

# Essence Without Fundamentality

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In *Modality and Explanatory Reasoning*, Boris Kment argues that a single notion of essence can be used to play two different theoretical roles. He thinks there is an important connection between essence and metaphysical necessity, on the one hand, and between essence and metaphysical explanation, on the other.

It seems to me that there is a price to be paid for using a single notion of essence to play both of these roles. For the project of giving metaphysical explanations requires a notion of essence that distinguishes between truths that are more or less “fundamental”, in a metaphysical sense. So the result of using that same notion of essence in an account of metaphysical necessity is that one ends up with a conception of metaphysical necessity that is tied up with distinctions of metaphysical fundamentality.

The main objective of this paper is to develop a notion of essence which steers clear of the notion of metaphysical fundamentality, and to suggest that it is well-suited to elucidate the notion of metaphysical necessity. I will also argue that the relevant notion of essence can be used to resolve a tension implicit in a famous argument of Kit Fine’s for the conclusion that the notion of essence cannot be adequately captured by the notion of metaphysical necessity.

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# I Two Theoretical Projects

Let me begin by saying a few words about Kment's two projects.

## Metaphysical Necessity

The first project is that of establishing a connection between essence and metaphysical necessity. Kment's proposal is a variant of Kit Fine's view that

we should view metaphysical necessity as a special case of essence. For each class of objects, be they concepts or individuals or entities of some other kind, will give rise to its own domain of necessary truths, the truths which flow from the nature of the objects in question. The metaphysically necessary truths can then be identified with the propositions which are true in virtue of the nature of all objects whatever. (Fine 1994)

Thus, if it is part of the essence (or nature) of Socrates that he be human, then the necessity of Socrates's being human might be said to "flow" from the essence of Socrates. And if it is part of the essence of the property of being human that humans be mammals, then the necessity of humans being mammals might be said to "flow" from the essence of the property of being human.

There are different ways of understanding the relationship between essential truths and the necessary truths that "flow" from them. On the simplest proposal, the relationship is identity: there is *no difference* between Socrates's being necessarily human and its being essential of Socrates that he be human. But one could also hold that the relationship falls short of identity. On Kment's view, the fact that Socrates is necessarily human is distinct from the fact it is essential of Socrates that he be human, but the former is "grounded" on the latter.

It seems to me that there is something attractive about the Finean program of taking metaphysical necessity to flow from essence. I will say more about my preferred way of

spelling out the details below.

## Metaphysical Explanation

The second of Kment's projects is that of establishing a connection between essence and what he calls "metaphysical explanation".

What is metaphysical explanation? Here is one of Kment's examples:

I point to one of the atoms labeled as gold, and ask: "So, that one's a gold atom? What makes it so?". It seems natural and correct for you to answer: "It's a gold atom because it's an atom with atomic number 79 and because that's what it is to be a gold atom." (§6.2.1)

Kment thinks that the speaker's interlocutor provides a metaphysical explanation of the fact that a particular atom *a* is a gold atom. She does so by supplying two pieces of information:

1. She identifies a *ground* for the explanandum.

(In this case: the fact that *a* is an atom with atomic number 79.)

2. She identifies a *truth about essence* which establishes a connection between the explanandum and its ground.

(In this case: the proposition that it is essential to being a gold atom that gold atoms have atomic number 79.)

Kment's notion of metaphysical explanation presupposes a hierarchical picture of the world. According to this picture, "entities are arranged in strata by their degrees of relative metaphysical fundamentality", and "facts about more fundamental things give rise to facts about less fundamental ones in accordance with the laws of metaphysics" (Kment 2014, §6).<sup>1</sup>

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<sup>1</sup>It goes without saying that Kment is not the only philosopher to defend a hierarchical picture of the world. For a canonical source, see Fine 2001. Other influential texts include Schaffer 2009 and Sider 2012.

To supply a metaphysical explanation, Kment thinks, is to explain how facts about about more fundamental things “ground” (or “give rise to”) facts about less fundamental things. Accordingly, the task of metaphysically explaining a given fact  $f$  can usually be divided into two parts: (1) one identifies a ground for  $f$ ; and (2) one identifies metaphysical principles that establish a connection between the ground and  $f$ .

Kment labels the relevant metaphysical principles “laws of metaphysics”, but he thinks that, in a typical case, a law of metaphysics is simply a truth about essences.<sup>2</sup> This presupposes a notion of essence that is closely tied to the hierarchical picture of the world, since it sees truths about essence as describing connections between a fact and its grounds.

