]

So, in our discussion, we found only weak support for the idea that a representational notion of ground is needed, and no reasons that tell directly against a worldly notion of ground. And, in fact, there is strong reason to think that, independently of whether we have a representational notion of ground in our metaphysical toolkit or not, a worldly notion is needed in any case. For there is an important theoretical role that ground can play only if construed in worldly terms: to give rise to a layered structure *of reality itself independent of our ways of conceptualizing reality.* And this theoretical role is arguably the core theoretical role of ground—the very role that grounding was introduced to play, and a role that cannot be well played by any other notions. As Stephan Krämer and Stefan Roski (2015; p. 60) vividly put it (using the alternative terminology of 'conceptualist' rather than 'representational' ground):

> '[The worldly conception] seems more natural, given a standard way to *motivate* both the viability and the importance of the notion of ground.

[24] In addition, note that, in typical cases of analysis, the analysans consists in multiple conditions which all have to be fulfilled for the analysandum to obtain. And in such cases, while worldly accounts cannot maintain that the analysandum is grounded in the analysans conceived as the conjunction of these conditions, they are still free to hold that the analysandum is grounded in the analysans conceived as the plurality of conditions. (Assuming that the conditions are suitably disconnected, and that the conjunction of the analysans-conditions is worldly equivalent to the analysandum, from the worldly perspective, this would simply correspond to a case in which a conjunction is grounded in suitably disconnected conjuncts.)

> For this is usually done by appealing to a picture of *reality* as a *layered structure* (cf. Bennett 2011; deRosset 2013). According to such a picture, the world is not a mere aggregate of facts but falls into several layers that are connected by various relations of priority. Grounding is then thought of as one such relation. On this kind of view, therefore, grounding emerges as a relation among constituents of the world that exist, and can be individuated, *independently* of our conceptual (or linguistic) representations of them [...] Yet, the conceptualists' account of ground does not seem to pay this picture its proper due in that it introduces distinctions that are unduly sensitive to our conceptualizations of reality (cf. Correia (2010, p. 258f)).'

Hence, it seems that the friend of ground should countenance the worldly conception in any case, albeit possibly alongside the representational notion. But what if we have both a worldly *and* a representational notion in our metaphysical toolkit? Are there reasons to construe Ground by Status in terms of representational, as opposed to worldly ground? There do not seem to be any. For the case of Ground by Status is not one of philosophical analysis, where the representational notion would be the only one available. Clearly, in the case of Ground by Status, ground and groundee are not worldly equivalent: it is not the case that for `foo` to have essentially value 0 or value 1 just is for it to have value 0 or value 1; or that for there to be necessarily a first point in time just is for there to be a first point in time; or that for it to be law of nature that objects attract each other with this-and-that force just is for objects to attract each other with this-and-that force, and so on. The relevant status truths demand something of reality that goes beyond what their prejacents do, and they are thus not worldly equivalent to them. And indeed, the construal of Ground by Status in terms of worldly ground does not merely seem to be a legitimate, but a very natural one: as a claim regarding the structure of reality in itself, independent of our representational guises. Thus, at this point, it would seem that Ground by Status could be salvaged simply by construing it as a principle concerning worldly, as opposed to representational ground.

My aim in the next, and final section of the paper will be, however, to argue to the contrary: By invoking considerations regarding the *semantics* of worldly ground, we can derive a worldly, more liberal principle regarding the necessary conditions on

grounds of disjunctions. And on the basis of this principle, a new argument against Ground by Status can be devised.

3 The Argument from the Semantics of Worldly Ground

As we have seen, while representational grounding takes the representational means by which sentences represent worldly matters into account, worldly grounding is blind to these representational features. It focuses purely on the worldly matters themselves: on what the statement demands of the world for it to be true. One way of seeing the situation is this. What is important about a statement from the perspective of worldly ground are the states that would make the statement true if they were to obtain: the *verifiers* of the statement. Truthmaker semantics takes up precisely this idea. It construes the semantic values of sentences as the verifiers of these sentences, and yields truth-conditions in terms of them.[25]

Truthmaker semantics thus naturally suggests itself as a framework for theorizing about worldly ground. And indeed, the semantic accounts of worldly ground that have been offered thus far are all either truthmaker semantics, or semantics in the close vicinity of truthmaker semantics. In my discussion in this paper, I restrict attention to the truthmaker semantics for ground provided by Fine2017b, which is arguably the most prominent account at this point.[26] Moreover, in the main text, I will simplify certain matters for the purposes of presentation and implicitly rely on additional assumptions about propositions (viz., that propositions fulfill the condition of *Closure under Fusion* but not of *Convexity*, which I will explain in the appendix).[27] In the appendix, I will drop the simplifications and show how the results

[25] See Fine 2017c for a survey of truthmaker-semantics.

[26] Other truthmaker semantics for worldly ground are developed in Fine 2012a, Fine 2012b, Krämer 2021 and Leuenberger 2020. Correia 2010 and Correia forthcoming suggest semantics for worldly ground in the close vicinity of truthmaker semantics, and Correia 2017b a sketch of a semantics for representational ground in the vicinity of truthmaker semantics. I will have to leave the question of how the considerations presented here would work out on these alternative frameworks for another time.

[27] In particular, in the main text, I ignore the additional complications that arise from taking ground to be factive.

from the main text can be generalized under diffrent conceptions of propositions.

