On the Nature and Structure of Reality

by

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Abstract

This dissertation defends an **essence first** approach to metaphysics. We begin with identifying metaphysical conceptions of identity, existence, and truth, as associated with qualified versions of the questions 'What is it [really]?', 'Does it [really] exist?', and 'Is it [really] the case?'.

The concept of **essence** is identified with the metaphysical conception of identity, whereas the concept of **structure** flows from the metaphysical conceptions of existence and truth when structural claims are added: that what does not really exist or is not really the case owes its existence or truth to what really exists or what is really the case.

It is then systematically shown that the concept of essence can be used to define the metaphysical conceptions of existence and truth [i.e. **ontological fundamentality** and **alethic fundamentality**], as well as the structuring relations of **ontological dependence** and **alethic ground** that flow from them. It is furthermore shown how we can define the notions of **metaphysical necessity** [i.e. what must be the case without qualification] and **generic essence** [i.e. what it is to be thus-and-so] within the same essentialist framework.

However, the definitions provided are not merely an exercise in ideological simplification. For it is claimed that they offer superior accounts of the notions defined. Provided we can sensibly take these notions to be constitutive of metaphysics, we arrive at the essence first approach.

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Contents

Chapter 1

A Metaphysicians' Paradise

Consider the following three items from the inventory of reality: myself, my mobile phone, and the pair-set containing myself and my mobile phone. (Whether the mobile phone is an extension of my mind is ignored.)

Each item has various properties that the others do not: I am myself human; the mobile phone is an artifact; and the set has a cardinality of two. Furthermore, the three items have various properties in common: each is either blue or not blue; each is such that it is identical with itself; and each features in this paragraph.

Still more, each item stands in different relations to items distinct from the three: I bear the sibling relation to my brother; the mobile phone was manufactured by Apple; and the pair-set is equinumerous with the set containing only Plato and Aristotle. Even still more, the three items are interrelated: both myself and my mobile phone are common members of the pair-set. Conversely, the pair-set contains myself and my mobile phone as members.

But the selection of items is arbitrary. Similar claims could be made regarding any triple, quadruple, etc. of items. Long story short: items from the inventory of reality have many properties, and stand in many relations to many other items. In fact, if we are so permissive, then everything has infinitely many properties, and is related to everything else in an infinite number of ways. For example, given that Socrates has the property of being identical with Socrates, then he has the property of being identical with Socrates or the number 0; the property of being identical with Socrates or the number 0 or the number 1; and so on. Moreover, Socrates and the number 0 bear the relation that holds between a pair of items when each is either identical with Socrates or identical with the number 0; the relation that holds between a pair of

items when each is either identical with Socrates or the number 0 or the number 1; and so on.

1.1 Metaphysical Identity

There is a longstanding tradition within metaphysics, dating back to Aristotle, of bifurcating the properties and relations of an item with respect to a certain theoretical task: that of identifying what the item is; its **metaphysical identity**, or **essence**.[1] The properties and relations that pertain to what an item is are essential, whereas those that do not are accidental.[2]

In its intended sense, the notion of essence, or metaphysical identity, is distinct from the binary relation of logical identity. For one, it is a trivial matter whether, for example, the number 2 is identical with itself. However, it is a substantive matter whether it is of the essence of the number 2 (i.e. pertaining to what it is) that it is the set of all pairs; the pair-set of units; the pair-set of the null set and its unit set; or whether it is *of its own kind*.

So the notion of essence, or metaphysical identity, is not the binary relation of identity from logic, and it is associated with the question 'What is it?'. But we ask all sorts of 'What is it?' questions that are not directed at the essences of things. For suppose Bargle offers Argle a beverage, in addition to a snack of crackers and cheese.[3] As Bargle sits the glass down on the table, Argle asks 'What is it?' to which Bargle replies 'It is your drink'.

What Bargle said in response to Argle is not false. But suppose Argle persisted, 'No. What is it, *really*?' to which Bargle replies 'It is a sine qua non of life'. Here the intended question is after the essence of the liquid placed on the table, and not its importance in sustaining human life. With the qualification added, the answer returned is incorrect.

Suppose Bargle realizes this, and says 'Oh, my apologies. It is a liquid composed of H_2O'. Now Bargle has answered Argle's question. For what has been returned is a statement pertaining to what the substance *really* is, *viz.* its essence.

[1] This is *conistent* with other bifurcations relative to different theoretical tasks. For example, if we are tasked with finding the joints of reality, we may wish to bifurcate the properties and relations into the natural and non-natural, if our task calls for an absolute conception of naturalness. See Lewis (1983, 1986).

[2] For the most part, our interest is in the concept of essence, and not of accident.

[3] We allude here to Lewis and Lewis (1970).

1.2 Metaphysical Qualifications

It is not uncommon for metaphysicians to qualify their questions and claims with 'really'. For example, a metaphysician might say 'There are numbers, but not *really*', meaning that in the metaphysical sense of what is the case, or in the metaphysical sense of 'there is/are', there are no numbers, or no truths involving numbers.[4]

There seem to be three salient forms of **metaphysical qualification**, associated with the following three questions.

- What is it, *really*? (Identity)
- Does it *really* exist? (Existence)
- Is it *really* the case? (Truth)

From these qualified questions we obtain metaphysical conceptions of identity, existence, and truth. Although metaphysical qualification is *common* among metaphysicians, is it *coherent*?

Thomas Hofweber (2009) claims that it is not coherent. The argument, in a nutshell, is as follows. 1.) Metaphysical conceptions of identity, existence, and truth are **distinctively metaphysical**: they are rooted *in metaphysics*. 2.) If a discipline's concepts are rooted in that discipline, then they are **esoteric**: it takes a practitioner of the discipline to understand them. 3.) Esoteric concepts should be rejected. Therefore, 4.) The metaphysical conceptions of identity, existence, and truth should be rejected.

Although a more thorough discussion could no doubt be had, and would possibly be beneficial, no resistance is felt by arguments of this sort. For the mathematician's concept of a set (SET), which is partially given, for example, by axioms like infinity and foundation, is no less esoteric, and no more connected, to the ordinary concept of a *collection* (set) than the metaphysician's concept of identity (IDENTITY) is to the ordinary concept of *identity* (identity).[5]

[4]See, for example, Dorr (2005), Fine (2001), Rosen (2009), Schaffer (2009), and Sider (2011). For the purposes of introduction, we conflate 'exists' and 'there is'. Also, not all 'real' qualifications are metaphysical qualifications. For in response to something you say, I might ask 'What did you really mean?', where metaphysics is furthest from our concerns.

[5]Defined by lexicographers as 'the fact of being who or what a person or thing is'. (Hofweber is in the habit of inflating the metaphysical concepts by putting them in all-caps.) Also, see Raven (2012, 696) for a different, but related, discussion of set.

Second, metaphysical conceptions of identity, existence, and truth seem no more presumptuous than claims concerning the limits of inquiry. In any case, insofar as we might be interested in investigating reality in a general manner, which stretches over many different disciplines, we are bound to require concepts that are not confined to any one of those disciplines. The thought that our ordinary concepts should then spread across the various aspects or levels of reality is unlikely. Ordinary concepts, such as truth, existence, and identity, no doubt serve to latch on to the metaphysical concepts. But that need not be taken to imply anything more than family resemblance. After all, there is some reason we would like to express the concept as a metaphysical conception *of identity*, or *existence*, or *truth*.

Suffice it to say, this kind of antimetaphysical attempt to end inquiry before it begins will not spoil our dinner. Discussion of it will be limited to the above remarks. This is not because there are no challenges to be made, or discussions of the sort to be had. But there does not seem to be anything serious enough to stop metaphysics in its tracks.

1.3 Neutrality and Presupposition

This provides the outline of a pursuable concept of **essence** as a metaphysical conception of identity, distinct from logical identity, and associated with a qualified sense of the question 'What is it?'.

Some might be especially suspicious of the metaphysical conception of identity over those of existence and truth. But this extra suspicion would be unwarranted. Two features of the notion of essence help make the point: **neutrality** and **presupposition**.

1.3.1 Essence and Neutrality

The ontological and alethic questions have yes-or-no answers. Although metaphysicians may dispute what the correct answer is, either numbers really exist or they do not; and either it is really the case that *Obama is president* $\wedge$ *Sanders is a democrat* or it is not (in the sense of whether conjunctions are really the case, in addition to their conjuncts being the case).

When these questions are answered in the negative, this amounts to assigning a diminished metaphysical status to the existent or truth in question. After all, only real existents or truths are *real*! The rest is not

real, or perhaps only less real. In other words, the questions target the elite: what *really* exists, and what is *really* the case.

Not exactly so with respect to essence. First, essentialist questions are not yes-or-no. Although it may be that either 2 is essentially the pair set of the null set and its unit set or it is not, the question 'What is the number 2, really?' is not appropriately answered with 'yes' or 'no'. Second, although the notion privileges certain properties and relations, it does not target a privileged portion of reality. Whether the item in question is an electron or Eli Hirsch's incar, we can say that there is something it really is. Essentialist claims are comparatively more innocuous.

1.3.2 Essence and Presupposition

Essence is also presupposed in answers to the ontological and alethic questions, just as a red object is presupposed in 'The red apple is delicious'. For example, a claim such as 'Numbers exist, but do not really exist' presupposes that numbers really are a certain way, such as to underwrite their unreal existence. For example, that they are certain sorts of concepts, or works of fiction like Sherlock Holmes.[6] I could say, for example, 'I don't know what that really is, but it scares me'. But it would seem odd to say 'I don't know anything about what numbers really are, but they don't really exist'. In order to take a stance with respect to metaphysical existence and truth, it would then seem to be the case that one must take a stance on what the items involved really are. In this way, being suspicious of the metaphysical conception of identity over that of truth and existence seems somewhat misguided.

1.4 Molybdomancy

So we have a general idea of essence, analogous to a bit of melted lead; and we have existing theory, analogous to a pot of water. The next step is molybdomancy: drop the lead into the water and see what form it takes. Of course, there are many forms it might take, which will suggest different fates; some optimistic, some not so much.

[6]Dasgupta (2014b) expresses a similar view when he talks about essence as *prior* to possibility.

1.4.1 Essence and Necessity

It has been popular to think that essence takes the form of metaphysical necessity. For suppose we take possible worlds semantics most seriously, and we regard *truth at* as the basic modality, a more basic modality than necessity itself.[7]

Suppose further that this is expressed by means of a sentential operator that is indexed with a constant or variable name, either singular or plural. For example, if '@' denotes the actual world, then '$At_{@}B$' is true iff B is true at @. If 'S' is a plural term denoting the Socratic worlds, i.e. for every x, x belongs to S ($x \prec S$) iff x is a world and Socrates exists at that world ($Wx \wedge At_xEs$), then 'At_SB' is true iff B is true at every world belonging to S (where 'A' and 'B' are sentential variables).

More generally, we might take there to be a plurality X corresponding to each item x, denoting the x-worlds:

$(\forall x)(\exists X)[(\forall y)(y \prec X \equiv (Wy \wedge At_yEx))]$.

We are then naturally led to the view that for it to be essential to x that B is for it to be that At_XB.[8] Does this capture essence?

In a *loose* sense, it does. For something pertains to what Socrates is *only if* it is true at every Socratic world. But this loose sense of essence fails if we wish to build in a condition of *relevance* to the notion of essence, whereby something is essential to an item *if and only if* it pertains to what the item is. Indeed, the metaphysical conception of identity encodes some such notion of relevance.

But relevance is clearly not achieved with the loose sense of essence, since there are many things common to the Socratic worlds that have nothing to do with Socrates. For example, that 2 is greater than 1, or that it is true at every Platonic world that Plato is human. To secure relevance, we need to relativize truths, not to worlds, which involve all sorts of matters, but to something more refined.

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[7] See for example Linsky (1991).

[8] This is just the standard conditional view of essence in terms of necessity. It is differently formulated for the purposes of drawing parallels with the conception of essence we will in the end adopt.

Tangentially, we can even introduce a conception of *collective essence*: of something being essential to many items taken together. For example, suppose we want to consider the collective essence of Socrates and Plato. These will be the truths common to the Socratic and Platonic worlds. In other words, the 'plural intersection' of S and P ('$S \cap P$'): $(\forall y)(y \prec S \cap P \equiv (Wy \wedge At_yEs \wedge At_yEp))$. Then at least everything essential to each of the items will be essential to the collective, since everything true at the Socratic worlds, for example, is true at any sub-plurality of the Socratic worlds, including those Socratic worlds that feature Plato.

1.4.2 Primitive Essence: Inexact and Exact

To secure relevance, let essence take its own form. Let us not consider truths at worlds, but rather truths as they pertain to the essence(s) of the item(s) in question. In other words, take the operator to be an essentialist operator, and take the index to be the items, and not more, to which a given truth is attributed as essential. For example, **it is essential** *to Socrates* that Socrates is human.[9]

Although this is a step in the right direction, it still does not, on its own, secure perfect relevance. For what are the logical properties of the essentialist operator(s)? In this regard, it might appear that the logical consequences of what is essential to an item should also be essential to that item. That is, it is natural to take the operator(s) as closed under (let us say classical) logical consequence.

But then this only provides us with an *inexact* account of essence, since, although metaphysical irrelevancies such as that 2 and 2 is 4 are removed, many theorems of logic have nothing to do, for example, with Socrates. For example, it follows from the empty set of statements that Plato is human or not human. So it is essential to Socrates that Plato is human or not human. But Plato's humanity or non-humanity does not pertain to what Socrates is, and so essence is, at best, inexactly achieved.[10]

To achieve *exact* essence, i.e. to achieve exactly what we want, we need the essentialist operator and item indexes, but we also need to restrict against logical closure.[11] This is the concept of exact essence.[12]

1.5 An Essence First Metaphysics

Primitive notions do not stick merely on the basis of the theoretician's say-so. They must earn their keep from what they can contribute. Otherwise, they are idle.

[9] See Fine (1994a, 1994b, 1995b) for a defense of this idea.

[10] Fine (1995b) suggests a restriction on closure against consequences that involve *objects* that do not pertain to what the item in question is. But even this is not good enough, since (i) it is not essential to Socrates that Socrates is snubnosed or not snubnosed; and (ii) it is not essential to Socrates that everything is identical with itself. So again, relevance is only inexactly achieved.

[11] However, we will in Chapter 3 see how to recover closure with an exact conception of essence.

[12] The distinction between exact and inexact essence corresponds to Fine's (1994b, 1995a) distinction between constitutive and consequentialist essence, respectively. The terminology we employ here is borrowed from his work on truthmakers.

The view to be defended here is that the primitive notion of exact essence offers a paradise for metaphysicians. In particular, it is argued that with this conception of exact essence, along with some further, definable essentialist materials, we can provide *superior* accounts of various notions that are taken to be constitutive of metaphysics, such as metaphysical necessity, generic essence, ontological dependence, metaphysical ground, and relative and absolute fundamentality, both of an ontological and alethic variety.[13]

Let us then briefly outline these notions as they are standardly given, and comment on why they are taken to be constitutive of metaphysics.

- **Metaphysical Necessity** This is the notion of strict metaphysical necessity, where it is necessary, for example, that 2 and 2 is 4, but not necessary that Socrates is human, since Socrates may have failed to exist.[14]

- **Generic Essence** These are statements of essence pertaining to predicables. For example, that what it is to be prime is to have no non-trivial divisors, or what it is to be a bachelorette is to be an unmarried female.

- **Ontological Dependence** This expresses the sense in which some items owe their existence to others. For example, that {Socrates} owes its existence to Socrates, and perhaps Saul, in part, owes his existence to his mother Dorothy.[15]

  The metaphysical conception of existence is plausibly related to this notion of ontological dependence. For we might say that something *really exists* iff it exists and does not ontologically depend on anything.[16]

- **Metaphysical (or: alethic) Ground** This is the notion of a truth holding in virtue of other truths, the converse of which is ground. For example, that Obama is president, and that Sanders

[13] "Superior" is included and italicized above to stress that the project is not merely an exercise in ideological simplification.

[14] There are myriad issues to raise with respect to this rough characterization. Such issues will be dealt with along the way.

[15] We are not here taking a stance on whether there is a unique connection in these cases. For there are perhaps various ways in which 'owing' can be conceived.

[16] This is explored in Chapter 5. Although okay for introductory purposes, we will subsequently be more careful to distinguish 'exist' from 'there is'. However, it is standard to conflate them.

is a democrat, collectively ground the conjunction that Obama is president $\wedge$ Sanders is a democrat.

The notion of metaphysical ground is plausibly connected with the metaphysical conception of truth: something is *really the case* iff it is not grounded in any truths.[17]

- **Fundamentality** This notion admits of both a comparative and absolute variant, as well as an ontological and alethic variant. The comparative notions correspond to the notions of ontological dependence and metaphysical ground, where what is dependent and what is grounded is less fundamental than that on which it depends and in which it is grounded. The absolute notions are then taken to correspond to the metaphysical conceptions of existence and truth.

To reiterate: the claim to be defended is that each of the above notions can be reduced to the notion of exact essence, along with some further, definable essentialist materials. In other words, we advocate an essence first approach to metaphysics.

But why are these notions taken to be constitutive of metaphysics? Why is it significant if these notions are reduced?

We take it as a datum that reality, as a whole and in many of its parts, is complex, and so exhibits structure. It is then a matter of how that structure is to be articulated.

It seems plausible that this structure runs along two dimensions: ontological and alethic. For consider the proposition $p \vee q$ (where 'p' and 'q' are propositional variables; they stand in for names of propositions). As an existing thing, it is complex: it is the result of disjoining p and q with disjunction ($\vee$). As a result, it owes its existence to the content of p and q, and to the rules and truth-conditions governing disjunction ($\vee$). As a truth-bearer, its conditions for truth are complex: it is true iff either p is true or q is true. If, for example, $p \vee q$ is true, and p is true but q is false, then $p \vee q$ owes its truth to the truth of p.

In the same vein, philosophers have been moved to talk about structure along the ontological dimension. This is best exemplified in Fine (1995a), Schaffer (2009), and Sider (2011). As well, they have been moved to talk about structure along the alethic dimension. This is best exemplified in Fine (2012a), Rosen (2010), and Sider (2011). But this talk issues from our metaphysical conceptions of existence and truth, so long as we add *structural claims*: (i) What does not really exist owes its

[17] See Correia and Schnieder (2012).

existence to what really exists. (ii) What is not really true owes its truth to what is really true.

Then so long as we are given the metaphysical conceptions of identity, existence, and truth, as well as the structuring claims, we end up with everything but metaphysical necessity, the notion least in need of justification as constitutive of metaphysics. What is more, we are not, as of yet, reading essentialist content into the metaphysical conceptions of existence and truth, or the structural relations extracted from them given the structural claims. This is a matter to be developed as we proceed. All in all, we do have what appears to be as neutral and comprehensive a conception of metaphysics that the allowance of structure permits.[18]

1.6 Release of Liability

There are two tasks that remain to round out the introduction. First, a release of liability. This is where we make decisions on what we are not going to discuss in detail. Second, an outline of what is to come. This is so the reader knows where things are headed. Let us comment on some omissions.

1.6.1 Aristotle

There will be no discussion of Aristotle, or of a 'neo-Aristotelian revolution'. Why not? Two reasons. First, Aristotle scholarship is highly involved, and I am not a scholar. I am not sure I could establish something in scholarship that would aid my cause here, which is to defend an essence first approach to metaphysics. Second, I am unsure about the extent to which I am actually 'Aristotelian'. For one, I allow my first order quantifiers to range over properties and relations, in addition to quantification into predicate and sentential position.[19] Also, I take essence to be neutral, whereas I have been lead to believe that Aristotle does not. This is not to say that these are the most salient and important differences. It is simply to express unclarity on the issue, and that it is best resolved elsewhere.

[18] Debates in what might loosely be regarded as 'first-order metaphysics' then concern particular claims involving these metaphysical notions.

[19] See Prior (1971).

1.6.2 Quine

There will be no discussion of 'Quinean metaphysics' in contrast to the approach advocated. Why not? I adopt metaphysical conceptions of identity, existence, and truth. I also add structural claims that give rise to notions of ontological dependence, metaphysical ground, and (relative) fundamentality. But some, following Quine, might think that metaphysics is primarily concerned with what there is, in a single, ordinary (or logical) sense that does not require the kind of metaphysical structuring to which I subscribe.[20] This I will simply have to chalk up to a substantial difference of opinion. But even given such large-scale difference of opinion between metaphysicians, it does not stunt progress to explore the essence first approach to metaphysics, despite there being no defence against the Quinean. Witness van Inwagen who describes a 'good way' of proceeding.

> Let metaphysicians who accept the idea of ontological levels construct theories that incorporate that idea. Let metaphysicians who reject the idea of ontological levels construct theories that do not incorporate that idea. Once these things have been done ... compare all the theories that our metaphysicians have constructed and determine which is the best (forthcoming, 2).

1.6.3 Definition and Explanation

There is an association of essence with definition, and an association of ground with explanation, both of a metaphysical flavour. But an issue that continually presses harder is the extent to which we need to distinguish between essence and (real, or metaphysical) definition, and between ground and (real, or metaphysical) explanation.[21] Though no doubt important for some purposes, I will say little-to-nothing about the issue. As far as my investigations go, I have no reason to regard these connections as anything more or less than analogical.[22]

[20] Though perhaps a primitive predicate expressing parthood, and governed by classical mereological axioms, would be added.

[21] See for example Koslicki (2016) and Schaffer (2016).

[22] As we will see in Chapter 5, the account of ground offered is compatible with 'worldly' and 'representational' variants.

1.6.4 Interest-Relativity

We know the notion of exact essence contains at least one relativization: to the items to which a truth is attributed as essential. For example, it is essential *to Socrates* that Socrates is human. But some –especially Sullivan (forthcoming)– would say, and not without motivation, that the account is still incomplete. What is missing, they will say, is a relativization to certain interests. Let us consider a pair of Sullivan's cases that are intended to model her view.

> **Physics**. I'm offering an explanation for why some coin, c, completes an electrical circuit. c has the properties of conducting electricity and of being a unit of account in a financial market. Any good physical explanation of why c completes a circuit will cite its conductivity. Suppose there are objective norms underlying physical explanations. Then it is true that c essentially conducts electricity in my explanatory context. But c is only accidentally a unit of account, since a good physical explanation involving c need not cite c's economic properties.

> **Economics**. I'm offering an explanation why c is worth ten cents. Any good economic explanation of why c is worth ten cents will cite its property of being a unit of account in a market. Suppose there are objective norms underlying economic explanations. Then c is essentially a unit of account in my explanatory context. But c accidentally conducts electricity, since economics is indifferent to the electrical properties of currency.

My diagnosis of what is going on here is that we have failed to invoke the notion of generic essence. The coin essentially conducts electricity, and is accidentally worth ten cents. Period. But the coin is nevertheless worth ten cents, even if not essentially so. And part of *what it is to be worth ten cents* is to be a unit of account in a market. But what it is to be worth ten cents has nothing to do with conducting electricity.

The point is that statements of generic essence can involve predicables that are accidental to the items that satisfy them. For example, Susie is accidentally a bachelorette, and yet to be a bachelorette is to be an unmarried female. Susie's bachelorettehood might then be used in some explanation, say, to explain why Susie is either a bachelorette or playing

guitar on the moon. It is not part the view advocated here that only essential properties can enter into explanations concerning an item. But this does not require further relativization within the concept of exact essence.[23]

1.6.5 Competing Primitives

There are neighbouring notions, such as *structure*, *degrees of being*, *building*, etc. that other metaphysicians employ.[24] Why do I deal with ground and dependence, instead of these?

To a large extent, these other notions may be regarded as variants on some or all of the preferred notions of ontological dependence, ground, and fundamentality, each of which I attempt to locate within the notion of exact essence. You might think 'How could this be?', since the various notions have different 'shapes'. For example, Sider's notion of structure is 'biconditional', whereas ground is taken to be 'conditional': grounds strictly imply what they ground, but are not, in general, strictly equivalent to what they ground. By contrast, a statement with a metaphysical semantics is strictly equivalent to its metaphysical semantics. As we will see, the different 'shapes' reflect different choices available within the general framework advocated. So nothing is gained by instead saying 'structure' or 'degrees of being' or 'building' or whatever is preferred. What is important is to recognize that there are two dimensions: existence and truth.

1.6.6 Metaphysical Rationalism

I believe that the notion of exact essence can serve as a foundation for metaphysics. But I do not endorse the view that every truth is either essential to some items or else owes its truth to something essential to some items. This view, *metaphysical rationalism*, is advocated by Dasgupta (2014b). Given that essential truths are metaphysically necessary, and grounds strictly imply what they ground, this would imply that everything is metaphysically necessary.

On this issue, I err on the side of conservatism, and allow there to be genuine contingencies, and not only possibilities relative to proper subsets of the items there are. But I think conservatism is good here,

[23]It looks like an altogether different use of 'essential'. It is perhaps more like Quine's (1960) notion of 'essential occurrence' in connection with logical truth.

[24]On structure, see Sider (2011). On degrees of being, see McDaniel (2013). On buidling, see Bennett (2011a).

since it allows us to maintain real distinctions, for example, that between Socrates' being a philosopher and Socrates' being risible.[25]

1.7 What to Expect

The aim is to defend an essence first approach to metaphysics. This will be a seven step procedure, including the present introduction.

- **What Essence Cannot Be**, in which it is argued that it is impossible to account for exact essence in terms of metaphysical necessity.
- **What Necessity Is**, in which the notion of exact essence is fleshed out, and a defense is provided of the idea that to be metaphysically necessary is to be part of the collective essence of everything.
- **The Priority of the Individual**, in which the notion of exact essence is used to provide an account of statements of generic essence, such as 'to be prime is to have no non-trivial divisors'.
- **An Essence First Approach to Metaphysics**, in which the notion of exact essence is used to define generic notions of dependence and ground, under which the notions of ontological dependence and alethic ground are subsumed.
- **Ground and Fundamentality**, in which the theory resulting from the previous chapter is used to provide an account of fundamentality.
- **The Problem of Meta-Ground**, in which the essence first approach is used to provide an answer to the problem of meta-ground: What grounds the grounding facts?

Although Chapters 3 and 4, and 6 and 7, can be seen as partly constituting the essence first approach to metaphysics, there is an important sense in which Chapters 3 and 4 pave the way, and Chapters 6 and 7 are applications. So without further ado.

[25] More will be said on this issue in Chapter 3.

Chapter 2

What Essence Cannot Be

Let us call the view that essence is to be analyzed in terms of necessity **modal essentialism**. More specifically, **modal essentialism** is the view that what it is for it to be essential to x that x is F ($\Box_x Fx$) is for it to be necessary that x is F ($\Box Fx$).

But even this initial statement of the view is ambiguous between a *weak* ($\Box_W$) and *strict* ($\Box_S$) reading of the necessity operator. On a strict reading, it is, for example, necessary that 2 is even, but it is not necessary that Socrates is human. This is because, while the number 2 cannot have failed to exist, Socrates may have failed to exist, in which case, it is assumed, he would not have been human. Therefore, a strict reading of necessity in **modal essentialism** implies that Socrates is not essentially human.[1]

But a weak notion of necessity is definable from the strict notion to overcome this shortcoming. Let us say that it is weakly necessary that A is defined as: for some $x_1, \ldots, x_n$ (where variables have free range over possible items, etc.), it is strictly necessary that x_1 exists and ... and x_n exists only if A. Weak necessities are those necessities on whose truth the existence of some items is strictly necessarily conditional.

weak necessity. $\Box_W A =_{df} \exists x_1, \ldots, x_n(\Box_S E x_1 \wedge \cdots \wedge E x_n \supset A)$.[2]

[1] A couple of remarks. (1) Contra Prior (1957), we do not invoke the distinction between strict and weak necessity by introducing a notion of statability, denying the duality of necessity and possibility, and restricting the rule of necessitation. Our primary concern is not with strict actualism. (2) If we thought of certain necessary propositions as being independent of worldly goings-on, then we would take the proposition that Socrates is human, for example, as true irrespective of whether Socrates comes into existence at a particular world, and so strictly necessary. Such a view is advocated in Fine (2005b). We return to this position.