## 2 The Plan

I have given a brief description of Kment’s two theoretical projects: (1) the project of establishing a connection between essence and metaphysical necessity, and (2) the project of establishing a connection between essence and metaphysical explanation.

Kment’s position is certainly coherent, and it is in many ways attractive. But it seems to me that it has the disadvantage of burdening his conception of metaphysical necessity with the hierarchical picture of the world that is presupposed by his conception of metaphysical explanation—a picture whereby the less fundamental is grounded in the more fundamental.

In this paper I will argue that there is no need to think of the notion of metaphysical necessity as presupposing the hierarchical picture of the world. I will proceed by developing a non-hierarchical conception of essence: a conception of essence whereby the asymmetrical relation that holds between an entity and its essential features is totally independent from the asymmetrical relation that friends of the hierarchical picture see as holding between the

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<sup>2</sup>Kment notes that there are broader and narrower ways of thinking about essence, and argues that, on the narrower conception of essence that he prefers, one may find that one needs to go beyond the truths about essence to carry out theoretical projects we are considering here. It is for this reason that he formulates his proposal using the broader notion of a metaphysical law (§6.2.3). For discussion of the different notions of essence, see Rosen 2006.

more and the less fundamental. I will then suggest that the resulting conception of essence can be used to establish a connection between essence and metaphysical necessity.

### 3 Metaphysical Fundamentality

My main motivation for distinguishing between the asymmetry of essence and the asymmetry of metaphysical fundamentality is to do with intellectual hygiene: I think that keeping the asymmetries separate affords a more perspicuous picture of the underlying philosophical terrain.

There is, however, a secondary motivation. It seems to me that the hierarchical picture of the world is potentially problematic, and that there may be reasons to resist it. Someone who chooses to resist the picture will thereby give up on the idea that there is sense to be made of metaphysical explanation. But as long as she distinguishes between the asymmetry of essence and the asymmetry of metaphysical fundamentality, she won't also have to give up on the idea that there is sense to be made of essence, or on the idea that there is an important connection between essence and metaphysical necessity.

In this section I will say a few words about why I think the hierarchical picture is potentially problematic.

Let me begin with an analogy. Suppose your uncle Reginald insists that ascots are “objectively fashionable”: fashionable in a sense that transcends the tastes of some community or other. You should presumably resist Uncle Reginald's position. But, in so doing, you shouldn't simply counter Uncle's view with the claim that ascots are objectively *unfashionable*, while conceding that there is sense to be made of a distinction between the objectively fashionable and the objectively unfashionable. You should instead be skeptical of the very idea that there is sense to be made of the distinction.

One reason it is problematic to countenance a distinction between the objectively fashionable and the objectively unfashionable is that it generates an epistemological predicament:

we must either take facts about objective fashionability to be beyond our cognitive reach, or face the challenge of explaining how we could possibly come to know whether or not something is objectively fashionable.

The most straightforward way of addressing such a challenge would be to postulate a connection between objective fashionability and fashionability with respect to the standards of some community or other. But in doing so one would generate a certain kind of tension. For there are two basic ways of spelling out the connection: the first option is to claim that the standards of the relevant community are somehow built into the property of objective essence; the second option is to reject the first option but insist that the relevant community is nonetheless able to reliably track objective fashionability. Neither of these views seems particularly promising. The former threatens the supposed objectivity of objective fashionability; the latter leaves us with the awkward task of describing a mechanism that could explain how the relevant community is able to track objective fashionability.

I would like to suggest that analogous problems arise for someone who is prepared to countenance a distinction between more and less metaphysically fundamental objects or properties—as opposed to a distinction between more and less fundamental roles that objects or properties play in our cognitive lives. In particular, it seems to me that one is left in a difficult epistemological position merely by countenancing such a distinction. For, as before, one must either take facts about metaphysical fundamentality to be beyond our cognitive reach, or face the challenge of explaining how we could possibly come to know which objects and properties enjoy greater metaphysical fundamentality.

As before, the most straightforward way of addressing such a challenge would be to postulate a connection between metaphysical fundamentality and fundamentality relative to the theoretical tools of a particular community. But in doing so one would again create a certain kind of tension. For there are two basic ways of spelling out the connection: the first option is to claim that the theoretical standards of the relevant community are somehow built into the property of objective fundamentality; the second option is to reject the first option, but

insist that the theoretical tools of the relevant community are nonetheless reliable indicators of objective fundamentality. Again, neither of these views seems particularly promising. The former threatens the supposed objectivity of objective fundamentality; the latter leaves us with the awkward task of describing a mechanism that could explain how our theoretical tools are able to track objective fundamentality.