Truthmaker semantics can be seen as as successor to possible worlds semantics that modifies the framework in two respects. First, it replaces the notion of a possible world with the more general notion of a state. And second, it replaces the notion of a sentence being true at a world with the more demanding notion of a sentence being verified by a state.[28] In contrast to possible worlds, states need to be neither possible nor complete (in the sense of settling the truth-value of every sentence). For instance, we may countenance a state of *Socrates being a cat* which is neither complete nor possible. States stand in relations of parthood and fuse into larger states. The state of *London's being in England and Paris' being in France*, for example, has the state of *London's being in England* and the state of *Paris' being in France* as parts and is indeed the fusion of these two states. That a state verifies a sentence means, intuitively, that the state *guarantees* the truth of the sentence and is *fully relevant* for the truth of the sentence. Our previous examples can again help to clarify this idea. The sentence 'London is in England and Paris is in France' is verified by the state of *London's being in England and Paris' being in France*, but not by the state of *London's being in England*. For while both states are fully relevant for the truth of the sentence, only the former state, but not the latter guarantees the truth of the sentence. In the case of the sentence 'London is in England', by contrast, the situation is reversed; it is verified by the latter, but not by the former state. For while both states guarantee the truth of the sentence, only the latter state is fully relevant for its truth.

Based on an assignment of verifiers for atomic sentences and negations to atomic sentences, truthmaker-semantics yields conditions for the verifiers for truth-functionally complex sentences in terms of the verifiers for their constituents.[29] Thus, a state verifies a conjunction iff it is a fusion of verifiers for each conjunct. And a state verifies a disjunction iff it verifies one of the disjuncts or their conjunction.

The basic idea of the truthmaker-semantics for worldly ground is to construe ground

[28] In the main text, I use the word 'verification' in the sense of what Fine calls 'exact verification'. See the appendix for more on this.

[29] An alternative would be to assign both verifiers and falsifiers to all atomic sentences.

via the notion of so-called *(truthmaker-)entailment*. A sentence A is said to entail a sentence B iff all the verifiers of A are also verifiers of B. The idea here is that A entails B, iff, so to speak, any worldly matters that bring it about that A be true will thereby automatically also bring it about that B be true. Multiple sentences $A_1, A_2, ...$ may then be said to entail B iff the conjunction of the A_is entails B, i.e., iff all the verifiers for $A_1 \& A_2 ....$ are also verifiers for B. Entailment thus construed plausibly implies entailment in the modal sense of necessitation, but is stronger than it: A only entails B if it both necessitates B and is fully relevant for the truth of B.[30] Entailment can be conceived as a kind of proto-ground, or, to use the Finean terminology, as weak ground: just as when some truths ground another truth, some truths that entail another truth guarantee its truth and are fully relevant for it. In contrast to ground, however, entailment is not irreflexive, and thus also not asymmetric, since e.g. any sentence entails itself.[31] Thus, in order to get from entailment to ground, an asymmetry-condition is added: the A_is ground B iff, (a), the A_is jointly entail B, and, (b), B does not—alone or jointly with other sentences—entail any one of the A_is.[32]

Under the natural assumption that sameness of truthmakers corresponds to worldly equivalence, the sketched truthmaker semantics automatically vindicates the demand on a worldly conception of ground that worldly equivalence imply ground-theoretic equivalence. This is a direct consequence of the fact that, from the perspective of truthmaker-semantics, sentences with the same verifiers are indistinguishable. A further consequence is that the account vindicates GE-Associativity, and thus does not run afoul of the difficulties sketched for Disjunctions in §2: Given the

[30] See e.g. Fine 2017c for this. That entailment implies necessitation is also an immediate result of a natural way of integrating modality into the truthmaker framework suggested by Fine 2017a.

[31] There are also more complicated cases that violate asymmetry, such as cases in which (i) A entails B, (ii) B, jointly with some other sentence C, entails A, and, (iii) A and B have different sets of verifiers. Here is an example: Let s_1, s_2 and s_3 be states that have no proper parts. Let A be verified by $s_1 \sqcup s_2 \sqcup s_3$ (i.e., the fusion of s_1, s_2 and and s_3), B by both $s_1 \sqcup s_2$ and $s_1 \sqcup s_2 \sqcup s_3$, and C by s_3.

[32] This account automatically vindicates grounding-necessitarianism. This result could be avoided by the foe of necessitarianism, however, by taking states to verify sentences *relative to background-conditions*. For instance, one might think that the fusion of states that corresponds to instances of a universal generalization only verify the relevant generalization relative to a totality state (cf. footnote 8). The considerations in what follows could be adapted to fit this modified approach in the obvious way.

verification of disjunctions, two sentences of the forms $(A \vee B) \vee C$ and $A \vee (B \vee C)$ are guaranteed to have the same verifiers. And in consequence, $(A \vee B) \vee C$ and $A \vee (B \vee C)$ play the same ground-theoretic role.

With this set-up in place, we are now in a position to construe an argument against Ground by Status on its basis. As I will prove in the appendix, if the account of ground and the aforementioned verification conditions for the truth-functional connectives are adopted, it follows that any truth with more than one exact verifier is grounded. Adopting the common understanding of fundamental truths as ungrounded truths, we thus have:

> Verifiers for Fundamental Truths: Any fundamental truth has a single verifier.

Now, suppose that $B_1, B_2, ...$ ground $A_1 \vee A_2$, where the B_i are fundamental. Then, by Verifiers for Fundamental Truths, all the B_i have a single verifier each, say s_i. By the verification conditions for conjunctions, it follows that $s_1 \sqcup s_2 \sqcup ...$ (i.e. the fusion of the s_i) verifies the conjunction of the B_i. Since the B_i ground $A_1 \vee A_2$, their conjunction entails $A_1 \vee A_2$, that is, $s_1 \sqcup s_2 \sqcup ...$ verifies $A_1 \vee A_2$. Finally, by the verification conditions for disjunctions, it follows that $s_1 \sqcup s_2 \sqcup ...$ verifies either A_1 or A_2 or $A_1 \& A_2$. That is, we have:

> Worldly Disjunctions: If $B_1, B_2, ...$ ground $A_1 \vee A_2$, and all the B_i are fundamental, then: the B_i jointly entail A_1 or they entail A_2 or they entail $A_1 \& A_2$.