[2] For discussion of weak necessity, see Kripke (1971) and Zalta (2011). In what now follows, we take the predicate 'exist' ('E') as primitive. Thus 'Ex' is not equivalent to '$\exists y(x = y)$'. The quantifiers are then 'possibilist', ranging over every possible item, and existence is conceived, not as *being concrete*, but rather as some generic kind of

As such, it is weakly necessary that Socrates is human, since it is strictly necessary that Socrates exists only if he is human, and therefore there are some items whose existence is strictly necessarily conditional on Socrates' being human.[3] Then we can read **modal essentialism** in terms of weak necessity as follows.

modal essentialism $\Box_y Fy =_{df} \Box_W Fy$.[4]

On a weak reading, **modal essentialism** says that what it is for it to be essential to y that y is F is for it to be weakly necessary that y is F. Strictly speaking, in these cases the number of items in the existential antecedent of the weak necessity is one item identical with y. Thus equivalently: $\Box_y Fy =_{df} \exists x(x = y \wedge \Box_S Ex \supset Fx)$. Socrates is therefore the 'witness' to the necessity in the above example.

We are considering only the monadic fragment of what might otherwise be regarded as a broader theory. That is, F only takes as values monadic predicates in **modal essentialism**. However, this does not prevent relational essences, since we allow full use of lambda (λ) notation for expressing complex relational predicates. For example, it may be essential to Saul that he is a son of Dorothy, since it is strictly necessary that Saul exists only if Saul is an x such that x is a son of Dorothy; and so there are some items whose existence is strictly necessarily conditional on Saul's being an x such that x is a son of Dorothy.[5]

So construed, the thesis of **modal essentialism** is attractive. First, given its expression within quantified modal logic (plus an existence predicate), **modal essentialism** sits the concept of essence on solid logical and semantical foundations. (The solidity of the metaphysical foundations is a different story.) Second, the view captures a very natural way of privileging things as *essential*. The essential properties of an item are those the item cannot exist without exemplifying or instantiating. In other words, they are the properties an item *must* have. The difference is perhaps only of modal strength in comparison with the ordinary claim that water is essential to human survival. It is, in a sense, what we *must*

realization, so as to allow for contingent abstracta, if desired.

[3]Every strict necessity is a weak necessity, since, for any items $x_1, \ldots, x_n$, their existence is strictly necessarily conditional on any strict necessity.

[4]The analysandum is to be taken as expressing either an inexact or exact notion of essence, or metaphysical identity. The analysans need not be construed in terms of truth-at-a-world.

[5]The thesis of **modal essentialism** is expressed in the language of quantified modal logic, with an added predicate for existence. But the thesis is not that quantified modal logic is committed to essentialism. See Parsons (1969) for the claim that quantified modal logic is only committed to the *meaningfulness* of essentialist statements, and not to the truth of any essentialist statement.

have to survive.[6]

However, Kit Fine (1994a) has recently argued that **modal essentialism** is in fact false, at least insofar as it is aimed at analyzing an (in)exact notion of essence, or metaphysical identity.

In what follows, we rehearse Fine's examples against **modal essentialism**, which we assume compel the conclusion that it is false. We begin our inquiry accepting that (in)exact essence cannot be captured by weak necessity alone. The further, and more interesting, question is whether some extension of the view is possible.[7]

On this, Kit Fine (1994) has offered an argument that it is impossible to treat (in)exact essence with necessity. Furthermore, Alessandro Torza (2015) provides a proof of the claim that no sentential operator definable in the language of standard quantified modal logic can provide an account of essence. But it is argued that Fine's argument is fallacious, and that Torza's proof, though perhaps formally okay, is too weak. The question of **extended modal essentialism** remains open. Here we offer a novel argument against any extension.

However, this discussion is all very abstract, and does not consider the various particular proposals for how to extend **modal essentialism** that we find scattered throughout the recent literature on essence. As such, we consider the proposals of Gorman (2014), Wildman (2013) and Cowling (2013), and finally of Zalta (2006), each of which propose to extend the analysans of **modal essentialism** with their own preferred concepts. It is argued that these proposals fail on additional, albeit complementary, grounds from those given in the prior, abstract discussion.

2.1 Rehearsing Fine's Examples

Fine casts a slightly wider net than our present inquiry. For he targets both strong and weak readings of necessity in **modal essentialism** (but where existence is construed quantificationally). But let us focus in on the weak version of **modal essentialism**.

The thesis of **modal essentialism**, given that it is a statement of analysis, implies the following universalized equivalence.

[6]Formally, I tend towards the sentential mode: taking necessity or essence to be expressed by a sentential operator. Informally, it seems, on occasion, more natural to articulate claims in the predicate mode: taking necessity or essence as expressed by a predicate modifier. In either case, it is often convenient to speak in a 'metaphysical mode': talk of propositions or properties.

[7]In the introduction we went from 'essence takes the form of necessity' to 'essence takes its own form'. Here we consider what options might lie in between.

equivalence $(\forall y, F)(\Box_y Fy \equiv \Box_W Fy)$.

Fine's examples attack the right-to-left direction of **equivalence**. They are examples the generalization of which is the following existential: $(\exists y, F)(\Box_W Fy \wedge \neg\Box_y Fy)$. The upshot is that weak necessity is not sufficient for essence, or metaphysical identity.

The examples require different levels of logical complexity. At the very least, we need the use of lambda (λ) notation. This device binds variables to form complex predicates. For example, take the open sentence 'x is a member of {Socrates}'. We can apply the operator to form '$\lambda x.$ x is member of {Socrates}'. This variable-binding device is different from the quantifiers and variable-binding term operators, such as the description operator or set-formation, since what is produced functions syntactically neither like a sentence nor a denoting term. What is formed is rather a predicate. In our example, the complex predicate formed is read 'is an x such that x is a member of {Socrates}'. This can then be predicated, for example, of Socrates: Socrates is an x such that x is a member of {Socrates}.[8]

Fine's examples then use complex predicates in various ways. We focus on the following three examples.

1. **asymmetry**. We begin with a pair of claims concerning the membership of Socrates (s) in {Socrates} ($\{s\}$): $\Box_W[\lambda x.x\epsilon\{s\}]s$ and $\Box_W[\lambda x.s\epsilon x]\{s\}$. That is, it is weakly necessary that Socrates is an x such that x is a member of {Socrates}; and it is weakly necessary that {Socrates} is an x such that Socrates is a member of x. Given **modal essentialism**, it is essential to Socrates that he belongs to {Socrates}, and it is essential to {Socrates} that it contains Socrates. However, in the case of Socrates, belonging to {Socrates}, or to any set, does not pertain to what Socrates essentially is, i.e., to his metaphysical identity[9].

2. **distinctness.** We begin with a pair of claims concerning Socrates (s) and the Eiffel Tower (t): $\Box_W[\lambda x.x \neq t]s$ and $\Box_W[\lambda x.x \neq s]t$. That is, it is weakly necessary that Socrates is an x such that x is distinct from the Eiffel Tower; and it is weakly necessary that

[8]For more on λ notation, see Zalta (2010). There are three general principles that govern the device: λ-conversion; η-reduction; and α-conversion. The first is an equivalence between statements involving complex predicates; the second is an identity between predicates and their λ-counterparts; and the third that alphabetic variants are the same.

[9]Recall: we intend this in the (in)exact sense.

the Eiffel Tower is an x such that x is distinct from Socrates.[10] Given **modal essentialism**, Socrates is essentially distinct from the Eiffel Tower and the Eiffel Tower is essentially distinct from Socrates. However, in both cases, the distinctness of the one item from the other does not pertain to what the item is essentially, i.e. to its metaphysical identity.

3. **vacuity.** We begin with a feature of the λ-notation we permit: that the operator can vacuously bind. This means that it can be attached to a formula without binding any variables in that formula (e.g. when attached to a closed formula), such as that Socrates is inquisitive (Is). In symbols: $\lambda x.Is$. This predicate can then be predicated of an object, such as {Socrates}, as in $[\lambda x.Is]\{s\}$, which says that {Socrates} is an x such that Socrates is inquisitive. In such cases of vacuous binding, the predication is true iff the formula is true. For example, I am an x such that Socrates is inquisitive, given that Socrates is in fact inquisitive. Now suppose the formula is necessarily true. For example, that 2 is even. Then everything is such that it is weakly necessary that it is an x such that 2 is even. Given **modal essentialism**, it is essential to everything that it is an x such that 2 is even. However, the evenness of 2 does not, in general, pertain to what an item is essentially, i.e., to its metaphysical identity.

Insofar as there is a requirement of *relevance* built into the concept of essence (such that our analysandum is (in)exact essence), the examples compel the conclusion that **modal essentialism** is false. The interesting question is whether any form of **extended modal essentialism** is correct. To this we turn.

2.2 Extended Modal Essentialism?

Given that **modal essentialism** is false, there is the further question of whether any form of **extended modal essentialism** is possible. Kit Fine (1994) offers an argument that there is no such extension. Also, Alessandro Torza (2015) offers a proof that no operator definable within the language of standard quantified modal logic can capture essence. But Fine's argument is fallacious and Torza's proof is too weak. Let us discuss each in turn.

[10] These are also strict necessities.

2.2.1 Fine's Argument

Fine's argument is fairly straightforward. He claims that two disputants might agree on the modal facts and yet disagree on the essentialist facts, and therefore essence cannot be modality.

The argument is elegant, but I have my suspicions that it is fallacious. For let us consider a simplified version of Fine's example, involving only persons, bodies, and abstraction. Let us furthermore focus first on the disagreement over essentialist facts.

According to the first disputant **(D1)**, it is essential to the body (b) that it is an abstraction from the person (p) but not essential to the person that she is an abstraction from the body.

$\Box_b(b = Ab(p)) \wedge \neg\Box_p(p = Ab(b))$.

By contrast, according to the second disputant **(D2)**, it is essential to the person that she is an abstraction from the body but not essential to the body that it is an abstraction from the person.

$\Box_p(p = Ab(b)) \wedge \neg\Box_b(b = Ab(p))$.

The problem is that **(D1)** will claim that the person is not an abstraction from the body, i.e. $\neg(p = Ab(b))$, and so presumably that this is necessarily the case, i.e. $\Box\neg(p = Ab(b))$, since if x is an abstraction from y then y is not an abstraction from x.

By contrast, **(D2)** will claim that it is necessary that the person is an abstraction from the body, i.e. $\Box(p = Ab(b))$, since she claims that the body is essentially an abstraction from the person, i.e. $\Box_p(p = Ab(b))$, and necessity is a necessary condition on essence. But this is clearly a disagreement over modal facts, contrary to the assumption of the case.

In response, one might deny the asymmetry of abstraction. But in Fine's case, it is the connection of abstraction from which the claim of essence is inferred: "[e.g.] the one philosopher may think of the body ... as some kind of abstraction from a person ... For him therefore it is of the essence of a body ... to belong to the person that they belong to" (1994a, 8). So denying asymmetry does not seem to be in the cards.

Alternatively, one might think that the sense of abstraction is different in each each, such that the disputants agree on all the claims, and denials, of abstraction, and even on the modal status of these claims; and yet they disagree over the source of those truths. But again, the claims of abstraction are taken to suffice for essentialist claims, thus ruling this out as a possible response. If we drop this sufficiency claim, then, for each disputant, their respective essentialist views seem arbitrary.

But are we saying that all essentialist disagreement will contain some modal disagreement? Not exactly. For a pair of disputants may, with respect to the *self-same* proposition, agree on its modal status but disagree over its essentialist status. For example, one might say that Socrates is essentially a member of {Socrates}, while the other denies this claim, despite that both regard the relevant predications as weakly necessary.

But then this goes no further than **asymmetry** in establishing any conclusion. It does not speak to the possible extension of **modal essentialism** for representing this disagreement.

2.2.2 Torza's Proof

Alessandro Torza (2015) has claimed to provide a proof that **modal essentialism** cannot be extended. More precisely, Torza claims to provide a proof that no operator definable within the language of quantified modal logic can capture **asymmetry**. Discussion of the details of the proof is not required.

Despite appearances, Torza's result is not strong enough for our satisfaction. For it is a result that only applies to the set-theoretic example. For central to Torza's result is a 'mirroring constraint', whereby worlds have full domains consisting of the union of their domains with the powerset of that domain. As such, an individual, such as Socrates, exists at a world if and only if its singleton exists at that world.[11] Then it is proved that no operator is definable (with the aid of λ-notation) that captures **asymmetry**.

The issue taken with Torza's result is not a formal one. It is not even really an objection. It is rather that the result wrongly suggests that asymmetric judgments of essence are at the heart of the problem of **modal essentialism**, which is typified in the Socrates and {Socrates} case. But this is not true, and we can see the succession of Fine's examples as establishing this result.

First, the move from **asymmetry** to **distinction** establishes that the asymmetry of **asymmetry** is not the heart of the problem. For in the case of **distinction**, we want to symmetrically deny statements of essence: it is not essential to Socrates that he is distinct from the Eiffel

[11] For an articulation of this picture, one might see Appendix A of Lewis's (1983b) 'Counterpart Theory and Quantified Modal Logic', where he discusses the notion of being in a world. There, Lewis distinguishes between 'being part of a world' and 'being from the point of view of a world', where sets satisfy the latter, but only if their members satisfy the former.

Tower; and it is not essential to the Eiffel Tower that it is distinct from Socrates.[12]

But this might lead to the question of whether the heart of the problem has to do with foreign objects appearing in the essences of various other items. But even this is not true. For what **vacuity** establishes is that no foreign objects need to be involved to generate the problem. For consider a sentence that contains no objects at all, such as that everything is either green or not green (i.e. $\forall x(Gx \vee \neg Gx)$). This sentence can be bound by λy to form the predicate $\lambda y.\forall x(Gx \vee \neg Gx)$. Every item will then be essentially a y such that everything is either green or not green. So Torza's result, though perhaps formally well and good, does not get to the heart of the problem in attempting to establish the impossibility of extending **modal essentialism**.

2.3 Contra Extended Modal Essentialism

Let us take stock. Fine's counterexamples show that **modal essentialism** fails with respect to **equivalence**. This establishes, perhaps, that **modal essentialism** is false. But not that any extension of it is impossible. Can we show this? Fine offers an argument; but we have found it to be fallacious. Torza offers a proof; but we have found it to be too weak for our interests.

The Fine examples alert us to a problem with **modal essentialism**. In general, the issue is with relevance: irrelevant truths, whether or not they involve irrelevant items, are allowed into the essence of an item, under **modal essentialism**, and not merely because the operators are closed under logical consequence. The problem, I suspect, has to do with the fact that the theories of modality and properties have lives of their own, which causes them to overgenerate when applied to a refined concept such as *exact essence*.

Therefore, to extend **modal essentialism** we need to block the irrelevancies. We might follow Fine (2005a) in thinking that there are the following two salient strategies for how to define finer-grained notions of necessity. The first is by **relativization** and the second is by **restriction**.

[12]In any case, the point of **asymmetry** does not require asymmetry. We could only focus on the essence of Socrates, without regard to the essence of the set.

2.3.1 Relativization

The **relativization** strategy involves two components. First, that the box represent a narrower-than-strict conception of necessity ($\Box_N$), where $\Box_N A \leftrightarrow$ (it is a logical truth that A), for example, that everything is identical with itself, or that everything is human or not human.[13]

Second, that there is, for any item x, some X that are the 'basic x truths'. For example, if $x =$ Socrates, then the 'basic Socratic truths' include things such as that Socrates is human, that Socrates is an animal, and so on. Then we can define a proposition's being essential to Socrates as follows.

$\Box_s Fs =_{df} \Box_N(\wedge S \supset Fs)$,

where '$\wedge S \supset A$' expresses that the conjunction of propositions belonging to S materially implies Fs.

The definiens is extensionally equivalent to an inexact conception of Socrates' essence. The exact essence of Socrates is then given by the truths belonging to S. In general:

relativization $\Box_y Fy =_{df} \Box_N(\wedge Y \supset Fy)$,

where Y are the 'basic y truths'. Thus the exact essence of an item is obtained, in general, by $\wedge$-Elimination from the conjunction of 'basic y truths'. Moreover, the inexact essence of an item is obtained, in general, by the transitivity of implication.

The problem with **relativization** is that it presupposes the notion of exact essence. For **relativization** contains a component for the 'basic y truths' (Y). But what determines that something belongs to Y? A natural answer is that it is determined by y's exact essence. But then this renders the account circular.

2.3.2 Restriction

The **restriction** strategy also involves two components. First, that the box represent weak necessity ($\Box_W$), according to which it is necessary that 2 is even, etc., which are not narrowly necessary.

Second, an operator is provided on the weakly necessary propositions. For example, that they are natural; or that they are explanatorily basic; or it is encoded that; etc. This provides the following definition of a proposition being essential to an item.

restriction $\Box_y Fy =_{df} \Box_W Fy \wedge \Pi Fy$,

[13] We need not add that it is weakly necessary that A, since we assume that every logical truth is strictly necessary, and hence weakly necessary.

for some (non-modal) operator Π. In the case of **restriction**, the definiendum is the notion of exact essence. Supposing that Π is not closed under logical consequence, we obtain inexact essence by closure of exact essence under logical consequence.

The Fine examples involve weak necessities: it is necessary that Socrates is an x such that x a member of {Socrates}; it is necessary that Socrates is an x such that x is distinct from the number 2; and it is necessary that Socrates is an x such that everything is identical with itself. Therefore, the desired essentialist judgments (e.g. that it is not the case that it is essential to Socrates that Socrates is an x such that x is a member of {Socrates}) will depend entirely on what the condition Π is, and whether or not it is satisfied in that case. Thus we can infer that $\neg(\forall A)(\Box A \equiv \Pi A)$.[14]

For if it were that $(\forall A)(\Box A \equiv \Pi A)$ then Π would be ineffective as a form of **restriction**. As such, there should either be some A that is necessary but to which Π does not truly apply or some contingent A to which Π truly applies. Of course, every form of **restriction** must satisfy the first disjunct. Otherwise, it will not eliminate the irrelevancies.

An interesting question concerns the second disjunct: whether ΠA suffices for the necessity of A, or whether there is some contingent B to which Π is truly applied. Either there is or there is not.

If there is no contingent B to which Π truly applies, then necessity is strictly eliminable from the analysis of essence, and so such versions of **restriction** are *non-starters* for modal essentialists.[15] This would be like attempting to define even numbers as necessary numbers divisible by 2 without remainder. Since every number is necessary, necessity plays no differentiating role here, and so it is extraneous to the analysis of even numbers to include the modal status of numbers generally. But so too, I think, in the case of **restriction**, where ΠA implies $\Box_W A$. Necessity then serves no differentiating purpose, and so can be eliminated from the analysis of essence. We could alternatively just define essence by means of Π alone.[16] Therefore, it must be that there is a contingent B to which Π truly applies.

But then the question arises: What has this modal-indifferent oper-

[14]We use sentential variables here, though sometimes speak in the metaphysical mode about propositions.

[15]At least insofar as you think that modality is an integral component to **modal essentialism**. To take it out of the explicit analysis would, I think, amount to taking the 'modal' out of 'modal essentialism'.

[16]Note, though, that this is *only* a problem for **modal essentialism**. Others might not care if necessity is in principle eliminable.

ator have to do with the natures, or essences, of things? For it truly applies to contingencies.

Perhaps this is just the result of the 'joint' work involved in **restriction** (i.e. there are multiple conditions in the analysans that jointly analyze essence). I disagree, and believe that there is a genuine problem here.

What **relativization** gets right is that its extra-modal component (i.e. the 'basic Ytruths') is extensionally equivalent to the class of (exactly) essential truths for a given item (y). This, I think, secures relevance. Given the narrow conception of necessity involved, the notion of inexact essence is included when necessity is added. The problem is that the view is circular.

Versions of **restriction** seem to overcome circularity but give up this limited sort of extensional correctness. Their extra-modal component (i.e. the operator Π) is required to apply to some contingent propositions (lest the account of **modal essentialism** render necessity eliminable from the analysis of essence). But then the condition Π is satisfied by some propositions that lie outside the (in)exact essence of any items, and so the extra-modal component does not do the job of carving out essence *within* necessity. This makes Π extraneous to an analysis of *essence*.

If correct, this is a paradoxical situation for the proponent of **extended modal essentialism**. Under **restriction**, to have a properly differentiating feature that secures relevance, she must forfeit necessity from her analysis. To avoid forfeiting necessity from her analysis, she renders her differentiating feature extraneous.

To be sure, this is not a general paradox of analysis. If we permit ourselves to be Aristotelian for the purpose of an analogy, we would not say that, in every case of real definition, the differentiating feature has to apply to a proper subset of the genus. For example, if to be human is to be a rational animal, then it might be that some non-animals are rational. For example, the prime mover. But matters are different when your genus is metaphysical necessity, and you are trying to define *essence* as a species of *it*. This becomes clearer as we consider particular proposals. To this we turn.

2.3.3 The Essentiality of Essence

Consider the following argument concerning **restriction**.

1. By **restriction**, $\Box_y Fy =_{df} \Box_W Fy \wedge \Pi Fy$.

2. Essence is essential: $\Box_y Fy \rightarrow \Box_y \Box_y Fy$.[17]

3. Therefore, $\Box_W Fy \wedge \Pi Fy \rightarrow$
$\Box_W [\lambda v. \Box_W Fv \wedge \Pi Fv]y \wedge \Pi([\lambda z. \Box_W z \wedge \Pi Fz]y)$.

The first premise is familiar: it is just a reiteration of **restriction**.

The second premise states that if something is essentially F, then it is essentially such that it is essentially F. The premise is quite compelling. For essence is no accident: if Socrates is essentially human, then it is not accidental that Socrates is essentially human. For if he were accidentally essentially human, then it would be compatible with his essence that he is not essentially human, and so compatible with his essence that he is not human. But this contradicts his being essentially human.

The conclusion is then obtained by substituting the definiendum for the definiens. So the argument appears to be good. If good, then any instance of **restriction** should validate it.

But this is unclear. For in order to secure the conclusion (3), two claims need to be added concerning Π.

- $\Box_W Fy \wedge \Pi Fy \rightarrow \Box_W \Pi Fy$.
- $\Box_W Fy \wedge \Pi Fy \rightarrow \Pi([\lambda v. \Box_W Fv \wedge \Pi Fv]y)$

The first secures the necessity of essence, while the second secures the Π-ness of essence. Jointly, they secure the essentiality of essence. But given Π's independence from necessity, namely that something is contingently Π, there is no (non ad hoc) reason to suppose that Π interacts with necessity in the way described by the two securing claims. In other words, nothing about **restriction** prohibits something from in fact being necessary and Π but possibly being true but not Π. So nothing in **restriction** prohibits the contingency of essence. But insofar as essence is essential, and essentiality is necessary, **restriction** is bound to be incomplete. That is, although it implies that if y is essentially F then it is (weakly) necessarily F, **restriction** does not imply that if y is essentially F, then it is (weakly) necessarily essentially F.

From this, I conclude that Π is extraneous to an analysis of essence. If it *happens to be* that a given Π satisfies the two securing claims above, this

[17] My own view is that this principle applies to both an inexact and exact account of essence. Many follow Fine (1995b) in taking the principle to govern an inexact conception of essence. However, some, for example Dasgupta (2014b), would deny that the principle governs an exact conception of essence. But I do not want any sense of essence, especially not the 'central' sense of essence, to be one according to which it is accidental to an item that it is what it is.

shows *at best* that it is extensionally correct. But extensional correctness is a condition of adequacy on analysis. It does not suffice for the truth of analysis.

Nevertheless, we can look at some of the ways in which **restriction** has been developed in the literature, and in particular the sorts of conditions offered, of which three are salient.

1. Ground (Gorman)
2. Naturalness (Cowling, Wildman)
3. Encoding (Zalta).

But if the first securing claim does not fail for one of these proposals, then the second securing claim does. Let us treat each proposal in turn by first articulating it and then demonstrating how it fails with respect to one or both of the securing claims.

2.3.4 Explanation

Central to Gorman's view is a primitive notion of explanation, or 'support'. This is a metaphysical relation that is irreflexive, antisymmetric, transitive, and partial in character. We can best understand it as a subrelation of the familiar relation of (binary) partial strict ground[18], since not every instance of partial strict ground is an instance of support. What is distinctive about support, it seems, is that it concerns the explanatory relations between the properties of a particular item: Fx supports Gy $=_{df}$ $x = y$ and Fx is a partial strict ground for Gy.

Gorman then introduces a notion of 'foundationality': it is foundational that Fx if and only if (i) Fx and (ii) it is not the case that there is some G such that Gx supports Fx. What is foundational for an item, then, is what is unsupported for that item. We then obtain the following account of essence.

> **(EXP)** For it to be essential to y that Fy is for it to be that (i) $\Box_W Fy$; and (ii) It is foundational that Fy.

Gorman's view is not exactly **(EXP)**, since he is ambivalent on whether (i) should be included in an analysis of essence. However, the problems that we raise for the essentiality of essence would apply to the view

[18] On which see Fine (2012a). We have not said much about ground as of yet. But it suffices here to think of partial strict ground as an explanatory and metaphysical strict partial order on the set of truths.

without (i). In any event, we are inquiring into **extended modal essentialism**, and so take **(EXP)** as the target view.

It is reasonable that the notion of foundationality makes good on the first securing claim. If it is weakly necessary that Fy and foundational that Fy, then it is weakly necessarily foundational that Fy. This seems to me in keeping both with the factive nature of ground, as well as the nature of an ungrounded truth (suitably restricted, given that we are speaking of 'support'). However, **(EXP)** pretty clearly fails with respect to the second securing claim, since any proposition's satisfying a conjunctive predicate will be grounded in its satisfying the corresponding predicates for the conjuncts. For example, if **(EXP)**, and it is essential to y that Fy, then even if y is a z such that it is weakly necessary that Fz and it is foundational that Fz, this will be supported, for example, by the fact that y is a z such that it is weakly necessary that Fz. Without the second securing claim, **(EXP)** cannot validate the argument concerning **restriction**, and so fails as an account of essence.

2.3.5 Naturalness

Central to this view is a notion in the vicinity of David Lewis's notion of naturalness, which we assume is to be taken as primitive. The analysis of essentialism is given as follows.

> **(NAT)** For it to be essential to y that Fy is for it to be that (i) $\Box_W Fy$; and (ii) It is natural that Fy, where this obtain iff the constituent predicate/property is natural.

On Lewis's conception, a (perfectly) natural property is a fundamental property. Roughly: the fundamental properties are logically simple and positive, determinate, intrinsic, subvenient, and carve at reality's joints.[19] However, on the conception of naturalness of concern here, a property is natural if and only if it is part of the scientific conception of the world.[20] This is required because non-fundamental items, such as Socrates, presumably have essences, though they instantiate no perfectly natural properties on Lewis's conception of naturalness.

The equivalence (of naturalness with the scientific conception) is the only guide provided by proponents of the view, and so we haven't much more to say by way of articulating their view. But this is because they have not provided it, and so is no fault of ours.

[19] See for example Lewis (2009).

[20] See Schaffer (2004). Cowling and Wildman adopt Schaffer's conception.

Like **(EXP)**, **(NAT)** makes good on the first securing claim: if **(NAT)**, and it is essential to y that Fy, then it is weakly necessary that it is natural that Fy. However, it does not seem to be the case that the view makes good on the second securing claim. For suppose that it is essential to y that Fy. Then y is a z such that it is weakly necessary that Fz and it is natural that Fz. But is this predicate natural? Is it indispensable to the scientific conception of the world? It would appear not. Possibly, it is non-natural because conjunctive. Possibly, it is non-natural because it contains metaphysical necessity. Possibly, it is non-natural because it contains the notion of naturalness. In any case, it is not straightforward, and likely cannot be sustained. Best case scenario: the proponent of **(NAT)** needs to say more about their understanding of 'indispensable to the scientific understanding of the world'. In the present context, the desired judgment will be hard to make in a non-ad-hoc manner.

2.3.6 Encoding

Central to Zalta's view is a primitive form of predication, but also a conception of essence on which essence is said in many ways, some of which can be stated within the familiar language of quantified modal logic, with an added predicate for existence.[21] Although there are various ways in which essence is said, two stand out to me as especially salient.

- For it to be Nessential to x that Fx is for it to be weakly necessary but not strictly necessary that Fx ($\Box_W Fx \wedge \neg\Box_S Fx$).[22]

But Zalta also introduces a new primitive kind of predication, which he labels 'encoding'. In the formal language, the difference in predication is represented by reversing the order of predicate and term. So 'Fx' represents that x exemplifies F, in the usual sense of predication, and 'xF' represents that x encodes F, in the new primitive sense of predication. This gives another way in which essence is said.

- For it to be Eessential to x that xF is for it to be that xF.[23]

On Zalta's view, the domain of reality can be partitioned into the ordinary and the abstract. Something is ordinary if and only if it is possibly concrete.[24] For example, Socrates is ordinary. Something is abstract if

[21] Zalta uses a predicate for being concrete.
[22] 'N' intended.
[23] 'E' intended.
[24] For Zalta's sake, we will work here with a sense of existence restricted to concreta.

and only if it encodes some F. For example, the Meinongian round square is abstract: it encodes the properties *being round* and *being square*.