I do not mean to suggest that we have decisive grounds for refusing to countenance distinctions of metaphysical fundamentality. The point is simply that there is a price to be paid for allowing such distinctions into our theoretical toolbox. So they had better be fruitful enough to earn their keep.

There has been a lot of interesting work on metaphysical fundamentality in recent years, and many philosophers are increasingly sanguine about the fruitfulness of the distinction.<sup>3</sup> But recent work has also shown that one can easily tie oneself into knots by theorizing about metaphysical fundamentality—knots that were not there to begin with: they arise only on the assumption that there is sense to be made of distinctions of metaphysical fundamentality.

Sider (2012), for example, considers the question of what grounds facts about grounding.<sup>4</sup>

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<sup>3</sup>Relevant texts include Sider 2012, Rosen typescript and the references therein.

<sup>4</sup>Sider defends a principle of “purity”, according to which “fundamental truths involve only fundamental notions” (Sider 2012). This principle entails that truths about what grounds what cannot count as fundamental, since they must bring in non-fundamental notions in order to establish a link between the fundamental and the non-fundamental.

It is perhaps worth noting that Sider would not state his proposal in terms of grounding. He instead suggests a linguistic account, according to which one specifies the connection between fundamental and non-fundamental truths by supplying a “metaphysical semantics” for non-fundamental truths: a semantics that explains how each (factual) sentence containing non-fundamental vocabulary “fits into fundamental reality” by pairing it with truth-conditions stated in purely fundamental terms. (The quotation is from Sider 2013.)

There is an interpretation of this proposal—though perhaps not the interpretation Sider has in mind—on which one is barred from claiming that non-fundamental truths are *explained* by fundamental truths. Let  $\phi$  be a sentence involving non-fundamental vocabulary, let  $\phi^f$  be a sentence containing only fundamental vocabulary, and assume that  $\ulcorner \phi \urcorner$  is true if and only if  $\phi^f$  is a theorem of one’s metaphysical semantics (where  $\phi$  is a name for  $\phi$ ). On the interpretation of the proposal I would like to consider, this assumption is understood as entailing that  $\phi$  and  $\phi^f$  have the same truth-conditions, in the following sense: what the truth of  $\phi$  demands of the world is precisely what the truth of  $\phi^f$  demands of the world. One way to put this point in the material mode is to assert  $\ulcorner$  there is *no difference* between its being the case that  $\phi$  and its being the case that  $\phi^f \urcorner$ . But the truth of such an assertion entails that  $\ulcorner$  its being the case that  $\phi$  is explained by its being the case that  $\phi^f \urcorner$  must be false, on the grounds that nothing can explain itself. (Compare: Hesperus’s being bright cannot be explained by Phosphorus’s being bright. For if Hesperus is Phosphorus, there is no difference between Hesperus’s being bright and Phosphorus’s being bright.)

Bennett (2011) suggests an answer: a ground grounds not just the grounded fact itself, but also the fact that the grounded fact is grounded by its ground. Regardless of one's stance on the issue, it should be agreed on all sides that it concerns a philosophical problem that arises entirely as a result of postulating distinctions of metaphysical fundamentality, and using them to develop a hierarchical picture of the world. A generation from now, philosophers may think of the problem as a tricky but legitimate theoretical issue—like we now think of the problem of identifying the value of the cosmological constant—but they may also come to think of it a consequence of interesting but ultimately faulty theoretical assumptions—like we now think of the problem of identifying one's velocity relative to the luminiferous aether.

## 4 Towards an Alternative Picture

There is clearly something attractive about the thought that being composed of water is, in some sense, nothing over and above being composed of  $H_2O$ . A proponent of the hierarchical picture might wish to spell out this idea by claiming that the fact that something is composed of water is *grounded* in the fact that it is composed of  $H_2O$ . In this section I will suggest an alternative. I will argue that one can give a satisfying account of the connection between being composed of water and being composed of  $H_2O$  without making distinctions of metaphysical fundamentality.

The proposal couldn't be simpler. Rather than making the hierarchical claim that facts about water are grounded on facts about  $H_2O$ , one takes the relevant facts to be *one and the same*. So, in particular:

There is *no difference* between there being water in the glass and there being  $H_2O$  in the glass.

In order to develop this sort of proposal in further detail, it will be useful to introduce a “no difference” operator, “ $\equiv$ ”, and read “ $\lceil \phi \equiv \psi \rceil$ ” as “there is no difference between its being the

case that  $\phi$  and its being the case that  $\psi$ .<sup>5</sup> Accordingly, what it takes for  $\lceil \phi \equiv \psi \rceil$  to be true is for it to be the case that what is required of the world by the truth of  $\phi$  is precisely what is required of the world by the truth of  $\psi$ . (More colorfully: when God made the world, what she would have had to do to verify  $\phi$  is precisely what she would have had to do to verify  $\psi$ .)