Worldly Disjunctions resembles Disjunctions, but it differs from it in two respects. First, it invokes the notion of entailment rather than the notion of grounding-role subsumption. Secondly, it exclusively concerns fundamental grounds for disjunctions, rather than all grounds. The first difference is not of central importance for the present context and merely simplifies matters to some degree: working with the notion of entailment makes things more straightforward than working with the notion of grounding-role subsumption.[33] But the second difference is of crucial importance:

[33] In fact, entailment implies grounding-role subsumption, although I do not provide a proof of this result here. I stick to the regimentation in terms of entailment for two reasons. First, as indicated in the main text, working with entailment rather than grounding-role subsumption

the restriction to fundamental truths turns Worldly Disjunctions into a substantially weaker principle than Disjunctions and — as we will see in due course — calls for additional reasoning that goes beyond the one in the LG-argument. Note that a generalization of Worldly Disjunctions to non-fundamental grounds of disjunctions would fail. For non-fundamental grounds of disjunctions may have more than one verifier, and grounds of a disjunction that have more than one verifier may fail to entail one of the disjuncts or their conjunction.[34]

In the remainder of the section, I now develop an argument against Ground by Status on the basis of Worldly Disjunctions. In the first step of the argument, I show that, provided that Worldly Disjunctions holds, Ground by Status rules out that the relevant disjunctive status truths are fundamental. This step of the argument indeed closely mirrors the LG-argument. In the second, new step, I will then go on to consider what would happen if the status truths were non-fundamental. I will argue that also in this case, severe problems would emerge in the presence of Ground by Status and that Ground by Status should therefore be rejected. Just as before, I will first focus on the case of essence, and then extend the considerations to that of other status truths.

To begin with, recall our example of the Boolean variable `foo` that actually has value 1, and essentially either value 0 or value 1:

(E) $\Box_{\texttt{foo}}$ (`foo` has value 0 or `foo` has value 1).

`foo` does not have value 1 essentially and `foo`'s value indeed varies over time and modal space. By Ground by Essence, (E) grounds its prejacent, that is, the following truth:

(D) `foo` has value 0 or `foo` has value 1.

Now, suppose in addition that (E) was a fundamental truth. Then, (E) would be

allows for a somewhat simpler argument. Second, as we will see in the appendix, there is a natural generalization of Worldly Disjunctions on accounts that adopt Convexity, while there is no such generalization for a principle cast in terms of grounding-role subsumption available.

[34] As an example, let A_1 be verified by the atomic states (i.e., states without proper parts) s_1 and t_1, A_2 by the atomic state s_2, and B by s_1 and s_2. Then, it is easy to check that $A_1 \vee A_2$ is grounded in B, and yet B entails neither A_1 nor A_2 nor $A_1 \& A_2$.

a fundamental ground of (D), and we could apply Worldly Disjunctions to it. This would give us that one of the following holds: (a) (E) entails that `foo` has value 1, (b) (E) entails that `foo` has value 0, or, (c) (E) entails that `foo` has value 1 and has value 0. Now, as we have seen, entailment implies necessitation. Given that (E) is itself necessary, this means that if (E) entails that `foo` has value 0, `foo` necessarily has value 0; if (E) entails that `foo` has value 1, `foo` necessarily has value 1; and if (E) entails that `foo` has value 0 and value 1, `foo` necessarily has value 0 and value 1. Since `foo` actually has value 1, it follows that `foo` necessarily has value 1. So we run into a contradiction with our assumption that `foo` has this value only as a matter of contingency.

It thus turns out that, provided that Worldly Disjunctions holds, Ground by Status is incompatible with the fundamentality of (E). This is already a significant result. For essence-truths such as (E) look like strong contenders for fundamental truths. On one popular picture of essence, essence-truths stand outside of the 'flux of the material world', imposing restrictions on the material world while itself being unaffected by them. On such a view, essence-truths are plausibly never grounded in any other, i.e. non-essentialist, kinds of truths. And (E) looks like a strong candidate for a truth that is 'basic among the essence-truths', i.e., not grounded in any further essence-truths, and thus fundamental in an absolute sense.

Be this as it may, it would certainly not be incoherent to maintain that (E) is non-fundamental. First, the assumption that (E) is basic among the essence-truths might be challenged. In this vein, it might be claimed that (E) is grounded in the truth that `foo` is essentially a Boolean variable, plus the truth that it is essential to being a Boolean variable that all Boolean variables have value 0 or value 1. Secondly, while the aforementioned picture on which essence-truths can never be grounded in truths other than essence-truths is a popular one, it is not universally accepted. Most prominently, there is the option of endorsing a modal account of essence, according to which it's being essential to e that p is grounded in its being necessarily the case that p, possibly jointly with other truths such as that having value 0 or having value 1 is an intrinsic property (Denby 2014, Bovey 2021), a natural property (Melo 2019, Wildman 2013) or a qualitative and discriminatory property (De

2020).[35] Indeed, various other proposals have been made regarding potential grounds for essence-truths (cf. Raven 2020): truths about god, such as her decree or ideas in her mind; the 'ongoings' in which the relevant entity came into existence ('cosmic generative processes', to use the phrase of Almog 2010); or, on more deflationary conceptions of essence, truths about us human beings, such as our language, concepts, or conventions.

So we arrive at the second step of the argument: How does the situation look if we take (E) to not be fundamental, but grounded in such other truths? Assuming Ground by Essence, we would then arrive at the following picture:

(D) `foo` has value 0 or `foo` has value 1

$\uparrow$ grounds

(E) $\Box_{\texttt{foo}}$ (`foo` has value 0 or `foo` has value 1)

$\uparrow$ ground

relevant truths regarding other essences/god/cosmic generative processes/...

Now, given the transitivity of ground, the truths at the bottom also ground (D) via (E). Hence, if the truths at the bottom were fundamental, Worldly Disjunctions would have it that they entail the true disjunct that `foo` has value 1. And if they were non-fundamental, we could again go deeper down in the grounding-hierarchy until we reach the fundamental grounds of these truths. Since these would, again by the transitivity of ground, ground (D) as well, we could apply Worldly Disjunctions to them. We can thus conclude:

> Fundamental Grounds: If the $A_1, A_2, ...$ are fundamental and ground (E), the A_i jointly entail that `foo` has value 1.