So all and only the abstract objects encode. Thus being Nessential applies only to abstract items. In contrast to encoding, exemplification is something everything does. For instance, both Socrates and the round square exemplify the property *not being a horse*. In general, the following two principles hold.

1. $(\forall x, F)[Fx \vee \neg Fx]$.

2. $(\exists x, F)[Ax \wedge \neg(xF \vee \neg xF)]$.

In other words: everything –unrestricted– either exemplifies a given property or exemplifies its negation. So exemplification obeys excluded middle. However, some abstract items fail to encode both a property *and* its negation. For example, the round square fails to encode both *being funny* and *not being funny*.

What is more, abstract items abound: there is an encoder for every collection of properties. However, there is a restriction Zalta places on what kinds of complex predicates express properties and relations. The restriction is that no complex predicate that contains an encoding expression expresses a property. For if property-formation was unrestricted in this sense, then we could form the following two complex predicates.

- $[\lambda x.(\exists F)(xF \wedge \neg Fx)]$.

  (Is an x such that it encodes something it does not exemplify.)

- $[\lambda x.(\forall F)(xF \rightarrow Fx)]$.

  (Is an x such that it exemplifies everything it encodes.)

Given that there is an encoder for every set of properties, there would be something that encodes the first property. Moreover, given that exemplification obeys excluded middle, then this single encoder either exemplifies the second property or it does not.

If it does, then it exemplifies everything it encodes, and so it exemplifies the first property. But then there is no property it encodes but does not exemplify. Contradiction.

If it does not exemplify the second property, then there is something it encodes but does not exemplify. But then that just means that it exemplifies the first property. But then it fails to encode something it does not exemplify. Contradiction.

As a result, Zalta places the restriction 'no encoding subformulas' into his account. We can then give a disjunctive account of essence in terms of being Nessential and Eessential.

> **(ENC)** For it to be essential to x that x is [generic copula] F is for it to be that either (i) it is Nessential to x that Fx or (ii) it is Eessential to x that xF.

So (i) clearly governs the essences of concrete items, while (ii) governs the essences of abstract items. But then **(ENC)** cannot account for the essentiality of essence.

In cases of (i), if it is Nessential to x that Fx, then it is not Nessential to x that it is Nessential to x that Fx, since its being Nessential to x that Fx is strictly necessary, and no strict necessity is Nessential.

In cases of (ii), **(ENC)** again fails, since there can be no encoding subformulas. So an encoder cannot encode its encoding a property, and so it cannot Eessentially be the ways it is Eessentially. But neither is it Nessentially Eessentially F, since that is a strict necessity.

Allowing other senses of essence defined by necessity into the definition as disjuncts would not help, because we do not want to say, in any sense, that Socrates is accidentally essentially human, *especially not* in the sense in which we wish to say that he is essentially human!

In sum: **modal essentialism** fails to capture the notions of inexact and exact essence. This is obvious (if we think of truth-at), but made more generally vivid by Fine's examples. The interesting question is then whether **extended modal essentialism** is tenable. Fine and Torza have independently said that it is not, but not successfully. We considered two general ways **extended modal essentialism** might be attempted: by **relativization** and by **restriction**. But the former is circular, and the latter inevitably renders some part of its analysis eliminable or extraneous. The latter issue is nicely brought out by consideration of the essentiality of essence, which can then be turned against particular **restriction** proposals found in the literature by Gorman, Cowling, Wildman, and Zalta. Let us then put to rest any desire to analyze essence in terms of necessity.

Chapter 3

What Necessity Is

Both essence and necessity have high profiles in metaphysics. High-profile notions in the same domain attract questions of reduction. It is natural to think that essence reduces to necessity[1]: what it is for it to be essential to y that A is for it to be weakly necessary that A, with y as a witness.[2] But we have found this view, along with its relativized and restricted extensions, not to be sustainable.

In contrast, Kit Fine (1994) has suggested that in fact necessity reduces to essence: what it is for it to be necessary that A is for it to be essential to everything together that A. Alternatively: what it is for it to be necessary that A is for there to be some items such that it is essential to them that A.[3]

The aim of this chapter is twofold. First, to defend the reduction of necessity to essence. We begin by giving the notion of essence to which necessity is claimed to reduce. We then consider two different accounts of how to carry out the reduction: the **inexact account** due to Kit Fine; and the **rule-based account** due to Fabrice Correia. We reject both in place of an alternative account, the **exact account**, that possesses all of the attractions of the other accounts, but none of their detractions.

[1]Unless we specify otherwise, talk of metaphysical necessity, and not conceptual necessity, logical necessity, nomic necessity, normative necessity, and so on.

[2]Recall the definition of weak necessity: it is weakly necessary that $A =_{df}$ there is some $x_1, \ldots, x_n$ such that it is strictly necessary that x_1 exists and $\ldots$ and x_n exists only if A. If it is strictly necessary that y exists only if A then y is a witness to the general claim.

[3]Fine initially formulates the view in the first way: "metaphysically necessary truths can then be identified with the propositions which are true in virtue of the nature of all objects whatever" (1994a, 9). However, Fine subsequently formulates the view in the second way: "a proposition is metaphysically necessary iff it is true in virtue of the identity of some (possible) objects" (2005, 247). As we will see, the two formulations are equivalent given our understanding of essence. Nevertheless, we will eventually find cause to prefer one.

In doing this, we simultaneously satisfy our second aim: to fill out the details of our conception of exact essence.

3.1 Essence

The notion of essence to which necessity is claimed to reduce has the following distinctive features: (i) Relativity; (ii) Collective Essence; (ii) Monotonicity; (iii) Unrestricted Essence; and (iv) Closure. In this section we outline those features.

3.1.1 Relativity

Statements of essence are always made relative to some item. For example, that it is essential to *Socrates* that Socrates is human, but not essential to *Plato* that Socrates is human; or that it is essential to {*Socrates*} that Socrates is a member of {Socrates}, but not essential to *Socrates* that Socrates is a member of {Socrates}.

We follow Kit Fine (1994a, 1994b, 1995a, 1995b) in representing this relativity formally by use of a primitive sentential operator '$\Box$', indexed to a term 't', constant or variable, to produce '$\Box_t$' that is applied to any sentence 'A' to form the sentence '$\Box_t A$', which abbreviates 'it is essential to t that A'. For example, 'it is essential to Socrates that Socrates is human' is formalized as '$\Box_s Hs$', and 'there is an x such that it is essential to x that x is a member of singleton Socrates' is formalized as '$(\exists x)(\Box_x x \epsilon \{s\})$'.

3.1.2 Collective Essence

But statements of essence may not be restricted to individual items. That is, some things might be essential to many items taken together. For example, it might be essential to the properties *being triangular* and *being trilateral* that they are co-extensive, or it might be essential to the pair sets {Socrates, Plato} and {Socrates, Aristotle} that they overlap. Thus in addition to the notion singular essence, there is a meaningful notion of *collective essence*.[4]

Formally, we allow the essentialist operator to be married to any plural term[5] denoting many items and yield a truth in application to

[4]The notion of collective essence can be found, for example, in Fine (1994b).

[5]Plural [and singular] terms must be non-empty, but [plural terms] may denote a single item. As such, we ignore Fine's (1995c) notion of a 'minimal necessity': being

some sentence. Let 'X', 'Y', etc. be variables ranging over pluralities of (possible) items, and 'x', 'y', etc. be variables ranging over individual (possible) items. We also introduce a primitive predicate '$\prec$' expressing that an item belongs to a plurality (e.g. $x \prec X$). We might also say that a plurality belongs to another (e.g. $X \prec Y$), but this is merely a shorthand for the fact that everything belonging to the one plurality belongs to the other (i.e. $(\forall x)(x \prec X \supset x \prec Y)$).

So we allow the essentialist operator to be indexed to singular or plural terms. As such, we can introduce a universal plural term 'U', where $(\forall x)(x \prec U \equiv \exists y(x = y))$, allowing us to form claims like '$\Box_U A$': it is essential to everything together that A.

3.1.3 Monotonicity

There is then a question of what individual items contribute to any collective essence to which they belong. On this, it is intuitive that, for example, the truths essential to Socrates and Plato together will include at least the union of the truths essential to Socrates and the truths essential to Plato.

More generally, an item will contribute its singular essence to any collective essence to which it belongs. Additionally, there may be truths essential to the collective that are not essential to any particular item in the collective, or essential to any properly belonging collective. But at the very least there is this general contribution. We can express this formally by the following monotonicity principle.

monotonicity $X \prec Y \rightarrow (\Box_X A \rightarrow \Box_Y A)$.[6]

Recall that we allow a plurality to denote a single item, and so we might add the following claim: $(\forall x)(\exists X)(x \prec X \leftrightarrow x = x)$. This says that there is a plurality for every individual item. But is there an essence for every item?

3.1.4 Unrestricted Essence

The notion of essence is taken to be unrestricted with respect to what has an essence.

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essential to zero items.

[6]Note that '$\rightarrow$' expresses strict implication.

unrestriced essence $(\forall X)(\exists A)(\Box_X A)$.[7]

That is, for all pluralities of items (which may consist of a single item), there is something that they essentially are. This kind of permissiveness about essence seems to me most natural, though it may seem counterintuitive to others. For one, given that every item [singular] is essentially something, and given that we take an item to contribute its singular essence to any collective essence to which it belongs, the claim of **unrestricted essence** is in fact more innocuous than one might have initially thought, since it is not committed to the claim that every plurality of items is such that something is collectively essential to them that is not essential to some individual item belonging to that plurality (though this may in fact be the case).

What is more, the denial of **unrestricted essence** would amount to there being items for which there is nothing that they (essentially) are.[8] But this seems to be as absurd as that there is something there is not (with 'there is' being uniform). As such, we deny that there are any genuine Protean, or purely accidental, items.

There seem to be two possible sorts of Protean items, neither one of which is strictly Protean. First, the **restrictive** sort: it could not be a number, say; but for any property it might have, it might also lack that property. Second, the **unrestrictive** sort: for any property, it could have it but also could lack it.[9]

Suppose we introduce the dual of the essentialist operator: an indexed diamond to the indexed box; and we read '$\Diamond_X A$' as 'it is compatible with the essence of X that A'. Then in either case our Protean item is essentially something. For take any x and F, properly restricted in the case of restricted Protean items. I submit: $\Box_x \Diamond_x Fx \wedge \Box_x \Diamond_x \neg Fx$.[10] That is, it essential to x that it is compatible with its essence that it is F, and essential to x that it is compatible with its essence that it is not F. After all, *what it is*, we have said, is an (un)restricted Protean item. But then

[7]We here take ourselves to be quantifying into sentential position.

[8]One might think that some items have essences, but only derivatively; and thus that **unrestricted essence**, read in a non-derivative way, is false. But what distinguishes items with a non-derivative essence from those with a derivative essence? It would appear to have something to do with what those items are. But then this might be seen as invoking the notion of non-derivative essence.

[9]We are being loose in lumping together accident and contingency. However, this issue will be taken up subsequently.

[10]Note that for the purposes of the present discussion, we need not take the claim to generalize to any item whatever, so that everything is such that it is essentially any way that is compatible with its essence.

it is essentially something.

There is yet another dimension to our permissiveness with respect to essence. For we will follow Fine (1995c) and Correia (2012) in taking the essences of the logical constants as given non-propositionally by their associated rules.[11] For example, the essence of conjunction is given, at least in part, by the following introduction rule.

$$\frac{A \quad B}{A \wedge B}\ \wedge\text{-I}$$

Additionally, the logical constants may have propositional essences. For example, it may be essential to conjunction that it is abstract, or that it is a logical constant. Or it might be essential to conjunction and negation together that they are functionally complete. Non-propositional essences may seem elusive. However, in the development of our own view, and in contrast to some of the other views considered (in particular, the **rule-based account**) they will hopefully become less elusive.[12]

3.1.5 Closure

The final feature of our notion of essence concerns more of its logical aspect; in particular, more of its logical behaviour. For it is claimed[13] that the essentialist operator is taken to be closed under logical consequence: if $\Gamma \vdash B$, for a (possibly empty) set of sentences Γ, and $\Box_t A$, for every 'A' in Γ, then $\Box_t B$.

Under our familiar philosophical notion of essence, it is perhaps awkward to think, for example, that it is essential to Socrates that Socrates is snubnosed or Socrates is not snubnosed, since this follows from the empty set of sentences. But in fact, we will go on to deny this principle of closure for an alternative principle of closure. In any case, some such notion of closure is built into our notion of essence.

This is the notion of essence to which necessity is claimed to reduce. In the next two sections, we consider two ways the reduction of necessity to essence has been attempted: the **inexact account** due to Kit Fine, and the **rule-based account** due to Fabrice Correia.

[11] See also Gentzen (1964).

[12] Fine (1994b) does offer a need for them, though. For if essences are given entirely propositionally, then at some point an inference (e.g. modus ponens) needs to be made. Why not then build the rules into the essences of the constants?

[13] For example, see Fine's (1994b, 1995a).

3.2 The Inexact Account

The **inexact account** takes the essentialist operator to be governed by the principle of closure we gave above: if $\Gamma \vdash B$, for a (possibly empty) set of sentences Γ, and $\Box_t A$, for every 'A' in Γ, then $\Box_t B$. The resulting notion of essence has been called 'consequentialist' by Kit Fine (1994b, 1995a), and it is this notion of essence to which we direct our attention.[14]

Admittedly, it is unclear whether this would be Fine's preferred conception of essence within the context of reducing metaphysical necessity. For there are three separate notions of essence to be found in his work on essentialism.

1. **unconstrained inexact essence** The essentialist operator obeys the following closure principle.
   If $\Gamma \vdash B$, and every A in Γ is such that $\Box_t A$, then $\Box_t B$.[15]

2. **constrained inexact essence** The essentialist operator presupposes the notion of dependence and obeys the following restricted principle of closure.
   If $\Gamma \vdash B$, and every A in Γ is such that $\Box_t A$, then $\Box_t B$ iff everything (objectually) involved in 'B' pertains to the essence of t.[16]

3. **exact essence** The essentialist operator obeys no principle of closure, and $\Box_t A$ iff A is directly definitive of t.[17]

In any case, Fine (e.g. 1994b) seems generally to prefer **unconstrained inexact essence** when doing metaphysics. But we can just as well take our target to be 'Finean', even if not directed at Fine and his preferred view. Thus the **inexact account** invokes **unconstrained inexact essence** in giving the following reduction of necessity to essence, letting the indexed box represent **unconstrained inexact essence**.

inexact account $\Box A =_{df} \Box_U A$.
Alternatively: $\Box A =_{df} (\exists X)(\Box_X A)$.

The **inexact account** says that for it to be necessary that A is for

[14] Note that the other features outlined hold as well of this conception of essence, and other conceptions of essence discussed in this section.
[15] Fine (1994, 1994b).
[16] Fine (1994b).
[17] The notion is given in Fine (1995b), though **unconstrained inexact essence** is still the preferred notion. We will later return to Fine's reasons for this preference.

it to be unconstrained inexactly essential to everything that A. Alternatively, for it to be necessary that A is for there to be some X such that it is unconstrained inexactly essential to X that A.

3.2.1 Against the Inexact Account

But we reject this account of the reduction for its inexactnes. For example, given that

$\vdash$ Socrates is snubnosed or Socrates is not snubnosed,

it follows, by the present account, that it is essential to Socrates that Socrates is snubnosed or not snubnosed.

But it seems that, even more so than we should deny that it is essential to Socrates that he is a member of his unit set, we should deny that it is essential to Socrates that he is either snubnosed or not snubnosed. For we would otherwise render every item essentially alike, since every item would therefore be essentially snubnosed or not snubnosed. However, we might want to say that Socrates and the number 2, for example, are not essentially alike in any respect.

What is perhaps more, any given logical truth, even if it contains an item like Socrates, traces back to the essence of any item whatever. For example, just as it is essential to Socrates that Socrates is snubnosed or not, so too it is essential to the number 2. But we might hold out for a notion of essence for which such backtracking does not hold.

Finally, the first of our reasons was taken to suffice for rejecting **modal essentialism**. We are here suggesting that they are likewise sufficient for rejecting the inexact notion of essence.[18] The fact that the contributions are made entirely by logic seems to me a difference that does not make a difference. There is a general worry of admitting as essential truths that are essentially irrelevant to the items to which they are attributed as essential.

What the **inexact account** has going for it is that it is plausibly extensionally correct: we can, for any necessary truth, find some items, no matter how irrelevant, to which that necessary truth is essential. Moreover, given that necessity is closed under an unconstrained notion of consequence, we might feel a need to so close our essentialist operator. But extensional correctness can be relatively cheap, and we will later see how we can recover closure with an exact conception of essence.

[18]Note that our particular example applies equally to **constrained inexact essence**, since Socrates no doubt pertains to his own essence. However, the backtracking objection will not stick.

3.3 The Rule-Based Account

Fabrice Correia (2012) has also defended the reduction of necessity to essence. Although he is primarily concerned with the extension of the reduction to other forms of necessity, such as logical necessity and conceptual necessity, it is nevertheless worth considering his own rendition of the reduction of metaphysical necessity. Correia's view has two components.

First, there is a primitive notion of **exact essence**. In Correia's notation: for any X, '$C(X)$' gives the set of truths that are directly definitive of the items denoted by the term. For instance, $C(Socrates)$ will include that Socrates is human, and $C(\{Socrates\})$ will include that Socrates is a member of {Socrates}.[19]

Second, there is a relativized notion of logical consequence. Taking any X, '$Log(X)$' denotes the set of logical constants belonging to X. This may be empty (even though 'X' cannot be empty), or it may include all or merely some of the logical constants. Suppose that $Log(X) = \{\wedge, \vee\}$. Then: $\Gamma \vdash_{Log(X)} A$ if and only if there is a derivation of A from the members of Γ making use only of the rules associated with conjunction and disjunction.

Putting these components together, we can build an account of essence. If no logical concepts are in $Log(X)$ (i.e. $Log(X) = \emptyset$), then $C(X) \vdash_{Log(X)} A$ iff '$A' \epsilon C(X)$. For example, take Socrates (s) and his being human (Hs) and the following holds.

(†) $C(s) \vdash_{Log(s)} Hs$.

But when $Log(X)$ is non-empty, then $C(X) \vdash_{Log(X)} A$ iff A follows from $C(X)$ via $Log(X)$. For example, where '$s\,and\,\vee$' is a plural term denoting Socrates and disjunction, then the following holds.

(‡) $C(s\,and\,\vee) \vdash_{Log(s\,and\,\vee)} Hs \vee \neg Hs$.

The disjunction follows from 'Socrates is human' by means of disjunction introduction. Correia then distinguishes between basic essential truths (†) and derived essential truths (‡). In general, we can say, on this view, that for it to be essential to X that A is for it to be that $C(X) \vdash_{Log(X)} A$.

[19] Recall that to every singularity there corresponds a plurality. So we can either read the occurrences of 'Socrates' and '{Socrates}' in a plural manner, or else note that Correia's C-operator can take singular terms as well.

This does not give Fine's notion of inexact essence, since where $Log(X)$ is empty, it will be the case that $C(X) \vdash_{Log(X)} A$ iff '$A' \epsilon C(X)$, which is a generalization from **(†)**. So, for example, we get the following: $C(s) \nvdash Hs \vee \neg Hs$. In other words, disjunctions involving only a single essential disjunct do not make it into the essence of the item to which the disjunct is essential. By contrast, this disjunction is essential to Socrates given either **constrained inexact essence** or **unconstrained inexact essence**. We can then give the rule-based account as follows.

rule-based account $\Box A =_{df} C(U) \vdash_{Log(U)} A$
Alternatively: $\Box A =_{df} (\exists X)(C(X) \vdash_{Log(X)} A)$.

This says that for it to be necessary that A is for 'A' to follow from the exact essence of everything by means of all the logical constants together. Alternatively: for it to be necessary that A is for there to be some X such that 'A' follows from the exact essence of X by means of the logical constants belonging to X.

3.3.1 Against the Rule-Based Account

We also reject the **rule-based account**. For one, the account is intended to reflect the idea that the logical constants have a rule-based aspect to their exact essences. But it does not seem clear that the account is successful in this respect. Take **(‡)** for example.

(‡) $C(s \, and \vee) \vdash_{Log(s \, and \vee)} Hs \vee \neg Hs$.

The disjunction '$Hs \vee \neg Hs$' is not part of the exact *collective* essence of Socrates and disjunction; it merely *follows* from their collective exact essence by means of $\vee$-Introduction, which is part of the rule-based aspect of the essence of disjunction.

But exact essence is what is *directly definititve* of the items in question, and the view about the logical constants appears to be one about their exact essence. For it would be odd for someone to hold this view about the logical constants and then say, for example, that it is directly definitive of disjunction that it is abstract, but deny this status to the rules. But then according to the **rule-based account**, whatever the rule-based aspect of disjunction is doing, it is not doing this as part of the exact essence of disjunction. For if it were, then we would expect the

disjunction in **(‡)** to be part of the exact collective essence of Socrates and disjunction.

Furthermore, there seems to be an ambiguity in the **rule-based account**, and no matter how you disambiguate the view, it clashes with a respectable principle concerning necessity. Let us first provide the principles and then the ambiguity and argument. The two principles are as follows.

uniformity If $\Box A$ and $\Box B$ then what it is for 'A' to be *necessary* is the same as what it is for 'B' to be *necessary*.

non-triviality If 'A' is not a theorem of modal logic[20], then if $\Box A$ then it is a non-trivial matter that $\Box A$.

With respect to **uniformity**, we can see, for example, that a possible worlds account of necessity is uniform: any pair of necessary truths are such that they are necessary because true in every possible world. This is what is intended by **uniformity**. In general, '$\Box$' is intended to be univocal as concerns metaphysical necessity (denying context-sensitivity to claims of *metaphysical* necessity).[21]

Similarly, an account of necessity in terms of possible worlds conforms to **non-triviality**. Given, for example, that it is necessary that Socrates is human, and that 'Socrates is human' is not a theorem of modal logic, then its being necessary that Socrates is human is non-trivial: its being true in every possible world that Socrates is human is not trivial.

The ambiguity in the **rule-based account** is this. Take any 'A' in $C(U)$. In what does its necessity consist? First answer: it consists in its being in $C(U)$. That is, $\Box A$ consists in '$A' \epsilon C(U)$.

Second answer: $Log(U)$ includes some such rule of identity, and the necessity of 'A' consists in its following by means of identity from $C(U)$. That is, the necessity of 'A' consists in the following: $C(U) \vdash_{Log(U)} A$.

But no matter how we disambiguate the view, the account fails with respect to one of our principles. Suppose we take the first answer. Then our account of metaphysical necessity is non-uniform. For example, that it is necessary that Socrates is human consists in its being in $C(U)$,

[20] This is a restriction against instances of necessitation.

[21] Suppose you think (i) that $\Box A \wedge B$, and thus (ii) that $\Box A$ and $\Box B$; and furthermore (iii) that (i) obtains in virtue of (ii). Still, it will be that case that (i) consists in $(\forall w) At_w (A \wedge B)$, and that (ii) consists in $(\forall w) At_w A$ and $(\forall w) At_w B$. That is, even with this kind of explanatory privileging, we still see uniformity.

whereas that it is necessary that Socrates is human or a mountain consists in its following by means of $Log(U)$ –and, in particular, by means of $\vee$-Introduction– from Socrates' being human, which is in $C(U)$. So **uniformity** is violated.

Suppose instead that we take the second answer. Then the necessity of any non-theorem 'A' in $C(U)$ is trivial, since its necessity consists in the logical triviality of its following from itself. For instance, that it is necessary that Socrates is human consists in $C(U) \vdash_{Log(U)}$ Socrates is human. But given that 'Socrates is human' is in $C(U)$, its necessity is trivial. So **non-triviality** is violated.

It is not enough to say, in response, that 'A' being in $C(U)$ is non-trivial, since necessity is taken to consist in something involving the relativized turnstile, according to the second answer. Whether a component of that is non-trivial is then beside the point. In any case, to then say that 'A' is necessary because it is in $C(U)$, but that some distinct 'B' is necessary because it follows from $C(U)$ by means of $Log(U)$, is to (again) violate **uniformity**.

Therefore, no matter how we understand the **rule-based account**, we do not get a proper reduction of metaphysical necessity.

3.4 The Exact Account

So far, we have introduced our notion of essence, and given its distinguishing features: (i) Relativity; (ii) Collective Essence; (ii) Monotonicity; (iii) Unrestricted Essence; and (iv) Closure. In so doing, we have also identified a particular essentialist thesis: that logical constants have a non-propositional, rule-based aspect to their essences.

We then considered two ways in which the reduction of necessity to essence has been attempted. The first was due to Kit Fine, which took an unconstrained inexact conception of essence. This account was rejected for its inexactness.

The second account was due to Fabrice Correia, and involved both a primitive conception of exact essence and a relativized relation of consequence. This account was rejected on the basis of its violating **uniformity** or **non-triviality**, depending on how we disambiguate the view. Also, it was said that the account fails to make good on the claim about essence and logical constants.

So what is attractive about the **inexact account** is that it is uniform and non-trivial, but it fails for using a notion of inexact essence. By

contrast, the **rule-based account** is attractive for using a notion of exact essence, but fails for being either non-uniform or trivial. In this section, we give an account that uses a notion of exact essence and is both uniform and non-trivial.

We take '$\Box_t$' to stand for a primitive notion of constitutive essence: $\Box_t A$ iff 'A' is directly definitive of t. This much we have in common with the **rule-based account**. Thus just as the **rule-based account** would say that it is essential to Socrates that Socrates is human but not essential to Socrates that Socrates is human or a philosopher, so too does the present account.

However, the present account differs from the rule-based account in that it claims, for example, that 'Socrates is human or a philosopher' (i.e. '$Hs \vee Ps$') is directly definititive of Socrates and disjunction together. So whereas the **rule-based account** would say

(1) $C(s\,and \vee) \vdash_{Log(s\,and \vee)} Hs \vee Ps$,

but that

(2) $\neg$ ('$Hs \vee Ps$' ϵ $C(s\,and \vee)$),

the present account says that

(3) $\Box_{s\,and \vee}\ Hs \vee Ps$,

in the exact sense of the essentialist operator. In other words, the **rule-based account** denies that the disjunction is essential to the collective essence of Socrates and disjunction, whereas the present account affirms this claim. This way, the rule-based essences of the logical constants are located within the constitutive essence of the logical constants. Not, mind you, as a proposition, since the rule-based aspect makes it non-propositional; but by contributing to the disjunction's being part of the constitutive collective essence. Thus (3) is on a par with other truths that are part of the essence of a collective without being part of the essence of any item belonging to that collective, as in the example involving negation and conjunction being functionally complete.[22]

Another important feature of our account is that we reject the principle of closure that governs **unconstrained consequentialist essence**: if $\Gamma \vdash B$, and every 'A' in Γ is such that $\Box_t A$, then $\Box_t B$.[23] Instead, we replace this principle with the following alternative principle of closure

[22] I take it as open whether more needs to be added to the index. For example, it might well be that, in addition to disjunction in the present example, we also need to add the property *being a philosopher*.

[23] We also reject the closure principle for **constrained consequentialist essence**, though this is beyond present concern. In short: we prefer a more variable account of dependence than that x depends $y =_{df}$ it is essential to x that $y = y$.

for our exact essentialist operator.

> **closure+**: if $\Gamma \vdash B$ and $\Box_X A$, for every 'A' in Γ, then $\exists Y(X \prec Y \wedge \Box_Y B)$.

Our closure principle says that any 'B' that follows from some truths Γ essential to X is such that there are some Y, to which X belong, and it is essential to Y that B.

For instance, given that it is essential to Socrates that Socrates human, and from 'Socrates is human' it follows that Socrates is human or a philosopher, there are some X to which Socrates belongs, and to which it is essential that Socrates is human or a philosopher, namely Socrates and disjunction.

This effectively collapses the distinction between exact and inexact essence. We have only a single notion of exact essence. We then give the reduction of necessity as follows.

> **exact account** $\Box A =_{df} \Box_U A$.
> Alternatively: $\Box A =_{df} (\exists X)(\Box_X A)$.

The **exact account** has many benefits over the **inexact account** and the **rule-based account**. First, the reduction is to exact essence. For example, it is not essential to Socrates that Socrates is snubnosed or not snubnosed. To obtain the disjunction, we must add items to the index and take their collective essence.