Unlike the grounding relation, which is supposed to be anti-reflexive and anti-symmetric, “ $\equiv$ ” is an equivalence relation. So, in particular, it satisfies:

**Symmetry:**  $\phi \equiv \psi \rightarrow \psi \equiv \phi$

[*Read:* If there is no difference between its being the case that  $\phi$  and its being the case that  $\psi$ , then there is no difference between its being the case that  $\psi$  and its being the case that  $\phi$ .]

Attention so far has focused on statements of the form  $\lceil \phi \equiv \psi \rceil$  where  $\phi$  and  $\psi$  are closed sentences. But one can also use “ $\equiv$ ” to capture identities between properties. One might say, for instance,

$\text{Water}(x) \equiv_x \text{H}_2\text{O}(x)$

[*Read:* There is *no difference* between being composed of water and being composed of  $\text{H}_2\text{O}$ . ]

More generally, one can read  $\lceil F(x) \equiv_x G(x) \rceil$  as  $\lceil$ there is no difference between being  $F$  and being  $G$  $\rceil$ , and take the occurrence of “ $x$ ” in “ $\equiv_x$ ” to bind the occurrences of “ $x$ ” in  $\lceil F(x) \rceil$  and  $\lceil G(x) \rceil$ .

When one sets forth a statement like “ $\text{Water}(x) \equiv_x \text{H}_2\text{O}(x)$ ”, one captures the thought that water-facts are nothing over and above  $\text{H}_2\text{O}$ -facts. But one does so without presupposing a hierarchical picture of the world. For suppose it is true that there is no difference between being composed of water and being composed of  $\text{H}_2\text{O}$ . Then being composed of water can be neither more nor less metaphysically fundamental than being composed of

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<sup>5</sup>For further discussion of this kind of operator, see Dorr (manuscript).

water: they are one and the same. (Compare: Hesperus, the object itself, is neither more nor less metaphysically fundamental than Hesperus, the object itself. They are one and the same.)

In the early days of the calculus, mathematicians worked with an awkward notion of infinitesimal: in some contexts infinitesimals were treated as if they were zero; in others, they were not. The subsequent rigorization of the calculus showed that there was ultimately nothing inconsistent about the calculus. But it also showed that there was something unsatisfying about the way the calculus had been explicated up to that point.

I sometimes worry that friends of grounding might be in a similar situation. I worry that there might be a tension in claiming, on the one hand, that being composed of water is “nothing over and above” being composed of  $H_2O$ , and, on the other, that something’s being composed of water is *grounded* in (and therefore explained by) its being composed of  $H_2O$ . On the most flatfooted reading these claims, their joint truth requires an “infinitesimal” distance—a distance that is treated as zero for some purposes but not others—between two facts:

1. the fact that  $x$  is composed of water;
2. the fact that  $x$  is composed of  $H_2O$ .

For when one says that being composed of water is “nothing over and above” being composed of  $H_2O$  one appears to be treating the distance as if it were zero. And when one claims that something’s being composed of water is *grounded* in (and therefore explained by) its being composed of  $H_2O$  one appears to be treating the distance as if it were greater than zero (at least on the assumption that nothing explains itself).

There may well be a good way of resolving this tension: friends of grounding might ultimately be in a position to supply an illuminating account of the theoretical space that is said to separate facts which are distinct enough for one to explain the other but non-distinct enough for one to be “nothing over and above” the other. An advantage of the picture I

have been developing in this section is that it does not face the burden of supplying such an account. In claiming that there is *no difference* between being composed of water and being composed of H<sub>2</sub>O, the distance between the fact that  $x$  is composed of water and the fact that  $x$  is composed of H<sub>2</sub>O is squarely and unambiguously zero.

## 5 Essence Without Fundamentality

In this section I will argue that the no-difference operator “ $\equiv$ ” can be used to characterize an interesting notion of essence.

The first thing to note is that even though “ $\equiv$ ” is itself a symmetrical operator, it can be used to define an antisymmetric “semi-identity” operator. Intuitively, the semi-identity operator corresponds to the English phrase “part of what it is to be ... is to ...”. For instance:

Part of what it is to be composed of water is to contain hydrogen atoms.