Intuitively speaking, the fundamental grounds for (E) thus have to *fix* the value of the variable. While (E) does not, so to speak, take any side as to which disjunct obtains, its fundamental grounds do: they settle that the variable has value 1, rather

[35] Two notes on this. First, one might think that the ground rather is that necessarily, *if `foo` exists*, it has value 0 or value 1. This modification will not make a difference for my argument, so I will go with the simpler option in the main text. Secondly, note that the naturalness-option does not look particularly compelling in the case of `foo`, since having value 0 or value 1 is plausibly not a natural property.

than 0. As I am going to show now, however, all the aforementioned suggestions for potential grounds for (E) turn out to be incompatible with this demand. In my discussion, I will go through all the options, albeit in a slightly different order.

(a) Truths about god: An account along these lines might have it that god decreed (willed/thought/...), 'Let `foo` be essentially such that it has value 0 or value 1!', thus grounding (E). That god made this decree would then look like a strong candidate for a fundamental truth. After all, the theist will not conceive of god as a physical being such that activities of her parts (such as firings of her brain-fibers or movements of her lips) would ground facts about her decrees. Rather, the theist will likely take god's doings as rock-bottom facts about reality that cannot be further explained in different terms. Yet, while god's decree fixes that the variable has either value 0 or value 1, the decree clearly leaves open *which* of the two values the variable has. To fix that `foo` has value 1, further decrees or facts about the world would be needed. And since truths that entail other truths fix the truths that they entail, we thus get a conflict which Fundamental Grounds: the theistic candidate ground for the essence-truth is fundamental, yet does not entail that the variable has value 1.

(b) Truths about cosmic generative processes: The cosmic generative process in the course of which `foo` came into existence would arguably consist in the writing of the relevant program code that introduces `foo` into the program. Now, plausibly, the occurrence of this process is not a fundamental matter, but ultimately grounded in further truths such as truths regarding the subatomic particles that make up the computer and the programer at the time when the program was written. Fundamental Grounds would then dictate that these latter truths jointly fix the value of the variable. But again, this looks highly implausible. For the value of the variable will not just depend on the particle-distribution that underlies the introduction of the variable, but also on additional facts such as (the fundamental grounds of) later data input while the program executes.

(c) Truths about our language/concepts/conventions: Truths concerning our language/concepts/ conventions with regard to (E) are plausibly also non-fundamental. And thus, Fundamental Grounds should be applied to their fundamental grounds, such as truths regarding the particles that we human beings are composed of. But it

is even harder than in the previous cases to see how such truths could possibly settle the value of `foo`. Our language/conceptions/conventions and their deeper grounds seem simply silent on which of the two values `foo` has. While they may settle that we categorize the world in such a way that nothing could be `foo` unless it has value 0 or 1, which of these values `foo` has is not 'up to us' in this sense. And thus, this option too conflicts with Fundamental Grounds.

(d) Further essence-truths: Here, the essence-truths suggested as potential grounds for (E)—viz., that `foo` is essentially a Boolean variable and that it is essential to Boolean-variablehood that all Boolean variables have value 0 or value 1—look like strong contenders for truths that are basic in the realm of essence-truths. It seems just very hard to see in what other essence-truths these two essence-truths could possibly be grounded.[36] And if the two truths were grounded in non-essence-truths, we would be thrown back to options that would look basically identical to the options (a)-(c) that we have already discussed, or the option (e) to be discussed next. But it once again seems clear that the two facts that `foo` essentially is a Boolean variable and that it is essential to Boolean-variablehood that Boolean variables have value 0 or value 1 cannot jointly determine the value of the variable: they fix that the variable has one of the two values 0 or 1, but not which of them. And thus, we again have a conflict with Fundamental Grounds.

(e) Modal truths: On a modal account of essence, (E) would be taken to be grounded in the necessity-truth

(N) $\Box$ (`foo` has value 0 or value 1),

possibly jointly with truths such as that having value 0 or having value 1 is an intrinsic/natural/qualitative and discriminatory property. Now, it is hard to see how the latter, additional truths, or their fundamental grounds, could play any role in helping to fix the value of `foo`. So it suffices to focus on (N) itself. By the transitivity of ground, if (N) grounds (E), and (E) grounds (D), then (N) grounds (D)—its prejacent. So we encounter a different instance of Ground by Status:

[36] To be sure, one natural idea would be to think that the truth that `foo` is essentially a Boolean variable is jointly grounded in the truth that `foo` is essentially a variable and the truth that `foo` essentially has value 0 or 1. But this option is not available in case (d) since we have precisely assumed that the grounding goes in the opposite direction.

one with a necessity-truth, instead of an essence-truth, as the relevant status truth. I will turn to the case of other kinds of status truths in short, and then also discuss the case of (N) in this context. What we should note about the discussion of at this point and keep in mind for later, however, is that, in a sense, the problem has merely been shifted rather than solved: the challenge of finding grounds that are in harmony with Fundamental Grounds still persists.

In reaction to the argument, friends of Ground by Essence might try to reject an assumption that implicitly figured in it, viz., the assumption that there *is* a fundamental level. Instead, they might claim that it is 'turtles all the way down': an endless hierarchy of more and more basic levels without any 'deepest' bottom level. On such a view, Worldly Disjunctions would not even enter the picture, since it purely concerns the *fundamental* grounds of essentialist truths. And if there are none, clearly, no problem can arise from this principle in the first place. However, even leaving possible misgivings about such a non-foundationalist view of reality aside, this move is ultimately of no help to Ground by Essence either. For, as I show in the appendix, the following principle that generalizes Worldly Disjunctions to non-foundationalist scenarios can be proven to hold:

> Worldly Disjunctions*: If $B_1, B_2, ... < A_1 \vee A_2$, then there are $C_1, C_2, ...$ such that (a) each C_i is either identical to B_i or grounds it, and (b) $C_1, C_2, ...$ entail A_1 or A_2 or $A_1 \& A_2$.