Second, there is no awkward backtracking: logical truths will be essential to whatever logical constants they concern, plus (perhaps) whatever non-logical material might be involved. For example, it may be essential to Socrates and disjunction that Socrates is snubnosed or not snubnosed, though not essential to Plato and disjunction. And it might be essential to Plato and disjunction that Plato is snubnosed or not snubnosed.

Third, the rule-based aspect of the essence of the logical constants sits nicely in the exact essence of the logical constants, and with a detectable non-propositional quality: you need them in the indexes to get consequences involving them as essential.[24]

Finally, the **exact account** satisfies **uniformity** and **non-triviality**. For example, its being necessary that Socrates is human consists in its

[24]Nevertheless, we do allow for logically general truths to be essential to certain non-logical items taken on their own. For example, we might want to say that it is essential to proper parthood that whenever anything has a proper part, then it has, in addition, a disjoint proper part. But then to infer from this, we need the necessary logical items in the index.

being essential to everything that Socrates is human. Moreover, this is the same as what it is for it to be necessary that Socrates is human or a philosopher: this too consists in its being essential to everything.

So the **exact account** is superior to the **inexact account** and the **rule-based account** in providing a reduction of necessity to essence: it possesses all of their attractions and none of their detractions. But this does not mean that it is impervious to objection. In the next section, we go on the defensive.

3.5 Objections

So far, focus has been on how to best give the reduction of necessity to essence, and in the process we have developed a novel account of exact essence. In this section, we consider some objections to the **exact account** and the notion of essence that underwrites it.

3.5.1 What is Exactly Essential?

Kit Fine (1994b) expresses suspicions about working with a notion of exact essence. It is that there are many logically equivalent ways of expressing what is essential, and no way to tell which *one* of *many* is essential to the item in question. For example, consider the case of {Socrates} and the following three statements.

1. $(\forall x)(x \epsilon \{s\} \leftrightarrow x = s)$.
2. $(\forall x)(x \notin \{s\} \leftrightarrow x \neq s)$.
3. $\neg(\exists x)\neg(x \epsilon \{s\} \leftrightarrow x = s)$.

Each is a way of expressing that Socrates is the sole member of {Socrates}. However, no one of them stands out as 'essentially privileged'. This is the alleged problem.

But it presupposes that such privileging is required. Certainly, allowing all of these as essential to {Socrates}, in the exact sense, plus any other equivalent expressions, is not the same issue as that raised against the notion of inexact essence. The latter was an issue of *irrelevance*. But this is an issue of *redundancy*, and it is not clear that redundancy is of genuine concern. What is more, the proposed account collapses the distinction between exact and inexact essence, and so, to some extent, alleviates the problem of "where to draw the line".

3.5.2 Relevance and the Exact Account

Throughout, we have been presented with two alternative accounts of the reduction: one all-inclusive and the other existential.

According to the first, for something to be necessarily the case is for it to be essential to everything together. According to the second, for something to be necessarily the case is for there to be some items to which it is essential.

(1) $\Box A =_{df} \Box_U A$.

(2) $\Box A =_{df} (\exists X)(\Box_X A)$.

But (1) and (2) are equivalent, given our understanding of essence. In one direction, suppose that $\Box_U A$. Then by existential generalization $(\exists X)(\Box_X A)$. In the other direction, suppose that $(\exists X)(\Box_X A)$. Then $\Box_\alpha A$ for some arbitrary plurality α. Given that every X belongs to U, it follows that α belongs to U. By **monotonicity**, $\Box_U A$.

But we prefer (1), since it best captures the notion of necessity we reduce. For recall from the introduction how our most serious possible worlds theorist would propose to account for necessity.

(3) $\Box A =_{df} At_W A$, where $(\forall x)(x \prec W \equiv Wx)$.

In other words, necessity is truth at all worlds. Or if you like: truth relative to all worlds. This is very similar to (1), where necessity is truth relative to the essences of all items. Besides the difference in items indexed, the operators are different too. For the truth-at operator is distributive in a way that the essentialist operator is not. For example, '$At_X B$' is true iff for every x belonging to X, $At_x B$. But the essentialist operator does not distribute in this way. We do not want to say that '$\Box_X B$' is true iff for every x belonging to X, $\Box_x B$. For it is not essential to Socrates, for example, that 2 is even, despite that Socrates belongs to U. Nevertheless, (1) *best* captures necessity, but not in a worldly way (which is what we want to take a distance from).

However, a certain specific problem might be thought to apply to (1). If $\Box A$ consists in $\Box_U A$, does this render every item relevant to 'A', despite that the operator does not distribute in the way identified above?

It does not. For we do not say that x is relevant to 'A' if there are some X such that x belongs to X, and $\Box_X A$. This is because we believe that everything has an 'essentialist basis', which we express as follows.

(3) If $\Box_U A$ then $\exists X(X \prec U \wedge \Box_X A \wedge \neg\exists Y(Y \prec X \wedge \Box_Y A))$.[25]

That is, if 'A' is essential to everything together, then there are some X

[25] We intend here a strong reading of '$\prec$': $(\forall x)(x \prec X \rightarrow x \prec Y) \wedge \exists y(y \prec Y \wedge \neg y \prec X)$. If there are essentialist claims about *everything*, they are excepted.

belonging to U such that $\Box_X A$, and for which there are no Y properly belonging to X, according to which $\Box_Y A$.[26]

We can then define a notion of relevance in terms of essentialist basis: if 'A' is such that there are some X for which $\Box_X A$, then x is relevant to 'A' $=_{df}$ x belongs to an essentialist basis of 'A'. In this sense, for example, it is not the case that the Eiffel Tower is relevant to 'Socrates is human', despite that its necessity consists in its being essential to everything together.[27]

3.5.3 Strictness and Reduction

If, for example, it is essential to Socrates that Socrates is human, then in what sense is it necessary that Socrates is human? For we want to distinguish this from the sense in which it is necessary that 2 is even, since Socrates may not have existed. But how do we capture this difference on the side of essence?

Fine (2005) sidesteps this issue. For he would say, for example, that 'Socrates is human' is necessary, because extra-worldly, and so would be true even if the worldly 'Socrates exists' were false. So if it is essential to Socrates that he is human, then it is, in a special way, strictly necessary that Socrates is human.[28]

We wish to maintain something like this view in our reduction, but with a different formulation. Let us instead formulate the distinction as follows. For let us tweak our definitions of 'strict necessity' and 'weak necessity'. Now we will say that it is *strictly necessary* that A if every essentialist basis for 'A' includes only essentially existent (or essentially

[26]Despite appearances, the essentialist basis need not be unique, though perhaps it often is. What is more, this kind of foundation for essence does not affect the possibility of gunk. For suppose some item is gunky. Then the fact that it is mereologically complex is essential to it. Nevertheless, it might depend on infinitely many items (i.e. its proper parts, and theirs, etc.). But for any given statement of parthood, it will be essential to the item to which other items are ascribed as parts.

[27]Given monotonicity, there is a monotonic structure from any essentialist basis for a truth up to the universal plurality. I believe this monotonic structure coincides with a grounding structure, and that it is the essentialist bases that are explanatorily basic. For example, it is essential to everything that Socrates is human in virtue of its being essential to Socrates alone that Socrates is human. Or: it is essential to Socrates and Plato that Socrates is human in virtue of its being essential to Socrates alone that Socrates is human. As such, I presume false a kind of 'essentialist holism', according to which the universal plurality is explanatorily basic. However, even if the unversal plurality were taken as explanatorily basic, I am not sure that this would affect the definition of relevance provided here, although the term 'essentialist basis' might in this case mislead.

[28]A sentence is extra-worldly if it is true irrespective of how any world turns out. A sentence is worldly if it is at least true at some world (or false at all worlds?).

nonexistent) items. Moreover, say that it is *weakly necessary* that A if every essentialist basis for 'A' includes only items that are neither essentially existent nor essentially nonexistent. There will also be *hybrid necessities* for which essentialist bases include some items that essentially exist and others that neither essentially exist nor essentially fail to exist.

For example, it is strictly necessary that 2 is even, since it is essential to everything that 2 is even (because essential to 2), and it is essential to 2 that it exists.[29] By contrast, it is weakly necessary that Socrates is human, since it is essential to everything that Socrates is human (because essential to Socrates), but it is neither essential to Socrates that he exists nor essential to Socrates that he does not exist.

Moreover, it is a hybrid necessity that Socrates is distinct from 2, since it is essential to everything (because essential to Socrates and 2), but 2 is essentially existent whereas Socrates is neither essentially existent nor essentially nonexistent. Conditional claims, such as 'If Socrates exists then he is human' will turn out weakly necessary or hybrid, depending on whether we believe them to be essential to Socrates alone (and if not, then what else in addition). In short: rather than putting the weight on the worlds, we put the weight on the individuals.[30]

3.5.4 The Necessary but Non-Essential

Many would like to distinguish between what is essential and what is necessary but not essential. For example, they want to say that it is necessary that Socrates is risible but not essential to Socrates that Socrates is risible. But given that the **exact account** contains only a notion of exact essence, and reduces necessity to essence, can we make this distinction?

We can. For what we want to say is that it is (weakly) necessary that Socrates is risible but that it is not essential to Socrates that he is risible

[29]It might strike some as counterintuitive that, for example, 2 essentially exists. For one, you might think that a theorist need not disagree over what numbers are to deny that they exist. I disagree, though this is a complex and sensitive issue. In any case, insofar as one accepts the general view on offer, then each necessity is essential to some items. So given that it is necessary that 2 exists, it follows that, for some X, it is essential to X that 2 exists. It seems that 2 is a plausible candidate. Moreoever, it does not seem that anything further could be required, with the exception, perhaps, of taking a structuralist stance towards arithmetic, where, say, all arithmetical truths have as their essentialist basis the integers taken together.

[30]The distinction relies on the (fair) assumption that there is no item whose existence or nonexistence is essential to something distinct without also being essential to the item itself. For suppose it is essential to 2 that 1 exists, because 2 depends on 1 (as the successor of 1), and so incorporates 1's essence as a part of its own. Nevertheless, it is essential to 1 that 1 exists.

('R'). That is, we want to maintain

$\Box_U Rs$

but at the same time deny

$\Box_s Rs$ (i.e. affirm $\neg\Box_s Rs$).

But this is achieved if some plurality to which Socrates properly belongs is the essentialist basis for 'Socrates is risible'. Perhaps the essentialist basis is in Socrates and the property *being risible*, plus whatever logical materials are required. For presumably, it will be essential to the property *being risible* that $(\forall x)(Rx \equiv Hx)$ (where 'H' is short for 'is human'). Then given that it is essential to Socrates that Socrates is human, it follows by conditional elimination that Socrates is risble. Hence it is essential to Socrates, *being risible*, and equivalence (or: conjunction and material implication) that Socrates is risible. But this does not mean that it is essential to Socrates that Socrates is risible. So we can, it seems, maintain this distinction.

Chapter 4

The Priority of the Individual

There are two sort of essence-specifying statements: statements of individual essence and statements of generic essence. We are familiar with statements of **individual essence**. For example, it is essential to Socrates that Socrates is human, or it is essential to negation and conjunction together that they are functionally complete. We formulate these statements using the notion of exact essence, and we formalize them by use of our indexed sentential operator.

But this leaves out a major component of essentialism: statements of **generic essence**. For example, what it is to prime is to have no nontrivial divisors, or what it is to be human is to be a rational animal. It is with statements of this sort, and not the particular truth-values of the examples provided, that concerns us here. Is **generic essence** a certain kind of **individual essence**, or vice versa; or are they altogether different?

This chapter defends a kind of **monism**: there is only a single, primitive kind of (exact) essence. It also defends **individualism**: that **individual essence** is prior to **generic essence**. Not only *can* we give an account of generic essence within the framework for individual essence, but we can give an account *superior* to the conjunction of **monism** and **generalism**, wherein generic essence is taken as primitive, and individual essence is defined in terms of it. If our view succeeds, then the 'two primitives' view is not required.[1]

[1]Correia (2013) also considers a primitive sentential notion of essence. If our account of ground in Chapter 5 is successful, then this further primitive is also not required.

4.1 Individual Essence & Nomination

We have so far reached two conclusions that influence how we proceed. The first is that exact essence is to be taken as primitive, and cannot be defined by the notion of necessity.[2] The second is that metaphysical necessity is definable in terms of the notion of exact essence. That definition is given as follows.

$\Box A =_{df} \Box_U A$.

This says that for it to be necessary that A is for it to be essential to U that A, where 'U' is the universal term, such that x belongs to U iff there is something to which it is identical. In other words, 'A' is part of the collective essence of everything, which then implies the following.

$(\forall A)(\Box A \rightarrow (\exists X)(\Box_X A))$.

This says that every necessity has a source, which is a straightforward consequence of the definition, plus a generalization from the definiens.

However, in addition we also accept that every necessary statement has a **essentialist basis**, stated as follows.

$(\forall A)(\Box A \rightarrow (\exists X)(X \prec U \wedge \Box_X A \wedge \neg(\exists Y)(Y \prec X \wedge \Box_Y A)))$,

where '$\prec$' represents a notion of *properly* belonging to a plurality. Thus X is an essentialist basis of 'A' iff it is essential to X that A and that there are no Y such that Y belongs to X but X does not belong to Y, and it is essential to Y that A. This definition of minimal source does not imply uniqueness.

The above claim concerning necessities and their essentialist bases then applies to all purely qualitative necessities, such as $(\forall x, y)(x \neq y \supset (\exists z)(z = x))$, $(\forall x)(Green(x) \supset Colored(x))$, and so on. That is, purely qualitative necessities must themselves have minimal sources, given that they are among the necessities.

In general, you might think that it is mysterious what the sources of such necessities are, since they do not contain any constituents functioning syntactically as names. What, then, are the items to which the purely qualitative necessities are essential?

In response, an intuitive answer is that we must **nominate** (i.e. form a name from) some predicative or operational constituents, and take the items denoted by those names as the items to which the sentence is ascribed as essential.

For example, although '$(\forall x)(x = x)$' contains no constituents func-

[2]Whether it can be defined within a primitive framework for generic essence is something we consider at the end.

tioning syntactically as names, we might nominate the predicate '=', and take the relation expressed by that predicate as the source of the general proposition. We can use 'N' as a nominating device that forms names for various items from items that are syntactically different.[3] For example, $N[=]$ denotes the relation of identity; $N[F]$ denotes the property *being* F; $N[\lambda]$ denotes the logical operation for forming complex predicates, and so on. Thus $\Box_{N[=]}(\forall x)(x = x)$.

Even if we do not accept that necessity is definable in terms of essence, we might still find cause to **nominate**, as in the previous example. For although we may not wish to say, in general, that every necessity is essential to some items, and so has an essentialist basis, we may wish to provide an essentialist basis for some purely qualitative necessities.

What is more, **nomination** extends beyond the purely qualitative. For example, it is essential to Socrates and disjunction that Socrates is human or Socrates is a skyscraper. In this case, we nominate a binary logical operation, which functions syntactically as an operation, and include it in the minimal source of the disjunction. For if the index is only to Socrates, then the rule of $\vee$-Introduction cannot be employed, and so we do not obtain the disjunction. Whether or not we take the particular approach to exact essence advocated, we may wish to provide a source for some non-qualitative necessities. For example, that conjunction ($N[\wedge]$) and negation ($N[\neg]$) are functionally complete.

The conclusion to be drawn is that **nomination** is a general feature of the essentialist framework. If we then use **nomination** in accounting, within the essentialist framework, for various phenomena, it is expensed as part of the general theory.

4.2 Generic Essence

Statements of generic essence are of the form 'To be F is to be G', where 'F' and 'G' function syntactically as predicates. The notion of generic essence we have in mind is partial: 'To be F is to be G' is equivalent in this context to 'to be F is at least in part to be G'.[4]

It is maybe tempting to think of the predicate variables as ranging only over non-rigid predicates: predicates that do not contain names as constituents. But we will not impose this restriction. For example, what

[3] Prior (1971) calls this 'nominalization'.

[4] We use 'For' locution for both the giving of an analysis and generic essence. Hopefully context disambiguates.

it is to be American is to be from the USA. This we accept among the statements of generic essence.

Furthermore, it is maybe tempting to think of the predicate variables as ranging only over one-place predicates. Indeed, some of what has been said might seem to suggest this. But we do not wish to impose this restriction. For example, what it is for x to be an aunt of y is for there to be some z such that x is a sister of z and y is a child of z. So it may be that the predicate on the left has less (or more?) argument places than that on the right.[5] This helps to fix the scope of **generic essence**.

4.2.1 Individualism: The Nomination Approach

Can we understand statements of **generic essence** using the resources that we have for treating **individual essence**? If so, how is this accomplished? This is a multi-step process.

1. Statements of generic essence are general in character, but are not existential. In this regard, every statement of generic essence should imply the corresponding universally quantified conditional: To be F is to be $G \rightarrow (\forall x)(Fx \supset Gx)$.[6]

   The universally quantified conditional runs in one direction due to the fact that the implying statement of generic essence is partial in character. For example, if what it is to be a bachelorette is at least in part to be unmarried, then, although every bachelorette is unmarried, some unmarried items are not bachelorettes.

2. Statements of generic essence do not express contingent connections between predicables, so each statement of generic essence should imply the corresponding *strict* universally quantified conditional: $\Box(\forall x)(Fx \supset Gx)$. But then the conditionals have an essentialist basis.

   We can think of statements of generic essence as expressing a kind of dependence among predicables. The antecedent predicate depends, predicatively, on the consequent predicate. For example, what it is to be human is in part to be rational. This dependence is partly communicated by the material conditional. Necessity then adds the

[5] This is also exemplified in the example of being American.

[6] Fine (2015) develops a generic account of essence and ground, which makes use of arbitrary objects. In that account, he claims that some generic statements of essence do not imply their universalized counterparts. We shall advance some considerations against generic monism in general. So let us return to this issue below.

appropriate strength, and the essentialist basis secures the direction of dependence.

3. We can then **nominate** some predicative or operational constituent. Given dependence, the nomination should involve only that which pertains to the antecedent predicate, since that is the dependent predicate, and we assume dependence among predicables to work similarly to the individual case.

   > **nomination approach** to be F is to be $G =_{df}$ there are some items pertaining only to the antecedent predicate ('F') such that it is essential to them that every F is G.

   Here 'pertaining to' means 'either the entire antecedent predicate is nominated or else some constituent(s) of it is(/are) nominated'. For example, to be prime is to have no nontrivial divisors, since it is essential to the property *being prime* that everything prime has no non-trivial divisors.

4.3 Against Nomination

Fabrice Correia (2008) discusses a restricted version of the **nomination approach**. According to this view, to be F is to be G is defined as: it is essential to $N[F]$ that every F is G. This is a restricted version of our approach, since our approach says that statements of generic essence are essential only to some nomination pertaining to the antecedent predicate. Correia then raises the following three objections, which we redirect at the **nomination approach**.

1. *Inflation.* The **nomination approach** is committed to properties and relations. For the approach requires **nominating** predicative and operational constituents.

   But **generic essence** is not committed, as such, to properties and relations.

   Therefore, the **nomination approach** fails for inflating the commitments of **generic essence**.

2. *Emptiness.* Some statements of generic essence involve predicates that do not express properties. As such, their nominations are empty. For example, the predicate 'is a non-self-exemplifying property', or '$[\lambda x.Px \wedge \neg Has(x, x)]$'.

If the antecedent predicates are empty, then nothing in the antecedent predicate can be nominated.

Therefore, the **nomination approach** fails because the analysans are not necessary for the analysansum.

3. *Neediness.* Given any satisfiable predicate 'F', everything is F only if it has $N[F]$: $(\forall y)(Fy \supset [\lambda z.Has(z, N[F])]y)$, where 'Has' is a primitive predicate expressing exemplification.

   The above universally quantified conditional is essential to the property *being F*. So it is essential to some nomination pertaining to the antecedent predicate.

   But then to be F is to have the property *being F*, which we wish to deny.[7] Therefore, the **nomination approach** fails because the analysans are not sufficient for the analysandum.

These are Correia's three objections, with some creative license taken, and also directing them in particular at the **nomination approach**. In what follows we offer replies to each of the three objections.

4.3.1 Re: Inflation

We have argued that **nomination** is a general feature of the essentialist framework, independently of generic essence. As such, there is a kind of hospitality towards properties and relations built in to essentialism so articulated.

But then using **nomination** in an account of generic essence is expensed by the general theory of essence, and so, I think, its burden is lifted in the particular case of generic essence.

4.3.2 Re: Emptiness

Although already alluded to, Correia likes the following example.

(e) To be a non-self-exemplifying property is to be a property.

Since the antecedent predicate does not express a property, that is to say, $\neg(\exists y)(y = N[\lambda x.Px \wedge \neg Has(x, x)])$, then

(f) '$(\forall y)([\lambda x.Px \wedge \neg Has(x, x)]y \supset Py)$',

cannot have as its source the property expressed by the antecedent predicate, namely *being a non-self-exemplifying property.*

[7] For this would commit us to the dependence of an item on the essential properties it instantiates. But such a claim is to be rejected the same as the similar claim involving an item and the sets to which that item belongs.

But the **nomination approach** says that the source need only include some nominated parts of the antecedent predicate; it need not nominate the entire antecedent predicate. Indeed, in the case of (f), the source appears to consist in conjunction ($\wedge$), along with the operation for forming complex predicates (λ), and in particular the rules for how the two interact. For in the case of (e), the content of the predicates, and whether they express properties, is obviously irrelevant. We can exchange for any conjunctive predicate and one of its conjuncts, and truth is preserved. Therefore, the source of (e) is *logical*: essential to the logical items involved.

Suppose that we shift the consequent predicate to 'abstract'.

(g) To be a non-self-exemplifying property is to be abstract.

Then the corresponding universalized conditional is as follows.

(h) $(\forall y)([\lambda x.Px \wedge \neg Has(x,x)]y \supset Ay)$.

In this case, we can safely nominate the predicate 'P', since it is this, in general, that is relevant to the dependence of the antecedent predicate on the consequent predicate. The particular aspect of *being non-self-exemplifying* does not get to the essentialist basis of the dependence on being abstract. It is rather *being a property*.

So the **nomination approach** withstands Correia's second objection. What is more, the **nomination approach** has the benefit of allowing the sources for statements of generic essence to vary, as supported by example.

4.3.3 Re: Neediness

Here Correia claims that

(i) $(\forall y)(Fy \supset Has(y, N[F])$,

and that this is essential to the property denoted by the nomination of the antecedent predicate.

(ii) $\Box_{N[F]}(\forall y)(Fy \supset [\lambda z.Has(z, N[F])]y)$.

But then given (i) and (ii): To be F is to have the property *being* F, which we want to reject.

However, the **nomination approach** does not commit us to the generic claim, since the nominated items, or the items from which they are nominated, should not appear in the consequent predicate, which is violated here. In this sense, we take statements of generic essence to be 'irreflexive'.

But then what if we want to say that to have the property $N[F]$

is to be F? This does not seem to be something we obviously want to avoid. But then in this case what is nominated is not *being* F but rather *being such as to have N[F]*.[8] The case does not look much different from conjunction: moving from more to less complex. Taking everything together, we are not moved by Correia's objections.

4.3.4 Rosen on Real Definition

Rosen (2015) tackles a notion in the neighbourhood of our notion of generic essence, namely *real definition*, although his notion is *full* (i.e. statements of real definition imply equivalences between predicables) whereas our notion is *partial* (i.e. statements of generic essence imply uni-directional conditionals between predicables).[9]

Rosen objects to the biconditional variant on the **nomination approach**. At any rate, we assume so, since he treats predicate variables as disguised first-order variables ranging over, among other things, properties and relations. His first objection states that

$(\forall F)\Box_{N[F]}(\forall x)(Fx \supset Fx)$,

in violation of some notion of noncircularity (though he uses '$\equiv$' in place of '$\supset$'), since he takes this to imply that to be F is to be F. But our 'source reader' detects that this has less to do with $N[F]$ and more to do with the material conditional. However, given that the essence of $N[\supset]$ knows not of $N[F]$, we might take it to be part of the collective essence of the property and the connective that every F is F. But the **nomination approach** says that indexed items 'pertain only to the antecedent predicate', which is not the case here, since the material conditional too is involved in the essentialist basis. Therefore, it is not true that to be F is to be F on our account.

Second, Rosen raises an objection concerning cause and effect relations. Let 'C' be the predicate 'is a cause of' and 'H' be the predicate 'is an effect of' (so as not to confuse the predicate with existence). Then Rosen says that it might be that

$\Box_{N[C]}(\forall x)(Cxy \equiv Hyx)$

and

$\Box_{N[H]}(\forall x)(Hyx \equiv Cxy)$,

again in violation of some form of noncircularity, since he takes this to imply that (i) for x to be a cause of y is for y to be an effect of x; and

[8] This is the difference between $[\lambda x.Fx]$ and $[\lambda x.Has(x, N[F])]$.

[9] Also, I am making no claim regarding the connection between generic essence and real definition.

(ii) for y to be an effect of x is for x to be a cause of y. But in this case, the two relations are clearly converse relations, and it is in virtue of this, so to speak, that the pair of equivalences hold. So instead of a violation of noncircularity, we might take it to be part of the collective essence of $N[C]$ and $N[H]$ that they are converses of one another. This will give the pair of equivalences.

A further worry Rosen raises is that the **nomination approach** does not obviously chain. For suppose that what it is to be square is to be an equilateral rectangle, and that what it is to be a rectangle is to be a right quadrilateral. It then stands to reason that to be square is to be an equilateral right quadrilateral. But it is unclear that the **nomination approach** validates this inference.

Rosen is absolutely right. But we are not committed to the claim that our notion of exact essence has been fully specified. In particular, we have only begun to discuss relations among predicables in the essences of things. It is perhaps a plausible general principle that if it is essential to some items pertaining to $N[F]$ that $(\forall x)(Fx \supset Gx)$, and it is essential to some items pertaining to $N[G]$ that $(\forall x)(Gx \supset Hx)$, then it is essential to some items pertaining to $N[F]$ that $(\forall x)(Fx \supset Hx)$.

In any event, Rosen's own approach involves nominating the antecedent predicate. Where his view differs is in adding the notion of ground into the content of the statement attributed as essential. If he is right to do so, and our reduction of ground to essence is successful, then we have no problems accommodating Rosen's view, if a weaker version of it fit the bill for our partial statements of generic essence (say, by invoking a notion of partial ground instead of the notion of full ground). So we need not be detained by Rosen's proposal.

4.4 Generic Monism

We have examined Correia's objections to the **nomination approach** and responded to those objections. But it is worth also discussing Correia's positive proposal, which is to take **generic essence** as primitive and define **individual essence** from it. In other words, Correia defends a version of **generic monism**.[10]

[10]Kit Fine's (2015) view can alse be considered a version of generic monism.

4.4.1 The Predication Approach

Correia's proposal begins with the introduction of a new, primitive sentential operator '$\boxminus$' that, unlike the operator for individual essence, takes items that function syntactically as predicates for indexes. Thus '$\boxminus_F A$' formalizes 'it is part of what it is to F that A'. For example, it is part of what it is to be prime that everything prime has no non-trivial divisors.

Just as with the operator for individual essence, the generic operator allows for a meaningful notion of collective essence, and so allows for many predicates to be indexed, as in $\boxminus_{F,G,H} A$. For example, it is part of what it is to be human and a number together that nothing is both human and and a number.

Correia then avails himself of the Quinean strategy of translating names into predicates to give an account of **individual essence** in terms of **generic essence**. For example, corresponding to the name 'Socrates' ('s'), there is the predicate 'being Socrates' ('$\lambda x.x = s$') to which the generic essentialist operator can be married.[11] Thus it is part of what it is to be Socrates that Socrates is human ($\boxminus_{\lambda x.x=s} Hs$). This provides a general framework for essence.

4.4.2 Contra The Predication Approach

We do not have any knock-down arguments against proceeding in this manner. In the broader scheme of things, taking the **predication approach** does not affect many of the results of the present work. But there are some worries against the **predication approach**. Since objections to the **nomination approach** have been answered, we prefer it.

Inflation and Emptiness

The first set of issues deals with how the **predication approach** intends to handle the concerns (or similar ones) that Correia raises against the **nomination approach**.

Correia claims that the **predication approach** lifts the commitment to properties in statements of generic essence. But then since the framework also gives an account of individual essence, it stands to reason that the account lifts the commitment to individual items as well. Although Correia does not say, it might be intended that we are

[11] Strictly speaking, Correia does not explicitly use λ-notation and identity to form the identity predicates. He instead uses what appears to be a primitive device that forms predicates from names (like Quine).

to render a statement of individual essence, such as $\Box_s Hs$, as follows: $\boxminus_{\lambda x.x=s}(\forall y)(y = s \supset Hy)$.