[*In symbols:*  $\text{Water}(x) \gg_x \text{Hydrogen}(x)$ ]

To see how “ $\gg$ ” might be defined in terms of “ $\equiv$ ”, it is useful to remember that the material conditional can be defined using conjunction and the material biconditional:

$$\phi \rightarrow \psi =_{df} \phi \leftrightarrow (\phi \wedge \psi)$$

Similarly, one can define the semi-identity operator “ $\gg$ ” using conjunction and “ $\equiv$ ”:

$$\phi \gg \psi =_{df} \phi \equiv (\phi \wedge \psi)$$

and, more generally:

$$F(x) \gg_x G(x) =_{df} F(x) \equiv_x (F(x) \wedge G(x))$$

So, for instance, the semi-identity statement “ $\text{Water}(x) \gg_x \text{Hydrogen}(x)$ ”, which I will continue to read “part of what it is to be composed of water is to contain hydrogen atoms”, can be treated as a syntactic abbreviation for:

$$\text{Water}(x) \equiv_x (\text{Water}(x) \wedge \text{Hydrogen}(x))$$

[*Read:* there is no difference between being composed of water and being such that one is both composed of water and contains hydrogen atoms.]

Here is an intuitive way of wrapping one’s mind around this definition. When God created the world and made it the case that the glass was filled with water, she *thereby* made it the case that the glass was both such that it was filled with water and such that it contained hydrogen atoms. Why? Because part of what it is to be composed of water is to contain hydrogen atoms.

An immediate consequence of our definition is that the semi-identity operator “ $\gg$ ” is reflexive, transitive and anti-symmetric, and so a partial order. And once one is equipped with the semi-identity operator, it is straightforward to characterize a notion of essence.

Following Fine (1995), I will introduce an *essence operator* “ $\square_z$ ”. Like Fine, I will read “ $\square_z \phi$ ” as “ $\phi$  is true in virtue of the essence (or nature) of  $z$ ”; unlike Fine, I will treat “ $\square_z \phi$ ” as a syntactic abbreviation for the following formula (where  $\phi_x$  is the result of replacing all occurrences of “ $z$ ” in  $\phi$  by occurrences of “ $x$ ”):

$$x = z \gg_x \phi_x$$

[*Read:* part of what it is to be  $z$  is to be such that one is  $\phi$ ]

For instance, the claim that it is in virtue of Charles’s essence that Charles has Elizabeth as a parent,

$$\square_{\text{Charles}}(\text{Parent}(\text{Elizabeth}, \text{Charles}))$$

will be treated as a syntactic abbreviation for:

$$x = \text{Charles} \gg_x \text{Mother}(\text{Elizabeth}, x)$$

[*Read:* part of what it is to be Charles is to be such that one has Elizabeth as a parent]

It is worth emphasizing that the essence-operator “ $\Box_x$ ” was explicitly defined on the basis of the no-difference operator “ $\equiv$ ”. Since “ $\equiv$ ” does not presuppose distinctions of metaphysical fundamentality, this means that our essence-operator does not presuppose distinctions of metaphysical fundamentality.

This does not, however, threaten the asymmetry of essence. One might think, for example, that although it is essential to Charles that he have Elizabeth as a parent, it is not essential to Elizabeth that she be Charles’s parent. Our notion of essence can capture this difference, since  $\Box_{\text{Charles}}(\text{Parent}(\text{Elizabeth}, \text{Charles}))$  does not entail  $\Box_{\text{Elizabeth}}(\text{Parent}(\text{Elizabeth}, \text{Charles}))$ .

We have seen that the asymmetry of essence need not be construed as presupposing the asymmetry of metaphysical fundamentality. I would like to suggest, moreover, that our non-fundamentalist essence-operator is well-suited to carrying out the first of Kment’s two theoretical projects: that of establishing a connection between essence and metaphysical necessity. A little more carefully: I see no reason to doubt that “ $\Box_x$ ” (together with its second-order analogue “ $\Box_F$ ”<sup>6</sup>) can be used to cash out the Finean idea that “the metaphysically necessary truths can . . . be identified with the propositions which are true in virtue of the [essence] of all objects whatever”.<sup>7</sup>

It is also worth emphasizing that the non-hierarchical notion of essence I have been defending here is compatible with a large range of views about which truths about essence to accept. I have argued for a connection between the “no difference” statements one accepts and the truths about essence one accepts, but I have not set forth any particular view about which no-difference statements to accept.<sup>8</sup>

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<sup>6</sup>Here is a generalization of the proposal to the second-order case:

$$\Box_F \phi =_{df} \forall x(x \prec xx \leftrightarrow F(x)) \gg_{xx} \phi_{xx}$$

where “ $xx$ ” is a plural variable, “ $\gg_{xx}$ ” is defined in terms of “ $\equiv_{xx}$ ”, and “ $\mathfrak{F}(xx) \equiv_{xx} \mathfrak{G}(xx)$ ” is taken to abbreviate “There is no difference between being (collectively)  $\mathfrak{F}$  and being (collectively)  $\mathfrak{G}$ ”.