That is: If some truths ground a disjunction, either they themselves or some of their grounds entail one of the disjuncts or their conjunction. If we only go down deep enough in the grounding hierarchy, we will always find grounds that 'fix' which of the disjuncts obtains, even if this level is not fundamental. And thus, we cannot circumvent the problem simply by rejecting the existence of a fundamental level.

So, having not yet found any plausible candidate grounds for (E) that are in harmony with Fundamental Grounds, how about other kinds of status truths? Recall our candidates for other disjunctive status-truths: that necessarily, `foo` has value 0 or has value 1; that necessarily, for any p, $p \vee \neg p$; and that it is a law of logic that for any p, $p \vee \neg p$. It seems plausible that all the options for grounds in the case of essence also apply to these other status truths, arguably with the sole exception of the option

of cosmic generative processes. Thus, in all of these cases, one option would be to conceive of the truths simply as fundamental. The theist might think that God's decrees also ground necessities and law-truths, and the deflationist that facts about language/concepts/conventions ground them. Moreover, the relevant status truths might be taken to be grounded in status truths of the same or a different kind. For instance, it might be claimed that (N) is grounded in the truths that necessarily, `foo` is a Boolean variable, and that necessarily, every Boolean variable has value 0 or value 1, taken together. Or, to give a different example, it might be claimed that the fact that, by (metaphysical/logical) necessity, for any p, $p \vee \neg p$, is grounded in its being a law (of metaphysics/logic) that, for any p, $p \vee \neg p$. In addition to the candidate grounds in the case of essence, however, also some new options arise for status truths other than those of essence. Thus, one may take metaphysical necessities to be grounded in truths regarding relations of incompatibility (Wang 2013) or entailment (Jubien 2009) among properties, potentialities of things (Vetter 2015), or truth in all possible worlds (Lewis 1986).[37] And in the case of the laws of nature, other prominent candidate accounts are the nomic necessitation account (Armstrong 1978, Dretske 1977, Tooley 1977) and the best system account (Beebee 2000, Lewis 1983, Loewer 2012).

We can directly leave two of these options aside in our discussion, since they are incompatible with Ground by Status: the possible worlds account and the best system account. What these two accounts have in common is that they are regularity accounts, in the sense that, according to them, the relevant status truths are partially grounded in their prejacents. Thus, on the best system account, its being a law of nature that p is grounded in its being the case that p, plus p's being part of a particularly simple and explanatory powerful system. And on the possible worlds account, its being necessary that p is grounded in p's being the case (in our world), plus p's being the case in other, distinct possible worlds. When combined with Ground by Status, such regularity accounts give rise to circles of ground: by Ground by Status, the prejacent is grounded in the status truth, and by the regularity account, the status truth is partially grounded in the prejacent. Hence, if one subscribes to a regularity account, Ground by Status is a non-starter, and

[37] In the potentialist case, $\Box p$ is grounded in the fact that nothing has or had a potentiality for non-p.

regularity accounts can safely be ignored.

For all the non-regularity accounts, by contrast, we find ourselves once again in the same situation as in the case of (E). Thus, taking the relevant status truths to be grounded in different status truths merely shifts, but does not solve the problem. And (although I will spare the reader the tediousness of going through the other options one by one again), it should be clear that, for all of the other candidate grounds mentioned, it is just extremely implausible that they should fix which of the disjuncts obtain—contrary to what the combination of Ground by Status and Worldly Disjunctions dictates.

All in all, we encounter a conflict between Ground by Status on the one hand, and the semantics of worldly ground on the other, not just in the case of essence, but also in the cases of all the other status truths. We do so no matter whether we take the relevant status truths to be fundamental, or grounded in other status truths, and no matter whether we commit to the existence of a fundamental level. The principles Worldly Disjunctions and Worldly Disjunctions* dictate that, as soon as we only go down 'deep' enough in reality, grounds for disjunctive status truths need to fix which of the disjuncts obtains. But, as we have seen, for all the candidate grounds that do not already conflict with Ground by Status by themselves, this demand cannot plausibly be met.

To recapitulate the discussion in the paper: While the LG-argument seems to make a forceful case that Ground by Status conflicts with a commonly held and intuitively plausible view about the grounds for disjunctions, on a closer look, the argument crumbles. For the principle Disjunctions that the LG-argument relies upon can only be upheld if a representational notion of ground is assumed, but not if a worldly notion is. And since there are no reasons to assume that Ground by Status has to be construed along representational rather than worldly lines, the LG-argument does not make a convincing case against Ground by Status. As I then showed, however, a different objection can be mounted against Ground by Status for worldly ground. Thus, the proponent of Ground by Status cannot evade the problem simply by opting for a worldly rather than representational conception of ground. No matter whether she postulates Ground by Status as a principle re-

garding representational ground or as a principle regarding worldly ground, Ground by Status runs into trouble. Considerations regarding the formal features of ground thus give us strong reasons to construe the explanatory role of status truths in different terms. As a consequence, they yield support pluralism about metaphysical explanation: ground is but one kind of metaphysical explanation among others.

Appendix

The aim of this appendix is to prove and generalize the results invoked in the main text, viz., Verifiers for Fundamental Truths, Worldly Disjunctions, and Worldly Disjunctions*. As indicated in the main text, my discussion will be based on the truthmaker framework as presented in Fine 2017a and Fine 2017b. The Finean framework can accommodate different takes on the precise behavior of ground, depending on what closure conditions on propositions—i.e., on the candidate semantic values of sentences—are imposed: whether propositions are taken to be closed under fusion or not, and whether they are taken to be convex or not. (I shall explain these conditions in due course.) In the main text, I assumed the account that arises when propositions are taken to be closed under fusion but not convex. I take it that there are good reasons to adopt this account, but the question is controversial.[38] Hence, in what follows, I will also show how the results can be generalized to the alternative views on propositions that are available. As we shall see, whether or not we endorse Closure Under Fusion makes no difference, but we obtain principles that are slightly weaker than Worldly Disjunctions and Worldly Disjunctions* if Convexity is assumed. However, these weaker principles allow us to run the argument from the main text all the same.