But you might think that statements of individual essence *do* carry a commitment to the items to which they are attributed as essential. So the opposite worry to *inflation* applies to **individual essence** on the **predication approach**. Call this *deflation*.

Maybe the response to *deflation* is that the **predication approach** only lifts commitments regarding impure predicates: predicates that do not involve names as constituents.[12] But then there is a worry of finding 'predicative sources' for some of the statements Correia makes. For example, take (j).

(j) $\neg(\exists y)(y = N[\lambda x.Px \wedge \neg Has(x, x)])$.

The statement (j) says that there is no property *non-self-exemplifying property*. But what is the predicative source of (j)? It is not, it seems, '$[\lambda x.Px \wedge \neg Has(x, x)]$', since it does not seem to be part of what it is to be a non-self-exemplifying property that nothing is the property *non-self-exemplifying property*. Nor can it be the predicate of being identical with this property, if non-rigid predicates are committal, since this would contradict (j), for which the predicate is providing a source.

Corriea could use our **nomination** reply, but then this better fits the **nomination approach** than the **predication approach**. This seems to tip the balance of consideration in favor of the **nomination approach**.

Logical and Metaphysical Identity

A final worry concerns the distinction between logical identity and the notion of metaphysical identity with which essence is connected. These two notions should be kept separate; but there is a worry that the **predication appoach** entwines the two. For example, the following seems perfectly reasonable.

(k) $\boxminus_{\lambda x.x=s}(\forall y)(y \neq s \rightarrow (\exists z)(z = y \wedge z \neq s))$.

That is, it is part of what it is to be *identical with Socrates* that anything distinct from Socrates is identical to something. But we do not want to say that the general statement in (k) to which the operator is applied is part of the exact essence of Socrates. This seems to expose an entwining of logical with metaphysical identity that the proponent of essentialism can avoid by taking **individual essence** as primitive and buying into the **nomination approach**.

[12] Not so, however, if the identity predicates are not analyzable in terms of lambda and identity.

This is all a dispute, it seems, between players on the same team. The argument is over which strategy wins the game. The view here is that the balance of consideration is tipped in favour of **individual essence** and the **nomination approach**. Two primitives is a last resort. If the **nomination approach** is successful, then we need not adopt two primitives.

Chapter 5

An Essence First Approach to Metaphysics

Let us recapitulate. So far, we have identified a metaphysical conception of identity: the notion of **exact essence**. It has the features of relativity, unrestrictedness, monotonicity, and it behaves according to a distinctive principle of logical closure.

With this notion of exact essence, we then carried out two reductions. First, a reduction of **metaphysical necessity**: for it to be necessary that A is for it to be essential to everything together that A. Second, a reduction of **generic essence**: for 'to be F is to be G' to be true is for there to be some nomination pertaining only to 'F' to which it is essential that every F is G.

But in a sense these two reductions were merely a warm-up to help fix the notion of exact essence, and to provide an important tool (namely, generic essence) for further reductions to exact essence.

For there has been much discussion recently of essence[1], ontological dependence[2], alethic ground[3], and fundamentality[4], which has begun to generate further discussion of how some or all of these notions are connected within a broader theory of metaphysics.[5] This chapter is a contri-

[1]See Almog (1991, 2003, 2010), Dasgupta (2014b), Fine (1994a, 1994b, 1995b), Koslicki (2012a, 2012b, 2013), Lowe (2008), Rosen (2009, 2015), and Tahko (2012).

[2]See Barnes (2012), Cameron (2008), Correia (2008), Fine (1994b, 1995a), Koslicki (2012a, 2012b, 2013), Lowe (2012), Lowe and Tahko (2015), and Schaffer (2009).

[3]See Correia and Schnieder (2012), deRosset (2014), Fine (2001, 2012a, 2012b), Litland (forthcoming), Raven (2015a), and Rosen (2010). We preface 'ground' with 'alethic' for reasons that should be clear. But it is intended to exlude the notion of 'entitiy grounding' associated with Schaffer (2009). That, we say here, is an instance of ontological dependence, since it is concerned, mostly, with metaphysical existence, and not metaphysical truth.

[4]See Barnes (2012), Cameron (2008), Raven (2015b), and Schaffer (2009).

[5]See Correia (2013), Fine (2001, 2009, 2015), Koslicki (2015, 2016), Schaffer (2016),

bution to this further discussion. It advocates an essence first approach to metaphysics, wherein essence is taken as primitive and definitionally prior to ontological dependence, alethic ground, and fundamentality.

In this chapter, we develop a generic notion of dependence, and a corresponding factive notion of ground, under which we subsume (i) ontological dependence, and its factive counterpart *ontological ground*; and (ii) alethic ground, and its non-factive counterpart *alethic dependence*.

We then give the impure logic of alethic ground within the theory advocated, apply the aforementioned factive and non-factive counterpart notions, treat some paradigmatic cases of alethic ground, respond to some potential objections, and resolve some extant issues surrounding the notion of alethic ground.

In Chapter 6, we use the theory, along with some further essentialist materials, to provide an account of both relative and absolute fundamentality for both the ontological and alethic notions. Finally, we apply the resulting theory, with fundamentality added, to a sample of issues. The resulting theory, it is believed, offers more unity than is presently available, while at the same time maintaining the individuality of the various notions in play.

In Chapter 7, we consider the problem of meta-grounds, of what grounds true grounding claims. We give a novel definition of the notion of 'zero ground' within the essentialist framework, and we use this to provide a theory of meta-ground that in some respects resembles, but improves upon, Litland (forthcoming).

5.1 Dependence and Ground

At the outset, we identified three types of **metaphysical qualification** with the following questions.

1. What is it *really*?
2. What *really* exists?
3. What is *really* the case?

Associated with the first question is a metaphysical conception of identity; with the second, a metaphysical conception of existence; and with the third, a metaphysical conception of truth.

and Sider (2011).

It was also noted that if we add the following *structural claims* to the latter two notions, then we obtain some distinctively metaphysical relations.

1. What does not *really* exist owes its existence to what *really* exists.

2. What is not *really* the case owes its truth to what is *really* the case.

In the first case, there is an ontological or existential kind of 'owing' in play, whereas in the second case, there is an alethic kind of 'owing' in play. Recently, philosophers have shown great interest in the first notion, under the heading 'ontological dependence'; and they have shown great interest in the second notion, under the heading 'ground'.[6] Let us say a few words about each of these notions, before providing them with an essentialist basis.

5.1.1 Ontological Dependence

We distinguish existence from the existential quantifier. So where variables have free range (i.e. over possible objects, propositions, properties and relations), it is not the case that an item exists if and only if there is something identical with it. In particular, the implication fails from right to left: some items are identical with something but do not exist. For example, my merely possible sister.

We liken our notion of existence to some generic kind of realization, as opposed to associating it with being concrete. For we would at least like to leave open that some abstract items contingently exist.

There is then the question of what we mean by 'exist' when we say 'What does not *really* exist owes its existence to what *really* exists'. In this chapter, our focus is on our sense of 'existence', and so not on the existential quantifier. But 'ontological dependence' seems the more common term, and it so is this that we employ.

But what sorts of things owe their existence to other things? What sorts of general features govern this notion of ontological dependence? We can borrow a list of paradigms from Koslicki (2012b).

- Smiles ontologically depend on mouths that are smiling.

- Sets ontologically depend on their members.

- Events or states of affairs (e.g. lightning or heat) ontologically depend on their participants (e.g. electrons or molecules).

[6] See the footnotes in the introduction to the present chapter for references.

- Chemical substances (e.g. water) ontologically depend on their molecular/atomic constituents (e.g. H_2O-molecules).
- Tropes (e.g. the redness of a particular tomato) ontologically depend on their 'bearers' (e.g. the tomato).
- Aristotelian universals (e.g. redness) ontologically depend on their 'bearers' (e.g. objects that are red).
- Holes (e.g. the holes in a piece of Emmentaler cheese) ontologically depend on their 'hosts' (e.g. the piece of Emmantaler cheese).
- Boundaries (e.g. the boundary around a football field) ontologically depend on their 'hosts' (e.g. the football field).

So there is a mixed bag of paradigm cases, some obscurely philosophical, while others quite ordinary. The examples stretch across various aspects of reality, indicating that the notion in play has very broad application. In general, ontological dependence should conform to some principle of **non-circularity**, as well as a principle of **chaining**. For example, if {Socrates} ontologically depends on Socrates, then Socrates does not ontologically depend on {Socrates}; nor does {Socrates} ontologically depend on {Socrates}. Moreover, if {{Socrates}} ontologically depends on {Socrates}, and {Socrates} ontologically depends on Socrates, then {{Socrates}} ontologically depends on Socrates.[7] There are distinctions aplenty concerning ontological dependence. We will keep them on a need-to-know basis. The sketch of paradigms and principles should suffice for now.

5.1.2 Alethic Ground

Given that there is a metaphysical conception of truth, and that we accept the structuring claim that what is not really the case owes its truth to what is really the case, we obtain an alethic notion of 'owing', which we call 'alethic ground'. The general idea of alethic ground is that of some truths holding in virtue of other truths. But what sorts of truths owe their truth to other truths? What sorts of features govern

[7]Of course, any one of the paradigms and principles could be denied. We will even considering lifting **non-circularity** for certain theoretical purposes. But a notion without these features seems too weak to be of real interest in developing. Better to start with developing the stronger notion, and explore lifting requirements where it seems advisable.

this notion of alethic ground? We can borrow a list of paradigms from Koslicki (2015).[8]

- Moral/Natural: The fact that an act is a telling of a lie grounds the fact that the act is morally wrong.
- Truthmaking: The truth of the proposition that snow is white is grounded in the existence of the state of affairs, snow's being white.
- Logical Cases: The fact that the ball is red grounds the fact that the ball is red or round.
- Determinate/Determinable: The fact that the ball is crimson grounds the fact that the ball is red.

Again, there is a mixed bag of paradigm cases, some obscurely philosophical, while others quite ordinary. The examples stretch across various aspects of reality, indicating that the notion in play has very broad application. In general, the notion of alethic ground should conform to some principle of **non-circularity**, as well as a principle of **chaining**. For example, if $(A \wedge B)$ and C ground $(A \wedge B) \wedge C$, then $(A \wedge B) \wedge C$ neither grounds itself nor, for example, $(A \wedge B)$.[9] There are distinctions aplenty concerning alethic ground. We will keep them on a need-to-know basis. The sketch of paradigms and principles should suffice for now.

5.2 The Materials

The purpose of this chapter is to articulate the above notions within our essentialist framework. To do so, we should be equipped with the following materials.

1. Let 'S' be a predicate variable restricted to predicates expressing factive statuses. Assume there are at least two such statuses: truth ('T') and existence ('E'). They are so-called because they are statuses with respect to which relations are characterized as 'factive'.[10] The notion is not taken to be especially natural, but it is useful for obtaining the desired generality.

[8] N.B. We read each of the following in terms of propositions, and not facts. If facts are desired, we will below provide space for them.

[9] See fn. 7. Also, since many wish to treat ground as a sentential operator, whereas as we will treat it relationally, there will inevitably be some toggling.

[10] For example, knowledge is taken to be factive, since knowing something implies its *truth*. Moreover, distance relations are taken to be factive, since being at a distance from something implies that both items *exist*.

2. Let 'x', 'y', and so on, be singular variables with free range over individuals, properties, relations, and propositions. Let 'X', 'Y', and so on, be similar plural variables.

   Let '$\prec$' be the predicate 'belongs to' (or: 'is among'), which takes a singular term on its left and a plural term on its right (e.g. '$x \prec X$'). We can use plural terms on both sides, as in '$X \prec Y$'. But this is short for '$\forall x(x \prec X \supset x \prec Y)$'.[11]

3. Let 'F', 'F'', 'F''', and so on, be variable monadic predicates, and 'R', 'R'', 'R''', and so on, be variable polyadic predicates, which may take a plural argument. We freely mix talk of predicates and properties and relations, though, formally, they are separated.

4. Let '$\Box_t$' be the indexed sentential operator that expresses our notion of exact essence.

   Let '$TB(F, F')$' (or '$TB(R, R')$') abbreviate statements of generic essence (e.g. 'To be F is to be F'').

5.3 Being Dependent

Many writing on the topic of ontological dependence distinguish between at least two types of ontological dependence: rigid and generic. For instance, {Socrates} rigidly ontologically depends on Socrates, since there is a particular item on which the set ontologically depends, namely Socrates. By contrast, the Aristotelian property *being human* might be said to generically ontologically depend on being instantiated merely by some item or other.[12]

We are accustomed to thinking of dependence as a relation between items. But if some item depends on bearing a relation merely to something or other, then there is nothing that is the relatum on the right; there is no *dependee*. As such, the first notion we introduce is that of being dependent, which is expressed by a monadic predicate 'is dependent' (i.e. 'D'), subscripted with a particular factive status 'S' (i.e. 'D_S').

$$D_S x =_{df} (\exists R)[\Box_x(Sx \supset (\exists X)(RxX \wedge (\exists z)(z \prec X \wedge Sz)))],$$

where the special case is: $(\forall y)(y \prec X \rightarrow Sy)$.[13]

[11] The horseshoe ('$\supset$') represents material implication, and the right arrow ('$\rightarrow$') represents strict implication.

[12] See Correia (2008), Fine (1995a), Koslicki (2012b), and Lowe and Tahko (2015).

[13] Predicates for factive statuses are distributive. So they can either be put in the universal form (e.g. '$\forall z(z \prec X \supset Sz)$'), or they can be applied directly to plural terms (e.g. 'SX'). However, the latter is merely a shorthand for the former.

This says that for x to be dependent with respect to factive status S is for there to be some R such that it is essential to x that it has S only if there are some X for which RxX, at least one of which has factive status S, where the special case is that everything belonging to X has S.[14] A few remarks are in order.

First, the notion of being dependent, and subsequent notions of dependence and ground, are always relativized to a particular factive status. For example, {Socrates} is dependent with respect to existence, since it is essential to {Socrates} that it exists only if there are some items that are its members, all of which exist.

Moreover, the proposition *Socrates is a philosopher or a sophist* is dependent with respect to truth, since it is essential to the proposition that it is true only if there are some propositions that are its disjuncts, and at least one of them is true.[15]

Second, there is an implicit restriction on the predicate quantifier to two-place predicates that take a plural term in their second argument place. So when considering an item such as {Socrates, Plato}, we do not consider membership, but rather plural membership: $R_{\epsilon}xX =_{df} Set(x) \wedge \forall y(y \prec X \equiv (y \epsilon x)))$.

Finally, the notion of being dependent will play a role in subsequent definitions of dependence and ground. To ensure that those relations have the desired shape, we will make explicit certain principles that we take to govern the notion of being dependent, and the demands those principles make on the essentialist framework.

To simplify matters, let us define the notion of a predicate 'R' being *dependent-making* as satisfying the following condition.

[14] This differs from Fine's (1994b, 1995a) treatment of generic essence, in that it does not postulate a further notion of essence that admits of alternatives. Also, it differs, for example, from Lowe and Tahko (2015), where statements such as 'x depends on the Fs' are made. The present notion saves on ideology with respect to the first view, and allows us to parse generic statements made within the second view.

We should add that this account of being dependent, and subsequent accounts of dependence and ground, do not commit us to a *conditional* account of essence. For we have already said that we accept an unconditional account of essence, but that this does not prohibit statements within the essence of an item from being logically complex. Indeed, the case of being dependent seems to fit the bill. For dependent items are, by their nature, items whose having factive status S is conditional on this or that. If we were to delete the antecedent involving the facive status, then we would not express the *dependent* nature of the item in question. Our view then differs from Fine (1995a) in another important respect. For Fine, dependence is *abstracted* from the essence of an item: it amounts to something being a constituent of some proposition that is essential to the item in question. But for us, being dependent is explicitly part of the essence of the dependent item. It is a *particular* sort of proposition, if you like, that makes for being dependent.

[15] Propositions are presumably also dependent with respect to existence.

For some factive status S: $RxX \leftrightarrow D_S x$.

Thus a predicate is dependent-making when it underwrites any related items being dependent with respect to S, for some factive status S.

In what immediately follows, let us restrict the values of our polyadic predicate variables to dependent-making predicates, in addition to the restriction to two-place predicates that take a plural term in their second argument place. We can then give the following principles for dependent-making predicates.[16]

AM $RxX \wedge R'xY \rightarrow (\exists Z, R'')((\forall y)(y \prec Z \equiv (y \prec X \vee y \prec Y) \wedge R''xZ)))$.

This says that dependent-making predicates amalgamate into further dependent-making predicates. For example, suppose that P_1 are the parents of b, and that P_2 are the microphysical parts of b. If both are dependent making, then'being a parent or part' is dependent making.

Some might be suspicious of **AM**, just as they are suspicious of amalgamation in the case of alethic ground.[17] However, the principle is not required. But since our aim is to give an account of alethic ground in essentialist terms, and that some hold a principle of amalgamation for alethic ground, it is at least fruitful to see how such a principle is articulated in, and what impact it makes on, the essentialist framework.

NC $RxX \rightarrow \neg(\exists y, Y, R')(R'yY \wedge x \prec Y \wedge y \prec X)$.

This says that dependent-making predicates do not make circles.

TR $RxX \wedge (\exists y, Y, R')(y \prec X \wedge R'yY) \rightarrow (\exists R'', Z)(R''xZ \wedge (\forall z)(z \prec Y \supset z \prec Z)))$.

This says that dependent-making predicates chain to produce chained dependent-making predicates.

These principles make certain demands on the essentialist framework. For instance, **TR** will require that there are such chained predicates, and that they are essential. Consider {Socrates+Plato}, i.e., the unit set of the aggregate of Socrates and Plato.[18] The unit set is dependent with respect to existence, underwritten by plural membership. Moreover, the

[16]We are working with the assumption that only dependent-making (polyadic) predicates are involved in the essences of things. This may not be the case with monadic predicates, in particular with 'E', where plausibly $(\exists x, y)(\Box_x Ex \wedge \neg\Box_y Ey)$.

[17]See Audi (2012).

[18]Let us work with a 'conjunctive' notion of aggregrate, whereby an aggregate exists if and only if all of its aggregative parts exist.

aggregate is dependent with respect to existence, underwritten by plural proper parthood. Both are dependent-making.

But then given that proper parthood relates some member of a set related by membership to the member's aggregative parts, **TR** says that there is some further dependent-making predicate relating the set to the aggregative parts of its aggregate member.

To begin, we define the following singular chaining predicate (letting 'ϵ' be membership and '$\sqsubset$' be proper parthood):

$$\lambda x, y(\exists z(z \epsilon x \wedge y \sqsubset z)),$$

i.e., of being an x, y such that there is some z, which is a member of x and of which y is an aggregative part. Then we can define a plural predicate

$$R_{\epsilon,\sqsubset}(v, X) =_{df} Set(v) \wedge \forall w(w \prec X \equiv \lambda x, y(\exists z(z \epsilon x \wedge y \sqsubset z))[v, w],$$

which we obtain from our singular predicate.

Given that it is essential to {Socrates+Plato} that it exists only if there are some X, namely Socrates and Plato, such that the unit set {Socrates+Plato} is related by $R_{\epsilon,\sqsubset}$ to X and X exist, then '$R_{\epsilon,\sqsubset}$' is dependent-making, and so satisfies the demand **TR** places on the essentialist framework.

In the case of **AM**, it is hybrid predicates, and not chained predicates, that are required as essential to the dependent item. Take our previous example. Since membership is dependent-making and relates {Socrates+Plato} to Socrates+Plato, and '$R_{\epsilon,\sqsubset}$' is dependent-making and relates {Socrates+Plato} to Socrates and Plato, there should be some further dependent-making predicate that relates the unit set of Socrates+Plato to Socrates+Plato, Socrates, and Plato.

Given the item involved, and the (unchained) dependent-making predicates involved, we can define the following hybrid predicate.

$$R_{\epsilon \vee \sqsubset}(x, X) =_{df} Set(x) \wedge \forall y(y \prec X \equiv (y \epsilon x \vee \exists v(v \epsilon x \wedge y \sqsubset v)),$$

i.e. that relates an item x and a plurality X when x is a set, and anything y belongs to X if and only if either it is an element of x or it is an aggregative part of an element of x.

Given that it is essential to {Socrates+Plato} that it exists only if

there are some X, namely Socrates+Plato, Socrates, and Plato, such that {Socrates+Plato} is related by $R_{\epsilon \vee \sqsubset}$ to X and X exist, '$R_{\epsilon \vee \sqsubset}$' is dependent-making, and so satisfies the demand **AM** places on the essentialist framework.

With respect to **NC**, the demand is that we never obtain circles. There is not much more to say beyond this.

Admittedly, these are rather non-natural predicates that end up essential to dependent items. But there is no requirement on essence that only natural predicates are essential. For presumably, there are very non-natural items that have essences. What is more, these chained and hybrid predicates do appear to speak to the individual essences of the items they concern (especially in the case of **TR**).

5.3.1 Full Dependence

That we introduced the monadic notion of being dependent does not mean that we reject any relation of dependence. We do not. In fact, we define the notion of full dependence as follows.

$$x \Rightarrow_S Y =_{df} (\exists R)[\Box_x Sx \supset (\exists X)(RxX \wedge (\exists z)(z \prec X \wedge Sz)) \wedge \Box_x Sx \supset (RxY \wedge SY)].$$

That is, for x to fully depend on Y with respect to factive status S is for x to be dependent with respect S underwritten by R, and for it to be essential to x that it has S only if it is related by R to Y and Y have S.

For example, {Socrates, Plato} fully depends on Socrates and Plato with respect to existence, since it is essential to {Socrates, Plato} that it exists only if there are some items that are its members, and they exist; and it is essential to {Socrates, Plato} that it exists only if Socrates and Plato are its members and exist.[19]

Furthermore, there is a series of principles, analogous to those for being dependent, by which the notion of dependence is governed.

AM* $x \Rightarrow_S Y \rightarrow \forall W(x \Rightarrow_S W \rightarrow \exists Z(\forall y(y \prec Z \equiv (y \prec W \vee y \prec X)) \wedge x \Rightarrow_S Z))$.

[19]Plural terms can denote a single object. We assume every denoting singular term has a plural counterpart. For example, we assume that it is essential to {Socrates} that it exists only if there are some X that are its members and exist. Also, we are taking both the general and particular claim as essential, without regard to the fact that one can be obtained from the other by consequence. So, for example, the set satisfies the general dependent claim by virtue of being a set, and it satisfies the particular dependence claim by virtue of being the particular set that it is.

NC* $x \Rightarrow_S Y \rightarrow \forall y(y \prec Y \rightarrow \neg\exists X(x \prec X \wedge y \Rightarrow_S X))$.

TR* $x \Rightarrow_S Y \rightarrow \forall X\forall y(y \prec Y \wedge y >_S X \rightarrow \exists Z(x \Rightarrow_S Z \wedge \forall z(z \prec X \rightarrow z \prec Z)))$.

Thus **AM*** states that full dependence amalgamates; **NC*** that it is non-circular; and **TR*** that it is, in a sense, transitive (i.e. it chains). These principles derive from the principles of the last section.

Other accounts of dependence[20] have attempted to side-step these commitments by claiming that dependence is involvement in some proposition in the exact essence of the dependent item, plus an added principle which says that whenever x depends on y, anything essential to y is essential to x. On this view, {{Socrates}} depends on Socrates, since it is essential to {Socrates} that it contains Socrates, and essential to {{Socrates}} that it contains {Socrates}. Given the aforementioned principle, it will then be essential to {{Socrates}} that {Socrates} contains Socrates, thus making for the dependence of {{Socrates}} on Socrates.

By contrast, the present view favours direct essential relatedness over indirect essential involvement. For we would say that it is essential to {{Socrates}} that it exists only if there are some X, to which Socrates belongs, that are its members (in the sense of the 'transitive closure' of plural membership) and exist.[21]

5.3.2 Partial Dependence

The definition of partial dependence has a familiar form. For partial dependence is defined in terms of full dependence as follows.

$x \rightrightarrows_S Y =_{df} (\exists X)((\forall y)(y \prec Y \supset y \prec X) \wedge x \Rightarrow_S X)$.

That is, for x to partially depend on Y with respect to S is for there to be some X to which all the Y belong, and x fully depends on X.

For example, {Socrates, Plato, Aristotle} partially depends on Socrates and Plato with respect to existence, since {Socrates, Plato, Aristotle} fully depends on Socrates, Plato, and Aristotle, among which include Socrates and Plato.

[20] In the ballpark of Fine (1994b, 1995a). But see also Koslicki (2012b).

[21] It is not clear that the side-stepper can just take the transitive closure of membership, since this might seem to collapse the distinction between 'immediate' and 'mediate' essence. Our view suffers no such collapse. For us, what is immediately essential is what is not the result of applications of our principles. Perhaps this distinction can even put the skeptic of our principles at ease, since they will just work with immediate essence. On the distinction between immediate and mediate essence, see Fine (1994b).

5.3.3 Full Ground

Ground is the factive, albeit relational counterpart of being dependent. But the notion is twofold.

One notion of ground issues from the special case of our definition of being dependent, namely when the item dependent with respect to S underwritten by R is essentially such that it has S only if there are some items to which it is related by R, *all of which* have S.

This notion of ground is just that definition plus a relevant factive component. The direction of the connective is reversed, now gesturing toward the grounds.

$$Y \Leftarrow_S x =_{df} (\exists R)[(\Box_x Sx \supset (\exists X)(RxX \wedge SX)) \wedge (RxY \wedge SY \wedge Sx)].$$

That is, for Y to fully ground x with respect to factive status S is for there to be some R such that it is essential to x that x has S only if there are some X to which x is related by R, which are S; and x is related by R to Y and both x and Y have S.

For example, the propositions *Obama is human* and *Obama is US President* ground the conjunctive proposition *Obama is human* $\wedge$ *Obama is US President* with respect to truth, since it is essential to the conjunctive proposition that it is true only if there are some propositions that are its conjuncts and are true; and they are in fact its conjuncts and are true.[22] What is more, this is a case where the grounded item fully depends on the items that in fact ground it.

But there is a second form of ground, issuing from the non-special case of our notion of being dependent. This will be a relation that takes singular terms on each side.

$$y \Leftarrow^2_S x =_{df} (\exists R)[(\Box_x(Sx \supset (\exists X)(RxX \wedge \exists z(z \prec X \wedge Sz))) \wedge (\exists Y)(RxY \wedge y \prec Y \wedge Sy \wedge Sx)].$$

That is, for y to be a second-ground for x with respect to S is for there to be some R such that x is dependent with respect to S; and in fact x is related by R to some Y to which y belongs, and both x and y have S.

Consider the proposition $\exists x(Human(x))$. It is an existential proposition, and it is second-grounded with respect to truth in the proposition *Human(Obama)*, since the latter is in fact a true instance of the former.[23]

[22] The examples used are of factive dependents (i.e. dependents with the relevant factive status), or else are stipulated to involve factive dependents. As such, the statement that the dependent item too has the relevant factive status is usually, if not always, ommitted.

[23] If one were especially keen on amalgamation principles, then there could be a

5.3.4 Partial Ground

The definition of partial ground also has a familiar form, at least for first-grounds, as it too is defined in terms of full ground as follows.

$$Y \leftleftarrows_S x =_{df} (\exists X)((\forall y)(y \prec Y \rightarrow y \prec X) \wedge X \Leftarrow_S x).$$

That is, for Y to partially ground x is for there to be some X such that, for any y, y belongs to Y only if y belongs to X, and X fully grounds x. In the case of second-ground, partial second ground and full second ground coincide. It is, after all, binary.

5.4 Unified Foundations

This completes the set of definitions for our generic notions of dependence and ground. The claim, then, is that the notion of ontological dependence invoked in Barnes (2012), Cameron (2008), Correia (2008), Fine (1995a), Koslicki (2012b, 2013), Lowe (2012), Lowe and Tahko (2015), etc. just is our combined notion of being dependent and dependence where the factive status is set to *existence*. It then has a factive counterpart, and admits of both full and partial notions. Call these notions (full/partial) *ontological dependence* and *ontological ground*, respectively.[24]

Similarly, we claim that the notion of alethic ground invoked in Correia and Schnieder (2012), Fine (2001, 2012a, 2012b), deRosset (2015), Raven (2015), and Rosen (2010), etc. just is our notion of ground where the factive status is set to *truth*. It then has a non-factive counterpart, and admits of both full and partial notions. Call these notions (full/partial) *alethic ground* and *alethic dependence*, respectively. Let us now proceed to some applications of the present framework, in an attempt showcase its novelty and power.