<sup>7</sup>My preferred way of developing this idea is spelled out in chapter 5 of Rayo 2013.

<sup>8</sup>For further discussion, see Rayo 2013.

## 6 Socrates's Singleton

There is an influential argument due to Kit Fine (1994) which purports to show that the notion of essence is more fine-grained than the notion of metaphysical necessity. I think Fine's argument is in tension with a certain way of developing his idea that a necessary truth is a proposition that is true in virtue of essences. In this final section of the paper I would like to say a few words about how I think the tension arises, and about how a non-hierarchical notion of essence might be used to resolve it.

Fine's argument is based on two assumptions:

**Assumption 1** There is an asymmetry between Socrates and his singleton: whereas it is essential to his singleton that Socrates exist, it is *not* essential to Socrates that his singleton exist.

**Assumption 2** There is a necessary connection between Socrates and his singleton: necessarily, if one of them exists, then so does the other.

These assumptions are then used to show that the notion of essence cannot be adequately captured in terms of metaphysical necessity.

One way to run the argument is to proceed by *reductio*, and suppose that for it to be essential to  $x$  that  $\phi$  is for it to be the case that, necessarily,  $\phi$  is true if  $x$  exists. Since [Assumption 2] is true, we have:

necessarily, if Socrates exists, then so does his singleton

So our supposition gives us:

it is essential to Socrates that his singleton exist

which contradicts [Assumption 1].

I claimed that this argument is in tension with a certain way of developing Fine's idea that a necessary truth is a proposition that is true in virtue of essences. The version of Fine's

view I have in mind might be captured by the slogan: *metaphysical possibility is limited only by essence*. It won't be necessary for present purposes to spell out this idea in full detail, but I will assume that the slogan is read so as to entail the following:

**Principle of Maximality**

Select any objects you please. It is metaphysically possible for the world to consist of all and only those objects—unless the assumption that all and only those objects exist is inconsistent with what is entailed by their essences.

It follows from the Principle of Maximality that [Assumption 1] and [Assumption 2] cannot both be true. For suppose that [Assumption 1] is true, and therefore that it is not essential to Socrates that his singleton exist. Now consider the set *S*, which consists of precisely those objects whose existence is essential to Socrates. *S* will certainly contain Socrates, but it may also contain Socrates's parents and his parents' parents, or the particular egg and sperm that gave rise to Socrates, or Socrates's right half. On the assumption that essence is transitive, it follows from the Principle of Maximality that it is metaphysically possible that all and only the objects in *S* exist. But we know that *S* does not contain Socrates's singleton, since we know that it is not essential to Socrates that his singleton exist. So [Assumption 2] must be false.

It is tempting to think that it would make a difference if we weakened the Principle of Maximality by insisting that any possibility respect the essences of all actually existing objects:

**Principle of Maximality (Restricted Version 1)**

Select any objects you please. It is metaphysically possible for the world to consist of all and only those objects—unless the assumption that all and only those objects exist is inconsistent with what is entailed by their essences *together with the essences of all actually existing objects*.

or if we weakened it further, by insisting that any possibility respect the essences of all possibly existing objects:

**Principle of Maximality (Restricted Version 2)**

Select any objects you please. It is metaphysically possible for the world to consist of all and only those objects—unless the assumption that all and only those objects exist is inconsistent with what is entailed by their essences *together with the essences of all possibly existing objects*.

But it's not clear that the restrictions make a difference: on reasonable assumptions, all three principles are equivalent.<sup>9</sup>

We have seen that the Principle of Maximality is incompatible with the conjunction of [Assumption 1] and [Assumption 2]. Since both assumptions tend to go unquestioned in the literature, it is tempting to resolve the incompatibility by giving up on the idea that possibility is limited only by essence—at least insofar as it is construed as entailing the Principle of Maximality.<sup>10</sup> It seems to me, however, that one shouldn't be too quick to dismiss the idea that the incompatibility is best resolved by keeping the Principle of Maximality in place and identifying principled reasons for rejecting the assumptions.