For our aims, we need to construe models M as quadruples $\langle S, \sqsubseteq, @, |\cdot| \rangle$. Thereby, S is the *set of states*, $\sqsubseteq$ the relation of (improper) *parthood* among states , $@$ the *actual world state*, and $|\cdot|$ the *valuation function*. $\sqsubseteq$ is a partial order on S, i.e., a

[38] Fine 2017b at least expresses leanings towards adopting both Closure Under Fusion and Convexity. See, however, Krämer and Roski 2015 and Correia 2016 for arguments against Convexity.

reflexive, transitive, and anti-symmetric relation. The *fusion* $\bigsqcup T$ of the states in set T is defined as the lowest upper bound of T, i.e., the state that has all the states in T as a part and is part of any state that has all states in T as a part. For some states $s_1, s_2, ...$ we also write $s_1 \sqcup s_2 \sqcup ...$ for their fusion. S is assumed to be *closed under fusion*, i.e., every set of states in S has a fusion. @ is a distinguished state which represents the actual world. We say that a state *obtains* iff it is part of @.

The valuation function $|\cdot|$ assigns a set of verifiers to each atomic and negated atomic sentence, the *proposition* expressed by the sentence. I shall use the letters 'P' and 'Q' and variants thereof for propositions, and the letter 'T' for arbitrary sets of states. As mentioned before, two different conditions may be imposed on sets of verifiers in order for these sets to qualify as propositions (i.e., as candidate semantic values of sentences):

> Closure Under Fusion: Any proposition P is closed under fusion, i.e., such that, for every non-empty $T \subseteq P$, $\bigsqcup T \in P$.
>
> Convexity: Any proposition P is convex, i.e., such that, for all $s_1, s_2, s_3 \in S$, if $s_1 \sqsubseteq s_2 \sqsubseteq s_3$ and $s_1, s_3 \in P$, then $s_2 \in P$.

Intuitively, Closure Under Fusion has it that, if some states are elements of a proposition, so is their fusion. And Convexity has it that if two states are elements of a proposition, so is any state that lies with regard to parthood in between those states. Depending on whether Closure Under Fusion and/or Convexity are adopted, we obtain conceptions of propositions of different fineness of grain: the more conditions we impose, the smaller the variety of propositions and thus the less fine-grained the account will turn out to be. For any given set of states T, I will use the symbol '$T*$' for the smallest proposition that contains all the states in T under the assumed closure operations. We say that a proposition is *verifiable* iff it is non-empty, and that a sentence is *verifiable* iff the proposition expressed by it is. We say that a proposition *obtains* iff it contains an obtaining state.

Conjunction and disjunction are first construed as operations on propositions. Then, the definitions are extended to the corresponding sentential connectives in the obvious way. I shall use the expressions '$\wedge$' and '$\vee$' as symbols for both the case of propositions and sentences, the letters 'A', 'B' and 'C' and variants thereof as sym-

bols for sentences, and the symbol '$|\cdot|$' for the proposition expressed by the enclosed sentence. For any verifiable propositions P_1 and $P_2, ...$ and sentences A_1 and $A_2, ...$, we have:

$P_1 \wedge P_2 = \{s_1 \sqcup s_2 |\ s_1 \in P, s_2 \in Q\}*$.
$|A_1 \wedge A_2| = |A_1| \wedge |A_2|$.

$P_1 \vee P_2 = \{s \mid s \in P_1 \text{ or } s \in P_2\}*$.
$|A_1 \vee A_2| = |A_1| \vee |A_2|$.

That is, the verification-set for $A_1 \wedge A_2$ is the smallest proposition that contains all the states that result by fusing a verifier for A_1 with a verifier for A_2. And the verification-set for $A_1 \vee A_2$ is the smallest proposition that contains all verifiers of A_1 and all verifiers of A_2. As we will see in shortly, what this smallest proposition is varies to some degree depending on which closure conditions on propositions we adopt.

Based on the notion of (exact) verification, we can define a second, less demanding notion of verification, that of *inexact* verification. A state is said to inexactly verify a sentence iff it has a part which exactly verifies the sentence. To give an example, while the state of *London's being in England and Paris' being in France* is not an exact verifier of the sentence 'London is in England', it is still an inexact one. For it has a part, the state of *London's being in England*, which is an exact verifier of this sentence. Just as exact verifiers, inexact verifiers guarantee the truth of the sentences that they verify and are relevant for their truth. But, in contrast to exact verifiers, they need not be *fully* relevant.

Corresponding to the two different notions of verification, two different notions of truthmaker-entailment can be defined. Say that a proposition P *(exactly) entails* another proposition Q iff all the elements of P are also in Q. And, correspondingly, say that P *inexactly entails* Q iff every state that has some state in P as a part also has some state in Q as a part. The notion of (exact/inexact) entailment can then also be generalized to the case of multiple propositions in a straightforward way: $P_1, P_2, ...$ jointly (exactly/inexactly) entail Q iff the conjunction of the P_is (exactly/inexactly) entails Q. Both exact and inexact entailment imply entailment in the modal sense of necessitation, but are stronger than it: if P exactly/inexactly entails Q, P not

merely necessitates Q, but is additionally fully—in the case of exact entailment—or at least partially—in the case of inexact entailment—relevant for the truth of Q.