5.4.1 The Impure Logic of Alethic Ground

We first apply our framework to the impure logic of alethic ground. This is the set of alethic grounding principles that govern truth-functional

principle that takes instances of second-ground and amalgamates them into an instance of first ground. For example, both $Human(Obama)$ and $Human(Kripke)$ second-ground $\exists x(Human(x))$. We might then take it to be essential to the existential proposition that it is true only if there are some *true* instances of it, all of which are true. Then there is a case of first-ground.

[24]It might be that we wish to be more discriminating, and distinguish 'ontological' from 'existential' dependence by setting the factive status to being (i.e. $\lambda x(\exists y(x = y))$ in the first case, but setting the factive status to existence (E) in the second case. We will leave this open.

connectives and quantifiers. Let us begin by defining a series of predicates to treat the quantifiers and some truth-functional connectives.

1. $R_{\forall}(x, X) =_{df} Proposition(x) \wedge Universal(x) \wedge \forall y(y \prec X \equiv Inst(y, x))$. The predicate holds between a proposition and some propositions iff the proposition is universal and everything that belongs to the plural belongs to that plural iff it is an instance of the proposition.

2. $R_{\wedge}(x, X) =_{df} Proposition(x) \wedge Conjunctive(p) \wedge \forall y(y \prec X \equiv Conj(y, x))$. The predicate holds between a proposition and some propositions iff the proposition is conjunctive and everything belonging to the plural belongs to that plural iff it is a conjunct of the proposition.

3. $R_{\exists}(x, X) =_{df} Proposition(x) \wedge Existential(x) \wedge \forall y(y \prec X \equiv Inst(y, x))$. The predicate holds between a proposition and some propositions iff the proposition is existential and everything that belongs to the plural belongs to that plural iff it is an instance of the proposition.

4. $R_{\vee}(x, X) =_{df} Proposition(x) \wedge Disjunctive(x) \wedge \forall y(y \prec X \equiv Disj(y, x))$. The predicate holds between a proposition and some propositions iff the proposition is disjunctive and everything belonging to the plural belongs to that plural iff it is a disjunct of the proposition.

We can express the relevant statements of being dependent as follows.

1. Let x be a universal proposition.

   It is essential to x that x is true only if there are some X such that $R_{\forall}(x, X)$ and, for every y belonging to X, y is true.

   Thus universal propositions are dependent with respect to truth, but they do not fully depend on their instances.

2. Let x be a conjunctive proposition.

   It is essential to x that x is true only if there are some X such that $R_{\wedge}(x, X)$ and, for every y belonging to X, y is true; and it is essential to the conjunctive proposition that it is true only if X are its conjuncts and are true.

   Thus conjunctive propositions are dependent with respect to truth, but they also fully depend on their conjuncts.

3. Let x be an existential proposition.

   It is essential to x that x is true only if there are some X such that $R_{\exists}(x, X)$ and some y belonging to X is true.

   Thus existential propositions are dependent with respect to truth, but do not fully depend on their instances.

4. Let x be a disjunctive proposition.

   It is essential to x that x is true only if there are some X such that $R_{\vee}(x, X)$ and some y belonging to X is true.

   Thus disjunctive propositions are dependent with respect to truth, but do not fully depend on their instances.

Grounds are then straightforward. But let us give some examples.

1. Suppose there are only two items a and b, and that both are G. Then the propositions Ga and Gb ground the proposition $\forall xGx$ with respect to truth, since they are its instances and are true. Moreover, given that universal propositions do not depend on their instances, the universal proposition does not require that Ga and Gb be all and only its instances. Nor does it require that they even be its instances. Still more, no totality proposition is required.[25]

2. The propositions *Obama is human* and *Obama is US President* ground the conjunctive proposition *Obama is human* $\wedge$ *Obama is US President* with respect to truth, since they are its true conjuncts.

3. The proposition *Obama is human* second-grounds $\exists xHuman(x)$, since it is a true instance.

4. The proposition *Obama is human* second-grounds the proposition *Obama is human* $\vee$ *Socrates is a sophist*, since it is a true disjunct.

We therefore arrive at a unified and sensitive treatment of the binary connectives and quantifiers.[26] The account treats universal quantification and conjunction similarly, and treats existential quantification and disjunction similarly. Also, the account does not require totality propositions, and it need not essentially tie quantified propositions to a particular

[25] Thus responding to Skiles (2015) on accidental generalizations, and Carnino (2014) on totality propositions.

[26] With respect to negation: true negations of atomic propositions are not dependent, and so are not grounded. However, they may ground logically complex propositions involving negation. The extension, I believe, is fairly straightforward.

domain. Our notion of alethic ground therefore provides a very attractive account of (an important fragment of) the impure logic of alethic ground, namely the sufficiency conditions, or introduction rules.[27]

5.4.2 Weak Dependence and Ground

The account that has been provided of dependence and ground is 'strict', in the sense that no form of circularity is permitted. It is an interesting question whether, and how, the present account can accommodate a weak notion, so as to account for the necessity, or elimination, side of the impure logic of alethic ground. These are general rules for how the grounds of logically complex and general statements must be, whether immediate or mediate. That is, they are necessary conditions on the grounds of logically complex and general propositions. To achieve weakness, we begin by defining the following predicate.

$$R_{\equiv_m}(x, X) =_{df} (\exists y)(y = x) \wedge (\forall z)(z \prec X \equiv (x \equiv_m z)).$$

The predicate '$\equiv_m$' invoked in the definiens is what we might call 'metaphysical equivalence'. Everything is metaphysically equivalent to itself, since it is identical to itself. But in addition, we might allow for distinct but metaphysically equivalent items. For example, considering the pair of propositions Rxy and Ryx, where 'R' is symmetric, we can take the propositions as distinct but metaphysically equivalent. If the notion is granted, then we might consider the following claim.

$$(\forall x)\ (x \text{ is apt to be } S \rightarrow \Box_x Sx \supset (\exists X)(R_{\equiv_m}(x, X) \wedge SX)).$$

This says that everything is essentially such that it has a given factive status S (if apt to have that status, e.g., Socrates is not apt to be true) only if it has some metaphysical equivalents that also have that status. Everything has at least one metaphysical equivalent, namely itself. Therefore, everything is dependent with respect to S on its metaphysical equivalents.

Given that x is a metaphysical equivalent of y if and only if the converse also holds, this kind of dependence is ruled out by the principle **NC**, i.e. non-circularity, governing our notion of being dependent. But lifting this principle provides a weak notion, and a corresponding weak

[27] On which see Fine (2012a).

notion of ground: everything is grounded in its matter-of-fact metaphysical equivalents, with respect to factive status S.

But then we can use this weak notion of ground, fixing the factive status to truth (T), to provide the necessary conditions, or elimination rules, for the impure logic of alethic ground.[28] These rules, Fine points out, require a weak notion below the horizontal line in order to secure that both sides of the grounding connections do not involve anything logically complex or general. This is important for giving 'necessary conditions', since some propositions might ground something logically complex or general only mediately. The intent is to capture both the immediate and mediate cases.[29]

$$\begin{array}{l} \Delta \Leftarrow_{T} A \wedge B \\ \text{———————} \ (\wedge\textbf{-E}) \\ \Delta \Leftarrow_{weak,T} \{x | Conjunct(x, A \wedge B)\} \end{array}$$

The subscripted 'T' sets our factive status to truth, and 'weak' indicates that it is the weak notion of alethic ground. Then in that case where $\Delta = \{A, B\}$, A will be a metaphysical equivalent of itself, and so will weakly ground itself with respect to truth (as will B). So the underwriting predicate will shift when moving below the horizontal line: from conjunction to metaphysical equivalence.

$$\begin{array}{l} \Delta \Leftarrow_{T} A \vee B \\ \text{———————} \ (\vee\textbf{-E}) \\ \Delta \Leftarrow_{weak,T} A;\ \Delta \Leftarrow_{weak,T} B;\ \Delta \Leftarrow_{weak,T} \{x | Disjunct(x, A \vee B)\} \end{array}$$

Here the semi-colons below the horizontal line indicate disjunction: one of the three options will obtain, for any Δ. A similar remark applies, if $\Delta = \{A\}$, $\Delta = \{B\}$, or $\Delta = \{A, B\}$: there will be grounding in metaphysical equivalents.

$$\begin{array}{l} \Delta \Leftarrow_{T} \exists x Fx \\ \text{———————} \ (\exists\textbf{-E}) \end{array}$$

[28] For a statement of the conditions from which the present ones are given, see Fine (2012a, pp.63-67).

[29] The notion of distributive ground is also invoked, which we have not discussed here. The idea is that when you have a set of items on the right, then there is a decomponsition of the set on the left into subsets, where each subset grounds some member of the set on the right, and each member of the set on the right is grounded by some subset. See Fine (2012a, p.54) for the notion of distributive (alethic) ground.

$$\exists U \subseteq \{y | Instance(y, \exists x Fx) \wedge Ty\} \wedge U \neq \emptyset : \Delta \Leftarrow_{weak,T} S^{30}$$

Here we follow Fine in taking the necessary conditions on an any Δ alethically grounding an existential to be that Δ weakly distributively alethically grounds some non-empty subset of the set of the existential's true instances.

$$\begin{array}{l} \Delta \Leftarrow_{T} \forall x Fx \\ \text{———————} \ (\forall\textbf{-E}) \\ \Delta \Leftarrow_{weak,T} \{y | Instance(y, \forall x Fx)\} \end{array}$$

Finally, here we have a weak distributive alethic ground of all the instances.

This, then, is a sketch of how the present account attempts the elimination side of the impure logic of alethic ground. Note that every strict ground is indeed a weak ground, since lifting **NC** and introducing '$\equiv_m$' does not affect strict grounds. It expands the notion, but does not contract it. This rounds out the impure logic of ground.

5.4.3 Ontological Ground and Alethic Dependence

It is common to think of ontological dependence as a non-factive notion. So, for example, we want to say that {Socrates} depends on Socrates, irrespective of whether Socrates and his unit set exist. And we can express this, since it is essential to {Socrates} that it exists only if there are some X such that {Socrates} is related by R_ϵ to X, and X exist. Moreover, it is essential to {Socrates} that it exist only if Socrates exists and are its members.

But we should also like to distinguish, for example, {Obama} from {Socrates}, given that Socrates does not exist. For our sense of existence is primitive and not quantificational. Our notion of ontological ground allows us to make this distinction: {Obama} exists and is grounded, with respect to existence, in Obama, whereas {Socrates} does not exist (though there is something identical with it) and so is not grounded (though it does depend on Socrates with respect to existence).

Such a distinction in reality seems real. It is perhaps only an accident of the literature that ontological dependence focuses on a non-factive notion, whereas the literature on alethic ground focuses on a factive

[30]Note that 'U' is here a variable ranging over sets of propositions.

notion.

In this regard, we should want to say, for example, that the conjunctive proposition *Obama is human* $\wedge \neg$*Obama is human* depends, with respect to truth, on the propositions *Obama is human* and $\neg$*Obama is human*. The difference between this conjunctive proposition and our example from above is that it is essential to the present conjunctive proposition that it is false, and so it is incompatible with the essence of the proposition that it be grounded.

So a factive counterpart of ontological dependence, as well as a non-factive counterpart of alethic ground, are real notions that allow us to make real distinctions. What is more, they are clearly distinguished on the present account. It of course remains to consider the extent of their application.

5.5 Paradigms of Alethic Ground

In this section, we outline how our account treats paradigmatic non-logical cases of alethic ground. We consider two paradigm cases: determinables and genera.

5.5.1 Determinables

Suppose we have a ball b that is in fact blue, and take the proposition b *is colored*. The proposition is a determinable proposition: it involves the ascription of a determinable property to an item.

Plausibly, it is essential to this proposition that it is true only if there are some X such that X are determinates of the proposition and there is some proposition belonging to X that is true. That is, the proposition is dependent, with respect to truth.

What is more, we can say that a pair of propositions are related as determinate to determinable iff the constituent properties are so related, and the other constituent items are identical.

We can then say that the proposition b *is blue* second-grounds the proposition b *is colored*, since the first is a true determinate of the second.[31]

[31] This general strategy for treating determinables can be found in Rosen (2009).

5.5.2 Genera

Take the proposition *Obama is an animal*. It is genus-ascribing. Plausibly, it is essential to the proposition that it is true only if there are some X such that X are specifications of the proposition, at least one of which is true. That is, the proposition *Obama is an animal* is dependent, with respect to truth.

What is more, we can say that a pair of propositions are related as species to genus (i.e. one is a specification of the other) iff the constituent properties are so related, and the other constituent items are identical.

We can then say that the proposition *Obama is human* second-grounds the proposition *Obama is an animal*, since the first is a true specification of the second. So our account nicely treats some paradigm non-logical cases of alethic ground.

5.6 Objections

In this section we consider various objections that might be brought against the account of dependence and ground, both with respect to how the notions are defined, as well as their applications.

5.6.1 Commitment to Propositions

The account on offer makes use of propositions in order to account for the alethic and ontological dependence and ground of logical complexity and generality. But it might be objected that dependence and ground, as such, do not require propositions.

In response, it is not clear to me that the notions do *not* require the relevant relata, be they sentences or propositions. (For we may speak of sentences instead of propositions.) If ground is construed as a sentential predicate, it is not clear to me that anything more or less is required than if it is construed as a sentential operator. For in the case of the latter, we still, presumably, need sentences on which to operate. So, how the constituents *function syntactically* between the two views is clear to me (i.e. nominally vs. sententially). What is not clear is whether something less is required on the operational view over that of the sentential predicate view.[32]

[32] As Fine says, "My preferred view is that the notion of ground should be expressed by means of a sentential operator, connecting the sentences that state the ground to the sentence that states what is grounded" (2012a, 46).

In any case, I myself am not at all concerned with a commitment to propositions.[33] Arguably, one of the benefits of any framework that includes relations of dependence, ground, and fundamentality –in fact, perhaps one of the *purposes* of including these notions– is that we can be permissive with respect to ontology, while at the same time being parsimonious with respect to what is fundamental.[34]

5.6.2 Definitional Circularity Threat

In application to quantifiers, the conditions written into universal and existential propositions involves universal and existential quantification. This is how we were able to avoid postulating totality propositions in our grounds for quantified propositions. However, there is perhaps the threat of a circular definition.

But this is an idle threat. For one, the essences under consideration are not the quantifiers themselves but are quantified propositions (i.e. universal and existential propositions). (Recall that we adopt the view that the essences of the logical constants are given non-propositionally by their associated rules.) For another, the very appearance of the quantifiers in the essences does not imply circularity. For suppose we thought that it was essential to conjunction that it is abstract, and also essential to conjunction that it is a logical constant. Suppose further that we thereby thought it was essential to conjunction that it is abstract $\wedge$ it is a logical constant. That is, we take the conjunctive proposition *Conjunction is abstract* $\wedge$ *Conjunction is a logical constant* to be part of the (propositional) essence of conjunction. Is this circular? It would appear not. Similarly with the case of quantified propositions.

5.6.3 Necessitarianism

It is typically thought that alethic grounds, by necessity, suffice for what they ground. Skiles (2015) calls this 'necessitarianism'. But the present account presents only conditions of necessity, and says nothing of sufficiency.

I am inclined to think that the definitions of our notions of being

[33]Many take ground to be a relation among facts, or they distinguish a conceptual from a worldly conception of ground. We can regard the present account as providing a view of conceptualist ground. Perhaps a sparser theory can do the same for worldly ground, if we add facts and a factive status of 'obtains'.

[34]See, for example, Schaffer (2009). In the next part, we develop a theory of fundamentality to support this claim.

dependent, and of full dependence and ground, can be strengthened by replacing the '$\supset$' with '$\equiv$', which will yield necessitarianism for ground. Thus our previous definition of being dependent

$$D_S x =_{df} (\exists R)[\Box_x(Sx \supset (\exists X)(RxX \wedge (\exists z)(z \prec X \wedge Sz)))]$$

could be strengthened to

$$D_S x =_{df} (\exists R)[\Box_x(Sx \equiv (\exists X)(RxX \wedge (\exists z)(z \prec X \wedge Sz)))].$$

If we then update our definition of ground in this way, then grounds will, by necessity, suffice for what they ground. For example, given that *Barack Obama is human* and *Hillary Clinton is human* are true and are the conjuncts of *Barack Obama is human* $\wedge$ *Hillary Clinton is human*, then given that it is essential to the conjunction that it is true **if and only if** there are some X that are its conjuncts and are true, then the conjuncts strictly imply the conjunction.[35]

However, if Skiles (2015) is correct, and we have good reason to suppose necessitarianism is false for alethic ground, then we have good reason not to strengthen our definitions to produce these results. Our account is compatible with the openness of this issue.

5.7 Extant Problems

In this final section, we deal with some extant problems surrounding the notion of alethic ground, and how the account presented here can resolve them. This should bolster support for the general view on offer.

5.7.1 Unwanted Dependencies

Any account of metaphysical ground in terms of essence runs the risk of unwanted dependencies. For example, suppose we thought that when propositions ground a proposition, then it is essential to the grounded proposition that the grounds suffice for it. Then the grounds are involved in the essence of what is grounded, and so you might reason, what is grounded in some sense depends on what grounds it. But take for exam-

[35] In non-special cases, we take it that it is part of the collective essence of the grounds and what is grounded that they stand in whatever relation underwrites the grounded items being dependent. For example, it is part of the collective essence of the propositions Fa and $(\exists x)(Fx)$ that the first is an instance of the second.

ple the proposition $\exists x Philosopher(x)$. It is grounded in the proposition *Socrates is a philosopher*. But then on the account just given, it is essential to the existential proposition that the truth of this particular instance suffice for the existential's truth. But in response, you would say that "the existential proposition *knows nothing* of Socrates".[36]

But our account carries no such unwanted dependencies. For example, given the way that existential propositions are treated, their essences are specified in an entirely general manner, with no specific reference, for example, to Socrates. When we then consider the alethic grounds of an existential, we look to the factive component of the definition of ground, which is external to the scope of any essentialist operator. So there are no unwanted dependencies.[37]

5.7.2 The Coarse-Grainedness of (Alethic) Ground

Koslicki (2015) and Wilson (2014) are skeptical of the notion of alethic ground. This, in part, has to do with its broad application to disparate phenomena, without any clear unification.

Thus Koslicki claims, "the grounding idiom is not sufficiently fine-grained to shed much light on the nature of the connections that are at play in putative cases of grounding" (2015, 339). For example, it is thought that conjuncts ground conjunctions; determinates ground determinables; physical facts ground mental facts; etc. But it is not at all clear how these instances are unified under the notion of alethic ground.

The objection to existing accounts of alethic ground is well taken. But the present account can respond to this worry. For built into our definition of alethic ground, and of ground and dependence more generally, is a predicate quantifier that will have different witnesses in different cases. For example, it will be '$R_\forall$' in the case of universal quantification; '$R_\vee$' in the case of disjunction; determination in the case of determinables; and specification in the case of genera.

However, despite the different cases being differently underwritten, each has the same form, and is within the scope of an essentialist operator. But then therein lies both difference and unification. What is more, the account is further unified in that it treats this issue for both ontological dependence and alethic ground, even though the worry has

[36]This is a phrase from Fine (2012a).

[37]In Correia (2013), this is considered as an objection that Correia's account cannot get around. So he accepts the consequences. It is, then, a great benefit of the present account that it entirely avoids such worries, which I think are of genuine concern.

only been raised with respect to alethic ground.

Finally, since I would deny that different witnesses in different cases implies different notions of alethic ground, I do not, contra Koslicki (2015), Cameron (2014), and Schaffer (2016), see the value of employing notions of synonymy, genus-species, or homonymy.

Chapter 6

Ground and Fundamentality

It appears to many that ground and fundamentality are closely connected.[1] Indeed, they seem to think that the value of ground derives from this tight connection. For they want to argue: metaphysics is concerned with what is fundamental; ground reveals what is fundamental; therefore, metaphysics is concerned with ground.

Concerns about the scope of metaphysics aside for the moment[2], the argument is fallacious. For even if we limit the first premise to the claim that *part* of what metaphysics is about concerns what is fundamental, the second premise, it will be argued, is false. This is not to say that ground is irrelevant to fundamentality. Rather, the claim shall be that ground only makes up part of an account of fundamentality. In short: the movement from less to more fundamental involves, not only connections of ground, but also a change in essence between what grounds and what is grounded.

6.1 Ground$_S$ and Fundamentality$_S$

The term 'fundamentality' is ambiguous. For there is a distinction between relative fundamentality, between an item being more fundamental than another, and absolute fundamentality, or an item being fundamental. Full stop. Furthermore, the notion of ground is ambiguous until we specify a factive status: for our purposes, existence ('E') or truth ('T').

In the remainder of this section, we are going to speak of ground generically, without consideration of a factive status. This is because we reject the principles considered, irrespective of factive status.

[1] See Bennett (2011), Cameron (2008), Fine (2001), Raven (2015), and Schaffer (2009),

[2] See Barnes (2014). We return to this issue below.

In what follows, we first introduce the supposed connection between ground and relative fundamentality, and then argue against it. We then introduce the supposed connection between ground and absolute fundamentality, and then argue against that. This provides the motivation for our positive account.

6.1.1 Ground and Relative Fundamentality

We shall assume that the relation of relative fundamentality is factive, and so we will only deal with the generic notion of ground, and not that of dependence. We also assume that the relation of relative fundamentality is binary and takes only singular terms as arguments. This is because we want to be able to say, of an item, that it is grounded in some X, but where only some of the items belonging to X are more fundamental than the item in question. For example, take the set $\{a, \{a\}\}$. It is grounded in a and $\{a\}$ (with respect to existence). But we will want to say that only a, assuming it not to be a set, is more fundamental than the pair set $\{a, \{a\}\}$.

The claim that ground and fundamentality are connected can be made in various ways, which differ in strength. The superscript specifies that we are considering relative fundamentality.

1. **definitional**^{R} y is more fundamental than $x =_{df} y$ [or its plural counterpart Y] is a partial ground of x.

2. **equivalence**^{R} y is more fundamental than x iff y is a partial ground of x.

3. **sufficiency**^{R} y is a partial ground of x only if more fundamental than x.

There is an obvious way in which **definitional**^{R} and **equivalence**^{R} can be claimed to fail. It is that some pair of items x and y are comparable with respect to relative fundamentality, and yet unconnected by ground.

For example, the conjunctive proposition *Eli Hirsch invented the incar* $\wedge$ *David Lewis is a modal realist* and, concerning a distant arbitrary electron e^-, the proposition e^- *is negatively charged*. The latter is more fundamental, it seems, and yet they are unconnected by ground (with respect to truth).[3]

For another example, consider e^- and the aggregate of Hirsch's incar and my copy of Lewis's OPW, again supposing that e^- is nowhere in

[3]Bennett (2011) makes this point as well.

the vicinity of either of the aggregative parts. The electron, it seems, is more fundamental than the aggregate, and yet they are unconnected by ground (with respect to existence).

At any rate, the lot fails for different reasons. Since **definitional**^{R} implies **equivalence**^{R}, and the latter implies **sufficiency**^{R}, it follows that **definitional**^{R} implies **sufficiency**^{R}. But if **sufficiency**^{R} is false, both of the others are false. We focus on **sufficiency**^{R}.

6.1.2 Against Sufficiency^R

There is a picture associated with relative fundamentality: it is that of a layer cake. The movement from less to more fundamental represents a movement from one layer of reality to a lower layer of reality.

Therefore, if relative fundamentality is revealed entirely by connections of ground, then the movement from what is grounded to grounds represents the movement from one layer of reality to a lower layer. But ground is an extremely fine-grained notion for this task. For example, the proposition corresponding to

'$(((A_1 \wedge A_2) \wedge A_3) \wedge A_4) \wedge (((A_5 \wedge A_6) \wedge A_7) \wedge A_8)$'

is, if true, grounded with respect to truth in the propositions corresponding to

'$(((A_1 \wedge A_2) \wedge A_3) \wedge A_4)$' and '$(((A_5 \wedge A_6) \wedge A_7) \wedge A_8)$';

and yet it is hard to imagine that this movement from grounded to grounds represents a movement from one layer of reality to a lower layer of reality, at least in the same sense as that, say, between the mental and the physical (assuming, for the sake of argument, that the mental is distributively grounded in the physical). But this is indeed the case given **sufficiency**^{R}.[4]

What is more, if **sufficiency**^{R}, and ground is the only (factive) structuring relation, then **sufficiency**^{R} implies that a level of reality cannot have structure. But why should a layer of reality be denied structure? I think these are good reasons to reject **sufficiency**^{R}.

6.1.3 Ground and Absolute Fundamentality

The situation is similar with respect to absolute fundamentality.

1. **definitional**^{A} x is absolutely fundamental $=_{df}$ nothing partially grounds it.

[4]For a case concerning ground with respect to existence, consider a set of some rank, where its members are all sets of the immediately lower rank.

2. **equivalence**^{A} x is absolutely fundamental iff nothing partially grounds it.

3. **sufficiency**^{A} If nothing partially grounds x then x is absolutely fundamental.

There is an obvious way in which **definitional**^{A} and **equivalence**^{A} are thought to fail. For many wish to allow for the possibility of infinitely-descending chains of ground, and yet maintain that some items in such a chain are fundamental.

In any case, those who endorse this possibility are nevertheless inclined towards **sufficiency**^{A}. So we shall focus on **sufficiency**^{A}, the falsity of which implies the falsity of the other two.

6.1.4 Against Sufficiency^A

Even if there are infinitely-descending grounding chains, there might also be grounding chains that only finitely descend, i.e. that terminate. But do all grounding chains that terminate then terminate in the absolutely fundamental? That is, does **sufficiency**^{A} hold?

Suppose that that every set's existence is grounded in the existence of its members. For example, the proposition *Socrates exists* grounds, with respect to truth, the proposition $\{Socrates\}$ *exists*. Given urelements and **sufficiency**^{R}, we would be inclined to say that the existence of sets is not fundamental.

But this is of course with the exception of the null set ($\emptyset$). For given that $\emptyset$ is such that $Set(\emptyset) \wedge \neg\exists x(x \epsilon \emptyset)$, there is nothing in whose existence the null set is grounded. Is the null set's existence then fundamental?[5]

In my view, an account that treats all sets as on a par with respect to fundamentality is to be desired. For just as it does not seem that the movement from one set rank to a lower rank is a movement from less to more fundamental, it does not seem that the movement from a set with members to one without can mark a difference between derivative and fundamental.

6.2 An Account of Fundamentality

In this section we provide a theory of relative fundamentality, within an essentialist framework, that avoids issues raised in the previous sections.

[5]For a case concerning ground with respect to existence, consider the items involved, and not the propositions asserting their existence.

To articulate the theory we need at least the following previously given materials.

- Exact Essence ($\Box_t A$)
- Ground ($\Leftarrow_S$)
- Generic essence: $TB(F, F')$

But in addition, we will introduce further essentialist materials to account for relative fundamentality with respect existence (i.e. relative ontological fundamentality) and relative fundamentality with respect to truth (i.e. relative alethic fundamentality).

In the first subsection, we introduce the materials relevant to the notion of relative fundamentality with respect to existence, and then we give that account. In the second subsection, we do the same for relative fundamentality with respect to truth. We then give a general account of fundamentality, both relative and absolute.

6.2.1 Relative Ontological Fundamentality

We begin our account of relative ontological fundamentality by introducing the notion of *being identical in essence*, which we represent with the symbol $=_e$. We define the relation as follows.

($=_e$**df**) $x =_e y =_{df} \Box_x Fx \leftrightarrow \Box_y Fy$,
where 'F' contains no names as constituents.

That is, for x to be identical in essence to y is for it to be that it is essential to x that Fx if and only if it is essential to y that Fy, where 'F' is a non-rigid (or 'pure') predicate.

There is also a corresponding notion of being distinct in essence: $x \neq_e y =_{df} \neg(x =_e y)$. A pair of items are then distinct in essence if there is some (non-rigid) essential difference between them.

For example, Socrates and Plato are identical in essence, since both are essentially human, animals, material objects, etc. Also, {Socrates} and {Plato} are identical in essence, despite the fact that {Socrates} is essentially such as to contain Socrates, whereas {Plato} is not, since the predicate '$\lambda x(s \epsilon x)$' is rigid. But both are essentially sets, abstract objects, etc.[6]

[6]Furthermore, {Socrates+Plato} and {{Socrates}} are not essentially distinct be-

By contrast, Socrates and Seabiscuit are distinct in essence, since Socrates is essentially human and Seabiscuit is essentially a horse. Moreover, Socrates is distinct in essence from electron e^-, since Socrates is essentially human, and e^- is essentially an electron.