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<sup>9</sup>The assumption I have in mind is a conditional conception of essence entailments. To see what this means, it is useful to start with an example. Consider Socrates's oldest son, Lamprocles, and suppose that it is essential to Lamprocles that he have Socrates as a father. We don't want our restricted versions of the Principle of Maximality to allow us to go from the claim that having Socrates as a father is part of the essence of Lamprocles that it is metaphysically necessary that Socrates be a father (from which it follows, in a negative free logic, that it is metaphysically necessary that Socrates exist). So if the restricted versions of the Principle of Maximality are to deliver sensible results, we had better assume that what follows from the fact that it is essential to Lamprocles that he have Socrates as a father is *not* that Socrates exists necessarily (and is necessarily a father), but only that Socrates must exist (and be a father) *in any world in which Lamprocles exists*.

This suggests that, in general, essence entailments are to be understood *conditionally*: what is entailed by its being essential to  $x$  that it be the case that  $p$  is *not* that  $p$  be the case in every possible world, but only that  $p$  be the case in every possible world at which  $x$  exists. The conditional reading of essence entailments has some nice features. It allows one to say, for example, that part of what it is to be Socrates is to exist (and therefore that it is essential to Socrates that he exist), without thereby committing oneself to the idea that Socrates exists necessarily. But, on the conditional reading of essence entailments, all three versions of the Principle of Maximality are equivalent.

I do not mean to suggest that there is no way of resisting a conditional conception of essence entailments. (See, in particular, Fine 2005*b*.) But I do think that resisting such a conception requires controversial assumptions.

<sup>10</sup>For an interesting way of doing so, see (Baron-Schmitt manuscript).

I will bring the paper to a close by describing two different ways of developing this idea. Both of the pictures I will consider are compatible with the broad claim that possibility is limited only by essence, and with the Principle of Maximality in particular. The first picture resolves the incompatibility by preserving [Assumption 1] but identifying principled reasons to reject [Assumption 2]; the second picture resolves the incompatibility by rejecting [Assumption 1] altogether.

### **Picture 1**

On the first picture, one accepts [Assumption 1]—the claim that although it is essential to his singleton that Socrates exist, it is not essential to Socrates that his singleton exist—and one remains resolutely committed to the idea that metaphysical possibility is to be limited only by essence.<sup>11</sup> One therefore accepts each of the following claims:

1. it is metaphysically impossible that Socrates's singleton exist without Socrates (since it is essential to the singleton that Socrates exist);
2. it is metaphysically *possible* that Socrates exist without his singleton (since possibility is limited only by essence, and since it is not essential to Socrates that his singleton exist).

The second of these claims contradicts Fine's [Assumption 2]: the idea that it is metaphysically impossible for one of Socrates and his singleton to exist without the other. It seems to me, however, that there is an attractive picture of the relationship between possibility and *absurdity* on which [Assumption 2] ought to be resisted. Suppose, in particular, that one endorses the following thesis:

### **Impossibility as Absurdity**

To go beyond metaphysical possibility is to lapse into *absurdity*.

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<sup>11</sup>It is a version of the view that Rosen (2006) attributes to a fictional community he calls "the Others".

Then it is not clear that that [Assumption 2] should be accepted. For even if one thinks that a world containing Socrates but not his singleton would be, in some sense, metaphysically infelicitous, it is not clear that there would be anything outright *absurd* about the assumption that Socrates exists without his singleton.

Notice, moreover, that Impossibility as Absurdity is a natural consequence of the non-hierarchical conception of essence we considered earlier in the paper, together with the idea that possibility is limited only by essence.

The crucial observation is that, on the non-hierarchical conception of essence, there is an intimate connection between essence and absurdity. This can be brought out by considering an example. Suppose that being human is part of Socrates's essence:

$$\square_{\text{Socrates}}(\text{Human}(\text{Socrates}))$$

On a non-hierarchical conception of essence, this amounts to the following:

$$x = \text{Socrates} \gg_x \text{Human}(x)$$

[*Read:* part of what it is to be Socrates is to be human.]

Now suppose, for *reductio*, that Socrates fails to be human. So we are supposing that Socrates—an object part of what it is to be is to be human—fails to be human. In other words: we are supposing that there is a non-human, part of what it is to be is to be human, which is absurd.

The lesson of our example is that, on the non-hierarchical conception of essence, the result of violating Socrates's essence is a lapse into absurdity. And the point generalizes: a friend of the non-hierarchical conception of essence thinks that to violate an essence is to lapse into absurdity.

When we combine this idea with the idea that possibility is limited only by essence—and, more specifically, with the idea that to go beyond the limits of possibility is to violate an essence—we get Impossibility as Absurdity: to go beyond metaphysical possibility is to lapse into absurdity.