The relation of ground between propositions is then defined as follows:

> $P_1, P_2, ...$ ground Q iff: (a) $P_1, P_2, ...$ obtain, (b) $P_1 \wedge P_2 \wedge ...$ entails Q, and (c) there are no propositions $R_1, R_2, ...$ such that $Q \wedge R_1 \wedge R_2 ...$ entails a proposition among $P_1, P_2, ...$[39]

We may then construe the truth-conditions for grounding-claims in the obvious way:

> $M \models (A_1, A_2, ... < B)$ iff $|A_1|, |A_2|, ...$ ground $|B|$.

We say that a proposition is *fundamental* iff it is not grounded.

With this framework in place, we are now in a position to prove the results from the main text.

Lemma 1. *For all propositions $P_1, P_2, ...$:*

> *On a non-convex account of propositions: $P_1 \wedge P_2 \wedge ... = \{s \in S \mid s = s_1 \sqcup s_2 \sqcup ....$ for some $s_1 \in P_1, s_2 \in P_2, ...\}$.*
>
> *On a convex account of propositions: $P_1 \wedge P_2 \wedge ... = \{s \in S \mid s = s_1 \sqcup s_2 \sqcup ....$ for some $s_1 \in P_1, s_2 \in P_2, ...\}^c$ (where 'T^c' designates the convex closure of T).*

Proof. By definition, $P_1 \wedge P_2 \wedge ...$ is the smallest proposition that contains $C := \{s \in S \mid s = s_1 \sqcup s_2 \sqcup ....$ for some $s_1 \in P_1, s_2 \in P_2, ...\}$ and fulfills the relevant closure conditions. Thus, to prove the first part of the lemma, it suffices to show that if all the P_i are closed under fusion, so is C. Now, assume that the P_i are all closed under fusion, and let $t^1, t^2, ... \in C$ be arbitrary. Then, by the definition of C, for every t^i, $t^i = s^i_1 \sqcup s^i_2 \sqcup ...$ for some $s^i_1 \in P_1, s^i_2 \in P_2, ...$ So, $t^1 \sqcup t^2 \sqcup .... = s^1_1 \sqcup s^1_2 \sqcup ... \sqcup s^2_1 \sqcup s^2_2 \sqcup .... = s^1_1 \sqcup s^2_1 \sqcup ... \sqcup s^1_2 \sqcup s^2_2 \sqcup .....$ Since all the P_i are closed

[39] Note that this definition differs from the one given by Fine 2017b in that it demands that all the grounds $P_1, P_2, ...$ obtain, rather than merely be verifiable. This is so since we are here interested in a factive notion of ground, while Fine is interested in a non-factive one.

under fusion, for every i, $s_i^1 \sqcup s_i^2 \sqcup ... \in P_i$. Hence, $s \in C$. And to prove the second part of the lemma, it suffices to additionally show that if C is closed under fusion, so is its convex closure. Let $T \subset C^c$ be arbitrary. Then, for every $s \in T$, there are $s_1, s_2 \in C$ such that $s_1 \sqsubseteq s \sqsubseteq s_2$. Let S_1 and S_2 be sets that contain one such s_1 or s_2, respectively, for every $t \in T$. Since C is closed under fusion, $\bigsqcup S_1, \bigsqcup S_2 \in S$. Moreover, $\bigsqcup S_1 \sqsubseteq \bigsqcup T \bigsqcup S_2$. Hence, $\bigsqcup T \in C^C$. □

Lemma 2.

(a) If a state s obtains at @, so do all the states that are part of s.

(b) If states $s_1, s_2, ...$ obtain at @, so does their fusion.

Proof. (a) follows immediately from the transitivity of parthood. (b) follows immediately from the definition of fusion. □

Lemma 3. *Let P be an obtaining proposition with more than one element. Then: P is grounded in a proposition with just one element.*

Proof. Let P be an arbitrary obtaining proposition which contains (at least) two states, say s and s^*. Since P obtains, at least one of its elements obtains, say s. If s were part of s^* and the other way around, by the anti-symmetry of parthood, s and s^* would be identical, in violation of the assumption. So either (a) s is part of s^* and not the other way around, or (b) s^* is part of s and not the other way around, or, (c) none of them is part of the other one. We now show that, (i), in cases (a) and (c), $\{s\}$ grounds P, and that, (ii), in case (b), $\{s^*\}$ grounds P.

(i): By assumption, $\{s\}$ has an obtaining element and entails P. What remains to be shown in order to prove that $\{s\}$ grounds P is that there are no propositions $P_1, P_2, ...$ such that $P \wedge P_1 \wedge P_2, ...$ entails $\{s\}$. Suppose the contrary for the purposes of reductio. Let $t_1 \in P_1$, $t_2 \in P_2$, etc., be arbitrary. Then, since $s^* \in P$, by Lemma 1, $s^* \sqcup t_1 \sqcup t_2 \sqcup ... \in P \wedge P_1 \wedge P_2 \wedge ....$ Since $P \wedge P_1 \wedge P_2, ...$ entails $\{s\}$, by Lemma 1, it follows that $s^* \sqcup t_1 \sqcup t_2 \sqcup ... \in \{s\}$, i.e., $s^* \sqcup t_1 \sqcup t_2 \sqcup ... = s$. But this cannot be the case, since s^* is part of $s^* \sqcup t_1 \sqcup t_2 \sqcup ...$ but, by (a) and (c), not of s.