With this notion and our previously given materials, we can first build an account of relative ontological fundamentality.

Let '$f_S(y, x)$' abbreviate 'y is more fundamental than x with respect to factive status S'. Then '$f_E(y, x)$' expresses that y is ontologically more fundamental than x.

We build an account of relative ontological fundamentality by providing a series of sufficient conditions, and then taking them, disjunctively, as giving an analysis.

(1) $(\exists X)((X \Leftarrow_E x) \wedge (y \prec X) \wedge (x \neq_e y))$.

Thus the first sufficient condition is that if y belongs to some X that ground x with respect to existence and is distinct in essence from x, then y is ontologically more fundamental than x. For example, Socrates is ontologically more fundamental than {Socrates}, since there are some X (such that any v belongs to X iff v is identical with Socrates) to which Socrates belongs that ground {Socrates} with respect to existence, and Socrates and {Socrates} are distinct in essence.

In addition, we need two further conditions that relate items by relative fundamentality, but where those items are unconnected by ground. The conditions are as follows.

(2) $(\exists v)(\exists X)((X \Leftarrow_E x) \wedge (v \prec X) \wedge (x \neq_e v) \wedge (v =_e y))$.

Thus the second sufficient condition is that if some X ground x with respect to existence, and v belongs to X and is distinct in essence from x but identical in essence to y, then y is ontologically more fundamental than x.

For example, Socrates is ontologically more fundamental than {Plato}, since there are some X (such that any v belongs to X iff v is identical with Plato) to which Plato belongs that ground {Plato} with respect to existence, and Socrates is distinct in essence from {Plato} but identical in essence to Plato.

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cause the former is related to Plato by $R_{\epsilon,\sqsubset}$, since the pure predicate 'is a set of an aggregate' is not essential.

But then what, for example, of electron e^- and {Plato}? We want e^- to come out more fundamental than {Plato}, and yet Plato and the electron are distinct in essence. So we add a further condition.

(3) $(\exists v)(\exists X)((X \Leftarrow_E v) \wedge (y \prec X) \wedge (v \neq_e y) \wedge (x =_e v))$.

Thus the third sufficient condition is that if there is some v and there are some X such that X grounds v with respect to existence and y belongs to X and v is distinct in essence from y but identical in essence to x, then y is more fundamental than x. For example, $\{e^-\}$ is grounded in X with respect to existence (such that any z belongs to X iff z is identical with e^-) and e^- belongs to X, and $\{e^-\}$ is identical in essence to {Plato} but distinct in essence to e^-, and so e^- is more fundamental than {Plato}.

These are the conditions for relative ontological fundamentality. If we take them disjunctively, they provide an analysis using only notions definable within the essentialist framework.

($f_E$df) $f_E(y, x) =_{df} (1) \vee (2) \vee (3)$.

This account of relative ontological fundamentality overcomes the shortcomings of **definitional**^{R}. For one, we can make the requisite judgments of relative-ontological-fundamentality-absent-grounding-connections. For another, we are not committed to the claims (a) that sets of different ranks differ with respect to relative fundamentality; and (b) that levels of reality always lack structure. For we allow for ontological grounding connections, but deny connections of relative ontological fundamentality, between items identical in essence.

6.2.2 Relative Alethic Fundamentality

Matters become slightly more complicated when the factive status is set to truth, since propositions can be compared with respect to fundamentality along two different dimensions, existence and truth, and they do not always coincide. For example, consider a disjunctive proposition. It is grounded in both disjuncts with respect to existence, but is only, perhaps, grounded in a single disjunct with respect to truth.

What we wish to do is to introduce an additional notion of *being identical in essence with respect to subject matter*, where the relevant notion of 'subject matter' is completely idiosyncratic, that applies only

to propositions, and is directly associated with the notion of relative alethic fundamentality.

First, a word about propositions. Propositions are complex items with constituents. Their constituents come in three general types: (i) nominal; (ii) predicative; and (iii) operational. For example, take the proposition $\exists x(x = Socrates)$. Here the nominal constituents (i.e. the constituents functioning syntactically like names) is Socrates; the predicative constituent (i.e. the constituent functioning syntactically like a predicate) is identity; and the operational constituent (i.e. the constituent functioning as an operation) is the existential quantifier closing the sentence.[7]

Where x is a proposition, let $No(x)$ denote the set of nominal constituents of x; $Pr(x)$ the set of predicative constituents of x; and $Op(x)$ the set of operational constituents of x.

Also, we shall now make use of our notion of generic essence. But it involves predicates, and the definition of '$\equiv_e$' will involve predicative constituents of *propositions*, and so it will involve properties and relations, and not predicates.

As such, let $TB_p(x, y)$ be the relation that obtains between x and y when x and y are properties (or relations), and there is a corresponding true statement of generic essence involving predicates that correspond to those properties (or relations). For example, where $x =$ the property *being prime* and $y =$ the property *being a number with no non-trivial divisors*, then $TB_p(x, y)$, since to be prime is to be a number with no non-trivial divisors.

Let us then define the notion of *being identical in essence with respect to subject matter*, for which we use '$\equiv_e$' to denote.

$$(\equiv_e \mathbf{df})\ x \equiv_e y =_{df} (Op(x) = Op(y) \neq \emptyset) \vee$$
$$\forall v, w(v \epsilon Pr(x) \wedge w \epsilon Pr(y) \rightarrow$$
$$(w = v \vee TB_p(v, w) \vee TB_p(w, v) \vee \exists z(TB_p(v, z) \wedge TB_p(w, z)))).$$

That is, a pair of propositions x and y are identical in essence with respect to subject matter when either their operational constituents are both non-empty or their predicative constituents are related by identity or generic essence.

So any logically complex or general propositions will count as identical in essence with respect to subject matter (in our intended sense). For

[7]Sometimes, a constituent can belong to multiple types in a given proposition. Kit Fine (2012c) provides a similar account.

example, the propositions $\exists x Fx$ and $(A \wedge B) \vee C$ will be identical in essence with respect to subject matter. But the propositions $\exists x Fx$ and Fa will not. Moreover, *Obama is an animal* and *Obama is a sentient being* will be identical in essence with respect to subject matter, since to be an animal is to be a sentient being.

The account of relative alethic fundamentality is then the same as the account of relative ontological fundamentality, the only difference being that we replace occurrences of '$=_e$' with '$\equiv_e$'.

So the proposition Fa will be alethically more fundamental than $\exists x Fx$. However, it will not be the case either that *b is crimson* is more fundamental than *b is red* or *Obama is human* is more fundamental than *Obama is an animal*. For presumably there is some connection of generic essence. For example, to be human is at least in part to be an animal; to be crimson is at least in part to be red. So even though we take the more specific and determinate propositions to alethically ground the genus- and determinable-ascribing propositions, we do not think that this leads from one *level of reality* to another, which seems sensible.[8]

The account of relative alethic fundamentality overcomes the shortcomings of **definitional**^{R}. For one, we can make the requisite judgments of relative-alethic-fundamentality-absent-grounding-connections.

Also, we are not committed to the claims (a) that complex conjunctions differ from their slightly less complex conjuncts with respect to relative fundamentality; and (b) that levels of reality always lack structure. For we allow for alethic grounding connections, but deny connections of relative alethic fundamentality, between items identical in essence with respect to subject matter, as has been shown above.

6.2.3 Relative Fundamentality

Taken together, we can provide a general account of relative fundamentality, which will include, not merely an index to a factive status, but an index to a pair consisting of a factive status and a corresponding notion of 'essentialist identity' (I).

Thus our general account consists in the following sufficient conditions

[8]Koslicki (2015) discusses this issue. However, the example she gives of genus-species, in connection with Rosen (2009), is not a case of genus-species; it's a case of defining a species, of which the genus is a part. In any case, we need not take the view that to be a rational animal, for example, is to be rational $\wedge$ an animal. That is, we need not take the view that genus and difference are connected by conjunction in a real definition. Nor do we need to take the connection between species acriptions and the corresponding genus+difference ascriptions to be connections of alethic ground.

for relative fundamentality.

(1*) $(\exists X)(X \Leftarrow_S x \wedge y \prec X \wedge \neg I(x,y))$.

(2*) $(\exists v)(\exists X)(X \Leftarrow_S x \wedge v \prec X \wedge \neg I(x,y) \wedge I(v,y))$.

(3*) $(\exists v)(\exists X)(X \Leftarrow_S v \wedge y \prec X \wedge \neg I(v,y) \wedge I(x,v))$.

Finally, the account of relative fundamentality is as follows.

($f_{S,I}$df) $f_{S,I}(y,x) =_{df}$ (1*) $\vee$ (2*) $\vee$ (3*).

6.2.4 Absolute Fundamentality

The account of relative fundamentality with respect to S and I can be used to define an absolute notion ($\Im$) as follows.

absolute fundamentality $\Im_{S,I}(x) =_{df} \neg(\exists y) f_{S,I}(y,x)$.

That is, for x to be absolutely fundamental with respect to (S,I) is for there to be no y that is more fundamental than x with respect to (S,I). The account allows for infinite descent, so long as there is no distinctness in essence after a certain point in the chain.

Michael Raven's (2014) distinction between fundamentality and foundations is meant to accommodate the fact that being ungrounded is not necessary for being fundamental, for at least the reason that there might be infinitely descending chains of grounding connections. So there are similarities between the two views. But Raven's account allows for a kind of magic that I find unpalatable. On his view, an item may be fundamental but not foundational if it is at least *ineliminable*, in the sense that it is *unbounded* in some proposition in which it is involved as a constituent. But given Raven's formal definition of *bounded*, an item can count as eliminable if, for some grounding tree at the root of which is a proposition in which the item is involved, that item disappears at some stage in the grounds but always reappears at some further stage in the grounds. But I fear such a possibility threatens non-circularity. Thus it should be that if an item disappears at some stage in a grounding tree, then it does not reappear at some further stage in that grounding tree.

6.3 Applications

In this final section, we shall consider some applications of our account of relative fundamentality that allow us to make progress on certain notions and issues.

6.3.1 The Scope of Metaphysical Inquiry

Everything taken together, we end up with a conception of metaphysics that is very interested in the notions of ground and fundamentality.

Proponents of similar views have been moved to claim that metaphysics is primarily concerned with what is fundamental.[9] But as Elizabeth Barnes (2014) argues, such conceptions of metaphysics put serious limitations on the scope of metaphysical inquiry. For they restrict metaphysical inquiry against various non-fundamental phenomena, such as gender.

However, even though the present view gives an account of fundamentality (and dependence and ground), its ultimate primitive is essence. Moreover, we endorse a permissive conception of essence, according to which every being has an essence. It also includes a concept of generic essence. Thus we treat as within the scope of metaphysical inquiry questions such as 'What is it to be of a certain gender?' and 'Are those of a certain gender essentially of that gender?'.[10] More generally, the present approach to metaphysics allows for metaphysical inquiry into non-fundamental phenomena.

6.3.2 Reduction

The account of fundamentality on offer involves more than just alethic ground or ontological dependence. It also involves different notions of *essentialist identity*.

Kit Fine (2001, 2009) has an account that appears to involve multiple components as well: the notion of alethic ground and a primitive sentential operator '$\Re$' which, when applied to a sentence 'A', expresses the reality of what is the case according to 'A': '$\Re(A)$' expresses that it is intrinsic to reality that A.

But there are various respects in which the present account differs from, and distances itself from, Fine's account. What is of particular interest in this section is the account Fine provides of reduction.

According to Fine (2001), for A to reduce to $B_0, B_1, \ldots$ is for it to be that A is not real and is alethically grounded in $B_0, B_1, \ldots$, each of

[9] See Schaffer (2009) and Raven (2014).

[10] Indeed, Barnes describes the central question as being that of "what genders are", which seems essentialist (in the generic sense), as opposed to whether facts involving gender are fundamental, or whether 'gender' is structural. Also, see Witt (2011) on the essentialist aspect of the metaphysics of gender. Thus even if one characterizes metaphysics in terms of ground, as being concerned with what grounds what, the characterization is still off the mark.

which is either real or grounded in what is real.

Fine more or less endorses **sufficiency**^{A}. Also, he treats relative fundamentality as definitionally posterior to the notion of absolute fundamentality ($\Re$)[11], whereas on our account it is absolute fundamentality that is definitionally posterior to relative fundamentality.

The issue taken with Fine's account of reduction is that its definition makes reduction the same as alethic ground. As a result, the introduction of reality into the definition of reduction adds nothing but complexity: you can delete the first and third condition from the definition, so long as you say 'everything (factual) with a(n) (alethic) ground is (alethically) grounded in the real', which is something you will no doubt accept if you accept Fine's view. But then A reduces to $B_0, B_1, \ldots$ iff the latter (alethically) ground the former.

Recall that on the present account, we move from the less to the more fundamental when, and only when, there is ground and distinctness in essence with respect to subject matter. As such, our account allows for structure within a level of reality: when there is ground but no distinctness in essence with respect to subject matter. My claim is that it is here that reduction occurs.

> **reduction**: x reduces to $Y =_{df}$
> $Y \Leftarrow_T x \wedge (\forall y)(y \prec Y \rightarrow x \equiv_e y)$.

That is, for x to reduce to Y is for it to be that Y alethically ground x and are identical in essence with respect to subject matter. Let us consider a pair of examples to help bring out the character of **reduction**.

> **van Inwagen's Chair:** Suppose first that what it is to be a table is to be a tablewise arrangement of particles. Then suppose that table t's existence is grounded in the facts that particles $p_0, \ldots, p_n$ exist and are tablewise arranged.

Does the move from grounded to grounds represent a movement from less to more fundamental? I think that it does not. After all, what it is to be a table is for there to be some particles arranged tablewise. The moral: reduction flattens *layers* of reality, although it does *not* flatten grounding structure. This is an instance of reduction.

> **Jane's Brain and Pain**: Suppose that Jane's being in pain is grounded in Jane's being in brain state s underwritten by

[11] See in particular Fine (2001), not Fine (2009).

> realization; but that it is not the case that what it is for something to be in pain is for it to be in the relevant brain state. Brains realize pain, but the phenomena are essentially distinct.

Does the move from pains to brains represent a move from less to more fundamental? I think that it does, since we have essentially distinct phenomena, and yet the strongest explanatory connection holds between them (i.e. pains are related essentially to brain states by realization, although it is not the case that what it is to be in pain is to be in a certain brain state). This, it seems to me, is a genuine move from one *layer* of reality to another. This is not an instance of reduction.

A perhaps surprising consequence of the account is that conjunctions of atomic propositions are not reduced to those atomic propositions. But I think this is how things should be, since the grounds are completely absent of anything doing 'conjunctive' work, so to speak. That is, I think that in genuine cases of reduction the reducing propositions contain content that reduces the part of the reduced proposition. In other words, in a genuine case of reduction, we do not merely *delete* or *eliminate*. Thus **reduction** allows us say that logical complexity is just not part of what is fundamental to reality.[12]

6.3.3 Alethic Fundamentality and Negation

One final interesting feature of our account is how it comes down on negation.[13] We know from the account of alethic ground that true negations are ungrounded with respect to truth, because not dependent with respect to truth: their truth does not materially depend, essentially (i.e. within the scope of an essentialist operator relative to the negated proposition), on their bearing any relation to some truths. Instead, their truth so depends on a falsehood, which does not make for dependence and so does not make for ground.

Nevertheless, $\neg\neg\neg A$ is grounded in $\neg A$, since it is essential to $\neg\neg\neg A$ that it is true only if there are some propositions that are constituents of $\neg\neg\neg A$, at least one of which is true; and $\neg\neg\neg A$ and some constituent $(\neg A)$ is in fact true.

[12]There is perhaps a close connection between **reduction**, and Fine's (2013) distinction between saying and describing. Also, what has been overlooked here is that this notion of reduction is not restricted to alethic ground. There is an ontological correlate!

[13]For background, see Fine (2013).

So we have the desired ground claim for negation. Yet, we are not thereby committed to taking negations as fundamental. For given $f_{T,\equiv_E}(3^*)$, negations are identical in essence with respect to subject matter to, for example, a conjunction. Supposing the conjuncts to be atomic, the conjunction is grounded in them, and they are distinct in essence with respect to subject matter, and so more fundamental than the conjunction. Therefore, the atomic propositions are more fundamental than any true propositions involving negation. Thus negations are, in this respect, like the null set with respect to fundamentality.

Chapter 7

The Problem of Meta-Ground

The notion of 'ground' is for us ambiguous: we must specify a factive status. Suppose that we set our factive status to existence. Then, for example, Socrates and Plato ground the pair set {Socrates, Plato} *with respect to existence*.

Suppose further that we bring back our nomination operation, and extend it to cover, not only items functioning syntactically as predicates or operations, but also items functioning syntactically as sentences. For example, if we take the sentence 'A' and apply '$N[]$' to obtain '$N[A]$', this denotes the proposition that A. We can then say: whenever X ground x with respect to factive status S, there is a y identical with $N[X \Leftarrow_S x]$, i.e. there is a relevant **grounding proposition**.[1]

Then we are faced with the question: What, if anything, grounds true **ontological grounding propositions** with respect to existence? And the answer returned is simple: like any proposition, they are grounded in their constituents with respect to existence.

But suppose that we set our factive status to truth. Then, for example, the proposition *Socrates is human* ($N[Hs]$) second-grounds *Something is human* ($N[\exists xHx]$) with respect to truth.

Now we are faced with the question: What, if anything, grounds true **alethic grounding propositions** with respect to truth? And here the answer is not at all obvious, since there is no general proposal for what *alethically* grounds propositions. What is more, we may ask: What, if anything, grounds an ontological grounding proposition with respect to *truth*, and not existence? Again, the answer is not at all obvious, and for the same reason as in the previous case. There is thus a 'meta' question concerning the notion of alethic ground, which does not apply to

[1] We have been referring to propositions with italics, and also by saying 'the proposition that', etc. The nomination device is more to ease formalisms.

ontological ground: What, if anything, alethically grounds true grounding propositions, whatever the factive status? This is the **problem of meta-ground**.

The **problem of meta-ground** is serious, and has been seriously taken up by various philosophers recently, including Bennett (2011), deRosset (2013), Fine (2015), and Litland (forthcoming), and Raven (2009). The aim of this chapter is two-fold. First, to provide a solution to the **problem of meta-ground** that improves upon the existing literature. Second, to do the first within the terms of our essence first approach to metaphysics.

We have already made progress over the existing literature with our formulation of the problem. For the existing literature fails to include the ontological cases as part of the alethic problem. However, we will play into the bias, and focus on alethic ground. When ontological ground is to be included in the discussion, it will be made explicit.

7.1 Inconsistency

It might be tempting to think that we have reached the ground floor with true grounding propositions: there is clearly nothing in which they are alethically grounded. But we can generate the following inconsistency given this assumption and others that have been present in the literature.[2]

> (1) $(\forall x)[Proposition(x) \rightarrow (\neg(\exists X)(X \Leftarrow_T x) \rightarrow Fund(x))]$,
> where '$Fund$' expresses a generic notion of (absolute) fundamentality, applicable to any item.[3]
> (One) Propositions are fundamental if they are ungrounded.
>
> (2) $(\forall x)[(\exists X)(X \Leftarrow_T x) \rightarrow (\exists y)(y = N[X \Leftarrow_S x])]$.
> (Two) Whenever anything is grounded, there is a relevant grounding proposition.
>
> (3) $(\forall x)[Proposition(x) \rightarrow (Fund(x) \rightarrow \forall y(y \sqsubset x \rightarrow Fund(y)))]$,
> where '$\sqsubset$' is a very liberal notion of (proper) *part*.[4]

[2] Versions of the problem have been given by Sider (2011), deRosset (2013), Litland (forthcoming), and Raven (2009). The present statement is my own rendition of the claims that lead up to the problem.

[3] It is open to interpretation what notion permeates the literature. Different interpretations will be discussed below. Of course, some will want to say 'fact' instead of 'proposition'. Let us not make such a fuss.

[4] For example, Socrates is a part of {Socrates}, a part of the proposition *Socrates is human*, etc.

(Three) Fundamental propositions have only fundamental parts.

(4) $(\forall x, X)[X \Leftarrow_T x \rightarrow (\neg\exists Y)(Y \Leftarrow_T N[X \Leftarrow_T x])]$.
(Four) Every true grounding proposition is ungrounded.

(5) $(\exists x, y, X)[(X \Leftarrow_T x) \wedge (y \sqsubset N[X \Leftarrow_T x] \wedge \neg Fund(y))]$.
(Five) Some grounding proposition has a nonfundamental part.

Claim. (One)/(1) through (Five)/(5) are jointly inconsistent.

Proof. Given (Five)/(5), something grounds something and the grounding proposition has a nonfundamental part. Let us take 'α' and 'Υ' as arbitrary singular and plural constants, respectively; and let Υ ground α. Thus: $\Upsilon \Leftarrow_T \alpha$. From (Two)/(2), we can infer that there is a grounding proposition expressing that Υ grounds α. Let it be denoted by 'ρ'. Thus: $\rho = N[\Upsilon \Leftarrow_T \alpha]$.

Still from (Five)/(5), ρ has some nonfundamental part. Let it be denoted by 'β'. Thus: $\beta \sqsubset \rho$ and $\neg Fund(\beta)$. From (Four)/(4), it follows that ρ is ungrounded, and thus, by (One)/(1), that ρ is fundamental. Thus: $Fund(\rho)$. But then by (Three)/(3), every part of ρ is fundamental. Therefore, β is fundamental. Thus: $Fund(\beta)$. QED.

7.2 Problem Assessment

Given inconsistency, at least one of the five claims is false. It seems that (Two)/(2) and (Five)/(5) are solid (or perhaps just uninteresting to deny, at least from the point of view of the present theorist).

- Denying (Two)/(2) is a cop-out.
- Denying (Five)/(5) would arguably defeat the purpose of ground.

This leaves (One)/(1), (Three)/(3), and (Four)/(4).

(1) $(\forall x)[Proposition(x) \rightarrow \neg(\exists X)(X \Leftarrow_T x) \rightarrow Fund(x)]$.
(One) Propositions are fundamental if they're ungrounded.

(3) $(\forall x)[Proposition(x) \rightarrow (Fund(x) \rightarrow \forall y(y \sqsubset x \rightarrow Fund(y)))]$.
(Three) Fundamental propositions have only fundamental parts.

(4) $(\forall x, X)[X \Leftarrow_T x \rightarrow (\neg\exists Y)(Y \Leftarrow_T N[X \Leftarrow_T x])]$.
(Four) Every true grounding proposition is ungrounded.

Putting aside the commitment of (One)/(1) and (Three)/(3) to propositions, a common opinion is to accept (One)/(1), deny (Four)/(4) by supplying some systematic account of how true grounding propositions are grounded, and preserve (Three)/(3) by interpreting fundamentality in terms of alethic ground.

7.3 The Common Opinion

The common opinion is underlain by a couple of assumptions concerning meta-grounds. The first is that every true grounding proposition is on a par with respect to ground: either ungrounded or grounded.

The second is that, if true grounding propositions are (all) grounded, then they are 'systematically grounded': there is a general, non-disjunctive statement of the view. Let us document the first assumption as follows.

> (5) $(\forall x, X)[X \Leftarrow_T x \rightarrow (\exists Y)(Y \Leftarrow_T N[X \Leftarrow_T x])] \vee (4)$
> (Five) Either every grounding proposition is grounded or every grounding proposition is ungrounded (i.e. (4)).

I do not know how to state the second assumption, but the popular proposal in the literature, of Bennett (2011) and deRosset (2013) (Fine (2015) is also sympathetic to this view), is an instance of it.

> (6) $(\forall x, X)((X \Leftarrow_T x) \rightarrow X \Leftarrow_T N[X \Leftarrow_T x])$.
> (Six) Every true grounding proposition is grounded in its constituent grounds.

But (Six)/(6) comes with a qualification on the consequent[5], namely that the intended notion of ground connecting the constituent grounds to the grounding proposition is that of *immediate* ground: it is not arrived at by means of chaining.[6]

Moreover, (Six)/(6) is systematic: it makes a claim along the lines of 'every true grounding proposition is grounded [this way]', which is not to be confused with the claim that every true grounding proposition has

[5]The qualification is made to distinguish deRosset and Bennett from Litland. For Litland ultimately grounds grounding propositions in their constituent grounds. But immediately: there is partial grounding in a non-factive relation of ground, which is then zero-grounded. What remains are the constituent grounds.

[6]Note that neither Bennett nor deRosset endorse our conception of ground, and so they will not speak of the predicates (or relations) that underwrite instances of ground. So whereas we would say that the connection expressed in (Six)/(6) is not the result of chaining dependent-making predicates (or relations), they would likely say that it is not the result of any application of CUT (or perhaps just applications of transitivity in Bennett's case).

the same grounds. Call the view expressed by (Six)/(6) **explanatory grounds**, since the grounds bear an enormous explanatory burden on this view.

7.4 Explanatory Grounds

Of course, (Six)/(6) fits the assumption (Five)/(5): if all true grounding propositions are grounded in their constituent grounds, then all true grounding propositions are grounded, and hence all true grounding propositions are grounded or all true grounding propositions are ungrounded.

Also, (Six)/(6) in place of (Four)/(4) does form a consistent set of claims. For (Four)/(4) allowed us to infer that ρ was ungrounded, and thus by (Two)/(2) that it was fundamental, and so by (Four)/(4) that it had only fundamental parts, contra (Five)/(5). But grounding grounding facts by (Six)/(6) blocks this inferential chain, thus lifting the inconsistency. So **explanatory grounds** is at least adequate.

In this section, I shall focus on **explanatory grounds**, and in particular its manifestation in deRosset (2013). In that regard, there are two lines of criticism against deRosset's view. First, against (Six)/(6). Second, against the interpretation of fundamentality that is prevalent in the common opinion[7], which defines fundamentality in application to any items in terms of alethic ground.

7.4.1 Contra (Six)/(6)

The view expressed in (Six)/(6) is a claim about *immediate* grounds. Thus it says that we do not have to chain/cut to arrive at the constituent grounds as grounds of true grounding propositions. It is this view we take up here.

The objection that comes naturally to mind proceeds as follows.

1. Nothing in (Six)/(6) accounts for the **explanatory connection** between grounds and what is grounded. At best, the view provides *merely* partial (immediate) grounds for a true grounding proposition.[8]

2. By definition: partial ground implies that there is a full ground.

[7] Though perhaps not part of Bennett's view.

[8] A 'merely partial ground' is a partial ground that is not a full ground.

3. The only way to account for the explanatory connection is with something that involves what is grounded. But that leads to regress or inconsistency.

4. Therefore, constituent grounds do not form partial grounds for true grounding propositions, and so neither do they form full grounds.

We might go one step further and say that, as a result, there are no possible grounds for grounding propositions. For all we have said so far, this might seem to justify the conclusion that grounding propositions are ungrounded, and thus that denying (Four)/(4) is not the correct route to consistency. But this is clearly not how the proponent of **explanatory grounds** intends to argue, and so let us consider the justification for the above premises, and what this theorist might say in response.

Justification for (Premise 1) might be by comparison with necessity. If one proposed that A grounds $\Box A$, we would say that the account is incomplete. Perhaps we would say that A partly grounds $\Box A$, but that we need to add something beyond what is in fact the case with respect to A.

Justification for (Premise 2) is perhaps not required: defining partial ground in terms of full ground is fairly standard. At any rate, deRosset (2013, fn.41) seems to suggest a willingness to play along with this definitional assumption.

Justification for (Premise 3) is contained within itself. If something is to be added to the grounds of (Six)/(6) to account for the explanatory connection, then it should connect the grounds to what is grounded. For if we attempted to connect the grounds to the grounds of what is grounded, we would violate the non-circularity of ground. But then this 'connective part' of the grounds will involve nonfundamental items, creating either regress or inconsistency.

7.4.2 Re: Explanatory Grounds

deRosset anticipates the objection and denies (Premise 1). He claims that the premise is obscure, and he is not altogether unjustified in this assessment. For in deRosset's defense, we are happy to say that A grounds $A \vee B$ without feeling that the 'disjunctive aspect' of what is grounded is somehow left out of the grounds. Thus it might be that meta-grounds are more like disjunctions than necessities. The problem is that it is just not clear.