*Moral:* when the non-hierarchical conception of essence is combined with the idea that possibility is limited only by essence, we get a picture of the connection between possibility, essence and absurdity on which it is natural to accept Fine's [Assumption 1] without accepting his [Assumption 2].

## Picture 2

The second picture I would like to consider does not take a stand on the connection between possibility and essence, but it presupposes a non-hierarchical conception of essence and takes a broadly Fregean stand on the issue of what no-difference statements to accept.

Proponents of the second picture think that the existence of Socrates's singleton is nothing over and above the existence of Socrates, in the following strict sense:

$$\exists x(x = \text{Socrates}) \equiv \exists x(x = \{\text{Socrates}\})$$

[*Read:* There is no difference between its being the case that Socrates exists and its being the case that Socrates's singleton exists.]

It is no part of this picture that Socrates is identical to his singleton: that would contradict the standard axioms of set theory by postulating the existence of a set that is a member of itself. What we are concerned with here is not identity between *sets* but—speaking loosely—identity between *facts*. A little more precisely: we are concerned with the view that what would be required of the world for it to be the case that Socrates exists is precisely what would be required of the world for it to be the case that his singleton exists.<sup>12</sup> (To return to an earlier image: when God made the world, and brought it about that Socrates existed she *thereby* brought it about that his singleton existed; and when she brought it about that Socrates's singleton existed she *thereby* brought it about that Socrates existed.)

This way of thinking about sets is closely connected to the view, set forth by Frege

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<sup>12</sup>In generalizing this idea to other sets, one must be careful to proceed in a way that avoids the set-theoretic paradoxes. For my preferred development of the idea, see Chapter 4 of Rayo 2013.

(1892, 1884) and further developed in the neo-Fregean literature,<sup>13</sup> that a single content can be “carved up” in more than one way. Thus, one might think that “Socrates exists” and “Socrates’s singleton exists” describe the very same feature of reality, but that in doing so they “carve up” reality in different ways.

Suppose that some version of this picture is correct, and that “ $\exists x(x = \text{Socrates}) \equiv \exists x(x = \{\text{Socrates}\})$ ” is true. Then it is an immediate consequence of our definition of “ $\Box_x$ ” in terms of “ $\equiv$ ” that the following essence-statements are both true:

$$\Box_{\text{Socrates}}(\exists x(x = \{\text{Socrates}\}))$$

[*Read:* it is essential to Socrates that his singleton exists.]

$$\Box_{\{\text{Socrates}\}}(\exists x(x = \text{Socrates}))$$

[*Read:* it is essential to Socrates’s singleton that Socrates exists.]

*Moral:* by combining a broadly Fregean conception of set with a non-hierarchical conception of essence, one gets a picture of mathematical reality according to which there is no reason to draw an asymmetry between Socrates’s essence and his singleton’s, and therefore a picture of reality according to which Fine’s [Assumption 1] does not hold.

### Back to Fine’s Argument

Fine’s argument is sometimes seen as a refutation of the idea that the notion of essence can be adequately captured by the notion of metaphysical necessity. But I think it is better to see it as bringing out a tension between the idea that metaphysical possibility is limited only by essence, on the one hand, and [Assumption 1] and [Assumption 2], on the other.

The orthodox way of eliminating the tension is by not being fully resolute about the idea that metaphysical possibility is limited only by essence—or at least about the Principle of Maximality. This allows one to preserve [Assumption 1] and [Assumption 2], along with the Finean idea that essence is more fine-grained than metaphysical necessity. The aim of this

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<sup>13</sup>The canonical neo-Fregean texts are Wright 1983, Hale & Wright 2001.

section has been to suggest that the orthodoxy is not mandatory. We have seen that there are two different pictures of the philosophical terrain that allow one to cast doubt on Fine's assumptions while remaining steadfast in one's commitment to the idea that possibility is limited only by essence, and to the Principle of Maximality in particular.

## 7 Conclusion

My main concern in this paper has been to show that there is an interesting conception of essence that does not rely on distinctions of metaphysical fundamentality. I have argued that such a conception can be constructed on the basis of the no-difference operator " $\equiv$ ", and suggested that although it is unsuitable for the project of establishing a connection between essence and metaphysical explanation, it is well-suited to the project of establishing a connection between essence and metaphysical necessity.

If this is right, it shows that one can do justice to the idea that metaphysical possibility is limited only by essence, without thereby committing oneself to the potentially problematic idea that some facts are more fundamental than others, metaphysically speaking.

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