(ii): Since s obtains, and, by (b), s^* is part of s, by Lemma 2 (a), s^* obtains. The

rest of the proof is analogous to the one for case (i). □

THEOREM 1 (VERIFIERS FOR FUNDAMENTAL TRUTHS). *Any fundamental obtaining proposition contains a single verifier.*

Proof. Follows immediately from LEMMA 3, given the definition of fundamentality. □

LEMMA 4. *For any propositions P_1 and P_2:*

> *(a) On a non-convex account of propositions: If $s \in P_1 \vee P_2$, then $s \in P_1$ or $s \in P_2$ or $s \in P_1 \wedge P_2$.*
>
> *(b) On a convex account of propositions: If $s \in P_1 \vee P_2$, then s has a part s' such that $s' \in P_1$ or $s' \in P_2$.*

Proof. (a) is clear. For (b), note that, if we assume CONVEXITY but not CLOSURE UNDER FUSION, the smallest proposition that contains all the states in P_1 and P_2 will be the set $\{s \mid s_1 \sqsubseteq s \sqsubseteq s_2$ or $s_2 \sqsubseteq s \sqsubseteq s_1$ for some $s_1 \in P_1$ and $s_2 \in P_2\}$. And if we assume both CONVEXITY and CLOSURE UNDER FUSION, the smallest proposition that contains all the states in P_1 and P_2 will be the set $\{s \mid s_1 \sqsubseteq s \sqsubseteq s_1{}^* \sqcup s_2$ or $s_2 \sqsubseteq s \sqsubseteq s_1 \sqcup s_2{}^*$ for some $s_1, s_1{}^* \in P_1$ and $s_2, s_2{}^* \in P_2\}$. And thus, (b) follows. □

THEOREM 2. *Let $Q_1, Q_2, \ldots$ ground $P_1 \vee P_2$. Then:*

> *(a) On a non-convex account of propositions: There are R_i such that each R_i is either identical to Q_i or grounds it and such that $R_1 \wedge R_2 \wedge \ldots$ entails P_1 or entails P_2 or entails $P_1 \wedge P_2$.*
>
> *(b) On any account of propositions: There are R_i such that each R_i is either identical to Q_i or grounds it and such that $R_1 \wedge R_2 \wedge \ldots$ inexactly entails P_1 or inexactly entails P_2.*

Proof. Let $Q_1, Q_2, \ldots$ ground $P_1 \vee P_2$. Hence, each of the Q_i obtains. By LEMMA 3, every Q_i that is not a singleton is grounded in an obtaining singleton. For every i, let s_i be the only state in Q_i if Q_i is a singleton, and let s_i be the only state in an obtaining singleton that grounds Q_i otherwise. Let $R_i = \{s_i\}$. Since ground implies

entailment, for every i, $s_i \in Q_i$. Hence, by LEMMA 1, $s_1 \sqcup s_2 \sqcup ... \in Q_1 \wedge Q_2 \wedge ....$ Since $Q_1, Q_2, ...$ grounds and thus entails $P_1 \vee P_2$, it follows that $s_1 \sqcup s_2 \sqcup ... \in P_1 \vee P_2$. Now, if a non-convex account of propositions is adopted, by LEMMA 4(a), $s_1 \sqcup s_2 \sqcup ...$ is an element of P_1 or an element of P_2 or an element of $P_1 \wedge P_2$. Thus, $R_1 \wedge R_2 \wedge ...$ entails P_1 or P_2 or $P_1 \wedge P_2$. That is, (a) holds. If a convex account of propositions is adopted, by LEMMA 4(b), $s_1 \sqcup s_2 \sqcup ...$ has an element of P_1 or for P_2 as a part, say t. Assume first that $t \in P_1$. Now, let t' be an arbitrary state that has $s_1 \sqcup s_2 \sqcup ...$ as a part. Then, by the transitivity of parthood, t' has t, and thus an element of P_1 as a part. Since t' was arbitrarily chosen, it follows that $R_1 \wedge R_2 \wedge ....$ inexactly entails P_1. The case in which $t \in P_2$ is analogous. Hence, (b) holds. □

COROLLARY 2. *Let $Q_1, Q_2, ...$ be all fundamental and ground $P_1 \vee P_2$. Then:*

> *(a) On a non-convex account of propositions: $Q_1 \wedge Q_2 \wedge ...$ entails P_1 or P_2 or $P_1 \wedge P_2$.*
>
> *(b) On a convex account of propositions: $Q_1 \wedge Q_2 \wedge ...$ inexactly entails P_1 or P_2.*

Proof. Follows directly from THEOREM 2, given that fundamental propositions have no grounds. □

THEOREM 2 (a) and COROLLARY 2 (a) are exactly the principles WORLDLY DISJUNCTIONS and WORLDLY DISJUNCTIONS*, respectively, from the main text (where I focused purely on the simpler non-convex account). If we assume CONVEXITY, by contrast, we get the slightly weaker results of THEOREM 2 (b) and COROLLARY 2 (b) which replace (exact) entailment by inexact entailment. Note, however, that this modification does not matter for the considerations in the main text. For all that mattered there was whether disjunctive status truths and their grounds *fix* which of the disjuncts of the status truth's prejacent obtain. And the difference between exact vs. inexact entailment has no bearing on this, since it merely concerns the difference between full vs. partial relevance. No matter whether a sentence exactly or inexactly entails another one, the truth of the former guarantees the truth of the latter.

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Summary

Dispositional Essentialism is the view that fundamental properties essentially confer nomic roles on their bearers and as such are the sources of natural modality. The aim of this thesis was to provide a new foundation for the view, by clarifying its theoretical and ontological commitments and situating it in the context of the current debate on essence, dependence, grounding, and their logic. In chapter 1, I argued that Dispositional Essentialism is compatible with austere nominalism, the view that there are no properties whatsoever. Drawing on resources in higher-order metaphysics, such as, in particular, the notion of generic essence, I developed and further explored a nominalist account of Dispositional Essentialism, Austere Nominalist Dispositional Essentialism. In chapter 2, I defended Dispositional Essentialism against a core objection. According to this objection, the view incurs mutually incompatible commitments, where this incompatibility is alleged to derive directly from the nature of the relations between essence, dependence, and grounding. Finally, in chapters 3 and 4, I discussed a prominent and prima facie compelling principle about the explanatory role of essence, according to which essence-truths ground their prejacents. I argued that two recent arguments based on considerations pertaining to the logic and semantics of essence and ground ultimately fail. I then offered a novel argument against that same principle based on considerations more specifically rooted in truthmaker semantics.