In support of (Six)/(6), and against (Premise 1), deRosset advocates taking a deflationary stance on ground, similar to a deflationary stance on truth. Deflationism about truth says: For it to be true that A is for it to be that A. Thus deflationism about ground presumably claims: for it to be that X grounds x with respect to truth is for it to be that X (better: each item belonging to X is the case). For example, the following pair of grounding claims fit the deflationary scheme.

1. For it to be that Hs grounds $\exists xHx$ is for it to be that Hs.

2. For it to be that Hs grounds As is for it to be that Hs.

It stands to reason, then, that what it is for Socrates' being human (Hs) to ground that something is human is the same as what it is for Socrates' being human to ground that Socrates is an animal (As), namely that Socrates is human.

But this claim should be denied. After all, what it is for Hs to ground the existential is for it to be a true instance, whereas what it is for Hs to ground As is for the former to be a species of the latter.[9]

deRosset introduces the notion of an 'explanatory story', which consists in some material used to 'make intelligible' a grounding connection without adding grounds to that connection. For example, I might cite $\wedge$-Introduction in making intelligible to you why conjuncts ground conjunctions. If plausible, this idea might allow the proponent of **explanatory grounds** to accept the first sentence of (Premise 1), while denying its second sentence and (Premise 3).

But what distinguishes part of an explanatory story from the grounds? Granted, some such idea may be motivated in cases concerning the impure logic of ground[10], since perhaps the inference rules invoked are not propositional; but it is otherwise very obscure and ad hoc. deRosset condemns the so-called 'trialists' for making an ad hoc distinction between basic facts and fundamental facts. But deRosset's distinction between 'ancillary material' and grounds is similarly ad hoc. A defense is needed

[9]Even those who do not accept our view should maintain this claim. Additionally, deflationism about ground might seem inconsistent with the possibility of a nonfactive conception of ground. For presumably, if statements of the form 'to be ϕ is to be ψ' are construed *fully*, then they imply necessary equivalence. If ground is nonfactive, this necessary equivalence will fail. For example, conjuncts will nonfactively ground their conjunction, even if the conjuncts are false. So deflationism, even if defensible, comes at a cost.

[10]However, given the use of propositional/factual variables in deRosset's diagrams, we are somehow led to believe that (non-propositional) rules are not what forms an explanatory story.

to justify the special treatment of ancillary material when they are propositional in nature (or perhaps they are required to be). Moreover, the epistemological issue of what you might use to 'make intelligible' some grounding connection is beside the metaphysical point. So invoking the notion of an explanatory story does not aid in responding to the above argument.

You might then think that the burden of proof is on deRosset and followers to provide a reason to think that ground is more like disjunction than necessity with respect to its grounds. Perhaps a final point against treating ground like disjunction is that ground, unlike disjunction, conjunction, etc., but like necessity, is not truth-functional. Perhaps it is truth-functionality that permits grounds without a 'disjunctive aspect' ('conjunctive aspect', etc.).

So we do not think that **explanatory grounds** is the correct solution to the problem of meta-ground, and are convinced that the account leaves something out of the meta-grounds, namely the explanatory connection between grounds and what is grounded. The challenge is to figure out how to include the explanatory connection without ending up in regress or inconsistency.

7.4.3 Fundamentality is Not Entirely Alethic

Another part of the common opinion concerns fundamentality. Recall that the **problem of meta-ground** involves a notion of fundamentality applicable to any items whatever. In particular, this came from (Three)/(3), and it was claimed that the notion of fundamentality is open to interpretation.

> (3) $(\forall x)[Proposition(x) \rightarrow (Fund(x) \rightarrow \forall y(y \sqsubset x \rightarrow Fund(y)))]$, where '$\sqsubset$' is a very liberal notion of (proper) *part*.[11]
> (Three) Fundamental propositions have only fundamental parts.

The common view –of deRosset (2013), Litland (forthcoming), etc.– seems to be that fundamentality is definable in terms of alethic ground, no matter the item to which it is applied. If alethic fundamentality is in mind, then the account is this.

> **(*AF*)** $aFund(x) =_{df} \neg(\exists X)[X \Leftarrow_T x]$.
> **alethic fundamentality** For x to be alethically fundamental

[11] For example, Socrates is a part of {Socrates}, a part of the proposition *Socrates is human*, etc.

is for x to be ungrounded with respect to truth.[12]

There is then a corresponding notion of objectual fundmentality.

> **(*OF*)** $oFund(x) =_{df} (\exists y)[(x \sqsubset y) \wedge aFund(y)]$.
> **objectual fundamentality** For x to be objectually fundamental is for x to be part of some y that is alethically fundamental.

It stands to reason that any item x that is not objectually fundamental is such that every proposition of which it is a part is not alethically fundamental. Assuming every alethically nonfundamental proposition is grounded in some alethically fundamental propositions, x will disappear at some level of ground. That is, objectually nonfundamental items will be such that any fact involving them is grounded in some facts that do not involve them as part.[13]

Indeed, deRosset goes a bit further in defining a multigrade predicate of some items $x_0, \ldots, x_n$ **objectually grounding** an item y: every proposition involving y is grounded in some propositions **only** involving ascriptions to $x_0, \ldots, x_n$. Call this **(OG)**. In conjunction with **(AF)** and **(OF)**, it would seem to be implied that, for any objectually nonfundamental item, there are some items that objectually ground it, each of which is objectually fundamental. But the three theses fail, and for the following reasons.

First Reason

First, deRosset thinks that {Socrates} is grounded in Socrates. Given **(OG)**, {Socrates}'s being a y such that $2 + 2 = 4$ is grounded in some true propositions involving only ascriptions to Socrates.

But part of what grounds any item's being a y such that $2 + 2 = 4$ is that $2 + 2 = 4$. Therefore, {Socrates}'s being a y such that $2 + 2 = 4$ is partially grounded in the (true) proposition that $2 + 2 = 4$. But the proposition that $2 + 2 = 4$ does not ascribe anything to Socrates. Therefore, **(OG)** is false.

Second Reason

Second, deRosset himself uses the example of {Socrates} being such as to contain a human member. Thus given **(OG)**, and that Socrates objec-

[12] Of course, they may not like our use of propositions. But let us not make a big fuss of this point.

[13] This corresponds to Raven's (2015b) notion of ineliminability.

tually grounds {Socrates}, the general proposition is grounded in some propositions involving only ascriptions to Socrates.

But this is not the case. For what clearly grounds {Socrates}'s being such as to contain a human member is that Socrates is a member of {Socrates}, along with the proposition that Socrates is human (although these ground the general claim only mediately through their conjunction). But the former clearly involves {Socrates}, contra **(OG)**. So unless the membership fact is grounded in something only involving ascriptions to Socrates, then {Socrates} is fundamental, as per **(OF)**.

First, it does not seem that the membership fact can be grounded in the essence of Socrates. For it is typically thought that, whereas the essence of {Socrates} involves Socrates' membership in the set, the essence of Socrates has nothing to do with membership in *any* set. As such, it would be a mystery how something which has nothing to do with set membership can somehow *entirely* account for truths involving relations of set membership.

Moreover, if the membership fact is grounded in accidental features of Socrates, the only candidate seems to be Socrates' existence. Although this could, perhaps, ground {Socrates}'s existence, it does not appear to ground the membership fact. For if it did, it would only do so *mediately*, through the existence of {Socrates}. But then we might seem to be in violation of non-circularity, since the existence of the set whose sole member is Socrates would ground that Socrates is a member of {Socrates}, in addition to its being intuitively the case that Socrates' membership in {Socrates} helps ground the existence of the set whose sole member is Socrates.

Thus the first point suggests that the restriction 'only' in the definition of the notion of objectual ground is far too strong, at least given a liberal conception of properties. The second point suggests that in fact some relational facts, such as membership facts, are ungrounded (in particular, when the relational facts are essential), despite that some items involved in those facts are, intuitively, nonfundamental. So why not reject **(AF)**, **(OF)**, and **(OG)**?

7.5 An Alternative Theory

We have encountered two general errors in current thinking on the **problem of meta-ground**. The first is a failure to include among the meta-grounds something concerning the explanatory connection between

grounds and what is grounded, while at the same time avoiding regress and inconsistency. The second is a failure to appreciate that alethic and objectual fundamentality are different in nature.

One of the conclusions that we reached was that there are certain relational facts that are ungrounded and yet contain objectually nonfundamental parts, such as

- Socrates and Plato are the members of {Socrates, Plato}
- Socrates, Plato, and distinctness are parts of $N[s \neq p]$.

(The objectually nonfundamental items are at least the set and the proposition.) But this is impossible given **(OF)**, since it implies that the nonfundamental part is fundamental, by virtue of appearing in some ungrounded fact, which, as a result, is alethically fundamental.

So we reject **(OF)** as an account of objectual fundamentality. Yet we want to make claims about fundamentality, such as that electron e^- is fundamental, or that it is fundamental that e^- is negatively charged.

But we already have the resources to make these claims. We simply use our notions of ontological fundamentality (i.e. $\Im_{(E,=_e)}$) and alethic fundamentality (i.e. $\Im_{(T,\equiv_e)}$).

7.5.1 Breaking Down Ground

We begin by deconstructing grounding propositions. For take some arbitrary instance of alethic ground: $\Upsilon \Leftarrow_T \alpha$, where α is nonfundamental, and *every* y belonging to Υ is distinct in essence from α with respect to subject matter (i.e. $y \not\equiv_e \alpha$).

(†) $\Upsilon \Leftarrow_T \alpha$.

Given our account of alethic ground, (†) can be subdivided into two immediate conjunctive parts.

(DEPENDENT) $\quad \Box_\alpha[T\alpha \supset \exists X(R_\alpha(\alpha, X) \wedge TX)]$,

where 'R_α' expresses whatever relation underwrites α's being dependent in this particular case. (We shall assume that α is dependent with respect to truth in the manner of the special case of being dependent.)

(FACTIVE) $\quad R_\alpha(\alpha, \Upsilon) \wedge T\Upsilon \wedge T\alpha$.

That is, (†) can be subdivided into the conjunctive parts (DEPENDENT) and (FACTIVE). The (DEPENDENT) part is the nonfactive component, whereas the (FACTIVE) part is what makes for ground.

7.5.2 Zero Ground?

Kit Fine (2012a) distinguishes being ungrounded from being zero grounded. The distinction is best brought out by consideration of a non-alethic case. Take the null set and any fundamental urelement, and say that each set is ontologically grounded in its members, because it is the result of applying the set building operation to the members.

Then the urelement is ungrounded: nothing ontologically grounds it, because it has no members (and is not, we assume, otherwise ontologically grounded). No urelement is the result of applying the set building operation to some items. By contrast, the null set is zero grounded. It has no members, but it is nevertheless the result of some application of the set building operation, namely where we input nothing. Alethic cases of zero ground are analogous.

Given that (DEPENDENT) is within the scope of an essentialist operator, we shall take it to be ungrounded and yet nonfundamental, since the operational constituents of $N[\Box_\alpha T\alpha \supset \exists X(R_\alpha(\alpha, X) \wedge TX)]$ are nonempty. This follows from our account of alethic relative fundamentality.

But in general, we might take such cases –i.e. those cases where something is ungrounded and yet nonfundamental– as definitive of zero grounding. That is, we might define the notion of zero grounding, or something near enough, as follows.

(ZG) $* \Leftarrow_S x =_{df} \neg(\exists X)[X \Leftarrow_S x] \wedge \neg\Im_{S,I}(x)$.

That is, for an item x to be zero grounded (i.e. $* \Leftarrow_S x$) with respect to factive status S is for x to be ungrounded with respect to S but not fundamental with respect to the pair (S, I) of a factive status and corresponding notion of essentialist identity.

For example, the null set ($\emptyset$) is zero grounded with respect to existence, since it is ungrounded with respect to existence and nonfundamental with respect to $(E, =_e)$. Furthermore, the proposition $N[\Box_s Hs]$, of it being essential to Socrates that he is human, is zero grounded with respect to truth, since ungrounded with respect to truth and nonfundamental with respect to $(T, \equiv_s)$.

Admittedly, calling our notion zero-**ground** might seem misleading, since we take zero grounded items to be ungrounded. However, the nonfundamentality component is intended to reflect the difference, for example, between Socrates and the null set ($\emptyset$). For electron e^- is presumably ungrounded but fundamental, since not connected by relative fundamentality to any other items in some items. By contrast, the null set ($\emptyset$) is both ungrounded and nonfundamental.

My hope is that our notion of zero ground actually achieves some understanding of the intended notion over the mysterious 'grounded but nothing grounds it'. So even if you think it is undeserving of the name, I think it is preferrable (and sensible).[14]

In addition to the notion of zero ground, we introduce the following pair of rules to capture some of its behaviour.

$$\frac{X, x \Leftarrow_S y \qquad * \Leftarrow_S x}{X \Leftarrow_S y}\ (* \Leftarrow_S\text{-}1)$$

Let 'X, x' be a plural term denoting everything belonging to X or identical with x. Then $(* \Leftarrow_S\text{-}1)$ says that items zero grounded with respect to S can be 'deleted' (or if you like, 'cut') from the S-grounds in which they participate.

This is not a claim about *immediate* grounds, but about *ultimate* grounds. So even if you have a set such as $\{\{a\}, \emptyset\}$, which contains the empty set as a member, the empty set will be part of the immediate grounds. What we are suggesting is that it can be deleted from the ultimate grounds: for $\{a\}$ gets grounded in a (perhaps a is fundamental), and $\emptyset$ gets zero grounded. The ultimate grounds are in a alone.

$$\frac{(\exists X)[\Box_X A] \qquad \neg(\exists X)[X \Leftarrow_T N[A]]}{}\text{-}(* \Leftarrow_T\text{-}2)$$

[14] One oddity does perhaps arise. For given that there are urelements, we can say that the null set is zero grounded in our sense, since it is identical in essence to other sets that are grounded in items distinct in essence to them. But suppose the set theory is pure. Then sets are fundamental, and so the null set is fundamental; hence the null set is not zero grounded according to pure set theory. Is this unpalatable? My inclination is that it is not. For surely there is some difference in the essences of sets if the set theory is conceived of with or without urelements. (We are not here thinking of the pure fragment of a set theory with urelements.) So perhaps what this indicates is that the notion of zero ground is, in a sense, 'contrastive': the null set is zero grounded *in contrast to* urelements; the null conjunction is zero grounded *in contrast to* atomic propositions; and so on. Surely this is not an absurd view.

$$* \Leftarrow_T N[A]$$

Note that ($* \Leftarrow_T$-2) concerns only alethic ground. It says that if A is essential to some items X and is ungrounded, then the proposition that A is zero grounded with respect to truth.

7.5.3 Building a Theory for Meta-Ground

We know that true grounding propositions are conjunctions of relevant (DEPENDENT) and (FACTIVE) components. (DEPENDENT) is within the scope of an essentialist operator and is ungrounded, and hence is zero grounded with respect to truth. Given ($* \Leftarrow_T$-1), it can be deleted from the ultimate grounds of the true grounding proposition of which it is a conjunctive component.

(FACTIVE) is a complex conjunctive component, which consists of assertions of truth, plus the assertion of the underwriting relation connecting grounds to what is grounded. From the example: $R_\alpha(\alpha, \Upsilon)$ and $T\Upsilon \wedge T\alpha$. Call these (RELATION) $[R_\alpha(\alpha, \Upsilon)]$ and (TRUTH) [i.e. $T\Upsilon \wedge T\alpha$], respectively.[15]

We hypothesize that (RELATION) is essential to some items (though perhaps not the items, alone, to which the grounded proposition is essential) and ungrounded. For example, if an instance grounds an existential, then it will not be essential to the existential that the instance is an instance of it. However, it will be part of the collective essence of the instance and the existential that the former is an instance of the latter. Given this, then ($* \Leftarrow_T$-2) can be used to delete it from the ultimate grounds of the grounding proposition.

We are thus left with (TRUTH), which will, as a part, involve asserting that the grounded item is true. However, this can be deleted from the ultimate grounds, since the one grounds the other. This leaves us with the grounds as the ultimate grounds of the grounding proposition.

7.5.4 Adding Fundamentality

Claims of relative fundamentality add only a component of essentialist distinctness to the generic account of ground. For example, Socrates is more fundamental than {Socrates} with respect to $(E, =_e)$, since Socrates grounds {Socrates} and the two are distinct in essence. But when a pair of items are identical or distinct in essence, is this connection essential

[15] Talk is of course of the propositions expressed by these components.

to anything? I believe that it is. It is part of the collective essence of the items under consideration. So just as it is part of the collective essence of Socrates and {Socrates} that they are distinct, so too it is part of their collective essence that they are distinct in essence. Moreover, this essential connection between them is ungrounded. As such, the connection is zero grounded, and can likewise be deleted (or cut).

Statements of absolute fundamentality will be grounded, as true universal propositions are, in their instances. Each instance will be a disjunction: grounded either in the fact that a particular grounding connection does not hold (i.e. a negation, which is also zero grounded) or else in a grounding claim and a claim that the items in question are identical in essence with respect to subject matter, where the latter is essential to some items and ungrounded. So no special issue presents itself with respect to the grounds of claims of fundamentality.[16]

7.6 Litland's ZGA

Jon Litland (forthcoming) takes a similar approach to the problem of meta-ground, which he calls the **zero grounding approach (ZGA)**. What is common to the two approaches is the following.

1. A division of the immediate grounds of true grounding propositions into a factive and non-factive component.

2. A deletion (or cut) of all components except the constituent grounds from the ultimate grounds of true grounding propositions by means of the notion of zero ground.

Let us begin by sketching Litland's view.

First, Litland takes a notion of nonfactive (alethic) ground as primitive. Let '$\lhd$' express Litland's primitive notion of nonfactive ground. Thus '$X \lhd x$' expresses that X nonfactively grounds x.[17] For example, $A, B \lhd A \wedge B$, $Fa \lhd \exists x Fx$, etc. He then defines factive ground in terms

[16]Earlier, we said that it was part of the common opinion that true grounding propositions are systematically grounded. Although our view is consistent with this assumption, I feel that it can, in a sense, be resisted. For at least one of the rules of the pure logic of ground, namely CUT, or in our framework **TR**, seems as explanatory as, for example, $\wedge$-Introduction and $\vee$-Introduction. So I am inclined to judge some true grounding propositions as grounded in other true grounded propositions.

[17]Two notes. First, Litland does not recognize a conception of ontological ground, and so all discussion of ground in the context of Litland is to alethic ground. Second, Litland would prefer a view of ground on which '$\lhd$' is taken as a sentential operator, and so he would not approve of our wide-ranging nominal variables.

of nonfactive ground plus the 'factivity' of the grounds: $X \Leftarrow_T x =_{df} X \triangleleft x \wedge TX$.

The **(ZGA)** claims that the immediate grounds of any true grounding proposition are the constituent grounds, along with the statement of nonfactive ground: $(\forall x, X)((X \Leftarrow_T x) \rightarrow N[X \triangleleft x], X \Leftarrow_T N[X \Leftarrow_T x])$. The statements of nonfactive ground are then taken to be zero grounded (not in our sense, but in the sense of 'grounded but nothing grounds it'), and hence we can delete (or cut) them from any grounds in which they participate.

Thus, like **explanatory grounds**, the ultimate grounds of the grounding facts are in their constituent grounds. However, unlike **explanatory grounds**, there is more to the immediate full grounds of any grounding fact. For Litland's immediate grounds contain a component that connects grounds to what is grounded. This is an advance over **explanatory grounds**.

7.6.1 Friendly Fire

Now to distinguish Litland's view from our own.

Litland endorses the views of fundamentality expressed in **(AF)** and **(OF)**, and also **(OG)**, which we have already claimed to be false. So we will not dwell on this aspect of the view.

Litland's notion of nonfactive ground is different from our notion of being dependent with respect to truth, since not all items that are dependent with respect to truth are such as to alethically depend on some items (which is our nonfactive relational notion). For example, although $N[\exists x Fx]$ is dependent with respect to truth, it does not alethically depend on $N[Fa]$: the instance will not appear in the essence of the existential. That is, there is no nonfactive connection between instance and existential.

Thus, whereas **(ZGA)** places the explanatory connection component within the nonfactive component of the immediate grounds, we place the explanatory connection component within the factive component of the immediate grounds, and then take that component to be zero grounded, and hence it can be deleted (or cut).

But insofar as Litland is willing to believe that connections of nonfactive ground are essential to the grounded propositions, in the sense that the grounds essentially suffice to factively ground what they nonfactively ground, his view will be susceptible to Correia's (2013) problem

of **unwanted dependencies**, which we have already shown our own account to avoid.[18]

Furthermore, whereas we posit relational connections between grounds and what is grounded in the factive component of the immediate grounds of grounding facts, and then zero ground those relational connections, Litland attempts to zero ground the nonfactive grounding connections via non-propositional, explanatory rules. For example, $A, B \triangleleft A \wedge B$, which is grounded due to the explanatory rule corresponding to (but distinct from) $\wedge$-Introduction. But given that the rule establishing the nonfactive connection is nonpropositional, there is nothing (propositional) in which the nonfactive connection is grounded; it is zero grounded.

But a worry is that, although this may work for cases in the impure logic of ground, it is not at all clear what conception of 'rules' allows for species-to-genus rules, determinate-to-determinable rules, etc., in any non-logical case. This needs to be supplied.

In any event, Litland takes these rules to be part of the nonpropositional essences of various elements (in the cases concerning the impure logic of ground): conjunction in the case of (explanatory) $\wedge$-Introduction; disjunction in the case of (explanatory) $\vee$-Introduction. But what about the determinate-determinable case, or the species-genus case? In the essences of which items do these rules reside? If they reside in the relation *being a species of* or *being a determinate of*, then Litland's account would seem to be obviously less parsimonious than our own, since we would require only the relations, whereas he would require relations and rules.

In sum: our view is similar to **(ZGA)**, although there are substantive differences. Furthermore, there are indications that our view is preferable. For one, our view relies on a notion of zero ground that can be understood, beyond the purely grammatical notion in Litland's account. For another, **(ZGA)** relies on an unclear conception of rules that is intended to be broader in application than perhaps is apparent. And yet, our view possesses all the advances over **explanatory grounds**: there is an aspect to the immediate grounds of grounding facts which connects grounds to what is grounded. But this connection can be deleted (or cut), and so it avoids inconsistency.

[18]N.B. This connection between essence and ground is something Litland seems inclined to believe, though, as he points out, his view is not committed to it. So the problem pointed out here is conditional on his acceptance of this idea.

7.7 What is Purity?

The problem of meta-ground arises because it is thought that an alethically fundamental proposition can have only ontologically fundamental parts. Combined with the ideas that (true) ungrounded propositions are fundamental and that grounding propositions are ungrounded, we get inconsistency.

Our view gets around the inconsistency by denying that ungrounded propositions are, in all cases, fundamental, and also by providing grounds for grounding propositions: immediately, in their factive and dependent components; and ultimately, in their constituent grounds.

But what does this initial claim amount to: that fundamental truths have only fundamental parts? Let us call this thesis **unconstrained purity** and formalize it, within our framework, as follows.[19]

(UP) $(\forall x)[\Im_{T,\equiv_e}(x) \rightarrow (\forall y)(y \sqsubset x \rightarrow \Im_{E,=_e}(y)]$.

Do we accept this thesis? One reason for possibly answering in the negative is that (i) every proposition contains some predicative constituent; and (ii) predicative constituents, i.e. properties and relations, are ontologically nonfundamental: every property and relation is essentially such that it exists only if there are some items (i.e. particulars) that are its instances and exist.[20] Given (i) and (ii), **(UP)** fails.

But perhaps a fundamentality structure among properties is desirable. If this is the case, we might extend our class of factive statuses, from existence and truth, to include instantiation (ι) as well. We would then need a further notion of *being identical in essence with respect to instantiation* to achieve a distinctive kind of fundamentality for properties and relations, which is straightforward. We can then redefine our notion of **unconstrained purity** in the following way.

(UP+) $(\forall x)[\Im_{T,\equiv_e}(x) \rightarrow (\forall y)(y \sqsubset x \rightarrow (\Im_{E,=_e}(y) \vee \Im_{\iota,\Leftrightarrow_e}(y))]$.

That is, every part of an alethically fundamental proposition is either ontologically fundamental or 'instantially' fundamental.

[19] The label 'purity' derives from Sider (2011).

[20] We can say that an item x is an instance of a property P, to take the property case, iff x has the property P.

7.8 Why Purity?

But why believe **(UP+)**? The arguments philosophers have advanced are quasi-theological: if **(UP+)** is true, then *all God has to do* is fix the distribution of properties and relations for the (existent) ontologically fundamental items (thus fixing the alethically fundamental truths) and all else follows.

Put into an argument, the idea is this. If God's labor would be minor, then your theory is simple; if your theory is simple, that is good reason to believe it; **(UP+)** renders our would-be God's labor minor; so, a theory of fundamentality should be **(UP+)**.

But the argument is only effective if the fundamental generally suffices (i) for the 'factivity' of the nonfundamental (i.e. necessitarianism); and (ii) for the grounding connections between the fundamental and the nonfundamental. We have remained neutral on whether necessitarianism holds, though we err on the side of caution by not presupposing it. Without (i), (ii) is not going to be maintained. For these reason alone, we are inclined to assign little value to the quasi-theological argument, even though we can accept **(UP+)**.

7.8.1 God's Work

What does God have to do on our view? The view that emerges is that, with respect to any essentialist truths, God does not have to do anything to make them the case. In other words, God need not make any items what they are. This has to do with their being zero grounded, or grounded in what is zero grounded. However, very many items have their various factive statuses (existence, truth, etc.) only accidentally, thus making the assignments of factive statuses part of God's work.

Thus our view is that God's work is to determine the accidents, whether they concern the fundamental or the nonfundamental: which items exist and are true (when this is an accidental matter). From this, **all (factive) structure –ground and fundamentality– follows**. In this sense, essence precedes existence (and truth!), since existence, and not essence (at least when the former is not part of the latter), is part of God's job description. In short: We can accept **(UP+)**, but we (potentially) have a very different view about what God would have to do.

Chapter 8

Conclusion

Let us see if we can bring everything together. Suppose we have a table t that is constituted by the tablewise arrangement of particles P, and we have the propositions $[t]$ and $[P]$ that assert the existence of the table and particles, respectively.[1] We then want to say that P ontologically ground t ($P \Leftarrow_E t$) and that $[P]$ alethically ground $[t]$ ($[P] \Leftarrow_T [t]$).

We know that each statement of ground is divisible into a (DEPENDENT) component and a (FACTIVE) component, and that the (FACTIVE) component is itself divisible into a (RELATION) component and a (TRUTH) or (EXISTENCE) component. The latter depends on whether we are taking the instance of ontological ground or alethic ground. Let us treat each case separately.

Ontological Ground. It is essential to t that it exists only if there are some X such that X arranged in a tablewise fashion constitute t, and X exist. So the table is dependent with respect to existence in the manner of the first disjunct of our definition of being dependent (DEPENDENT)[2]. Then given that P and t exist (EXISTENCE) and t is constituted by the tablewise arrangement of particles P (RELATION), the particles ontologically ground the table.

Alethic Ground. It is essential to $[t]$ that it is true only if there are some X such that X stand to $[t]$ in the relation of being existence propositions of items that constitute an item in a tablewise fashion, and are true. Thus the proposition is dependent with respect to truth in the manner of the first disjunct of our definition of being dependent (DEPENDENT). Then given that $[P]$ and $[t]$ are true (TRUTH) and stand in the specified relation (RELATION), the table exists because

[1] '$[P]$' can be taken to denote the proposition that distributively asserts the existence of the particles.

[2] This marks that the relevant component has been given.

the particles exist.[3]

Now, if what it is for something to be a table is for there to be some particles that arranged in a tablewise fashion constitute it, then the table is reduced to the particles, and its existence is reduced to the existence of those particles. Moreover, 'table talk' and 'tablewise particle arrangement talk' do not mark a difference in levels of reality.

Finally, given that it is part of the collective essence of t and P that P arranged in a tablewise fashion constitute t[4], then (DEPENDENT) and (RELATION) can be deleted from the grounds in which they may figure, and so (EXISTENCE) alethically grounds the proposition that $P \Leftarrow_E t$ and (TRUTH) alethically grounds the proposition that $[P] \Leftarrow_T [t]$. And so all God has to do is make the particles exist *and* the table exist. All else is supplied by essence.

[3]The relation in this case might sound contrived. But it is not. For one, it should not be surprising that some form of 'semantic ascent' is required when moving from items that constitute others to propositions involving those items, and moreover that we 'ascend' from 'constituting in a tablewise fashion'.

[4]Though this is neither essential to the table nor essential to the particles. This does not require them to exist with one another. However, it does require them to co-exist in a constitutive way.

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