GROUNDING IDENTITY IN EXISTENCE[1]

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What grounds the facts about what is identical to/distinct from what? A natural answer is: the facts about what exists. Despite its prima facie appeal, this view has received surprisingly little attention in the literature. Moreover, those who have discussed it have been inclined to reject it because of the following important challenge: why should the existence of some individuals ground their identity in some cases and their distinctness in others? (Burgess 2012, Shumener 2020b). This paper offers a sustained defense of the view. The first half provides some positive motivations in terms of other natural principles involving ground. The second half considers various ways of distilling the challenge into a precise objection to the view, and argues that none of the resulting objections proves persuasive.

1. Introduction

As everyone knows, Muhammad Ali is identical to Cassius Clay and distinct from Joe Frazier. But in virtue of what do these facts about identity obtain?

This is not a meta-semantic question about names — why 'Ali' co-refers with 'Clay' and not with 'Frazier' — but a metaphysical question about their referents. Presumably, the facts in question do have some metaphysical explanation: iconic as Ali is, surely no facts about him obtain fundamentally (or are metaphysically 'brute'). Just as we can metaphysically explain the facts

about Ali's mass and other properties, so we should also be able to explain the facts about his identity.[2]

The question is not particular to boxers, of course. Identity is all-pervasive: anything whatsoever is identical to itself, and distinct from everything else. We can consider identity facts involving particles, numbers, cities, etc. What, if anything, explains them?

Identity is, if not a logical notion, at least akin to logical notions such as conjunction and quantification. There is some consensus on the general principles concerning how facts involving logical notions are grounded, as described by Kit Fine (2012: §§1.7–8), and indeed these cases might be thought to play a key role in conveying the notion of ground itself. Perhaps surprisingly, however, there is no consensus on how identity facts are grounded. Here are some natural suggestions (for an overview, see Shumener 2020a: §IV):

> i) Identity facts involving fundamental individuals are fundamental, and ground all other identity facts.

> ii) Identity facts are grounded in facts about properties — namely, that the objects in question share or fail to share all of their properties.

> iii) Identity facts have no uniform explanation — identity between sets is grounded one way, identity between people another, and so on.

> iv) Identity facts are 'zero-grounded' — that is, they are grounded, but in nothing.[3]

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[2] As per Ted Sider's (2011: §7.2) 'Purity' principle, there are no fundamental facts involving non-fundamental individuals like Ali. But even if this principle has exceptions – in the form of metaphysical laws or essence facts, for example – it seems implausible that identity facts involving non-fundamental individuals are among them.

[3] This view is mentioned by Fine (2012:48).

I won't try to convince you that these views are all on the wrong track — instead, I will focus on defending what I take to be the most natural proposal of all:

> v) Identity facts are grounded in existence facts — namely, in the existence of the individuals in question.[4]

To feel the intuitive appeal of this view, imagine building a universe. First, you select your fundamental individuals: some particles and some spacetime points. Second, you give these individuals some monadic properties: masses, charges, and field-values. Third, you give them relations to one another: occupation relations between particles and points and spatiotemporal distance relations between points. Intuitively, in this third step, you don't need to also specify the

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[4] As far as I'm aware, this view has never been explicitly defended. Nathan Salmon comes close to a defense, when he writes:

> …there is nothing in the qualitative nature of x and y, other than their mere possible existence, that makes them identical. For surely there is no qualitative fact about x, other than the fact of its possible existence, in virtue of which x = x. (1987:517; see also 1996:216)

But he speaks of 'possible existence' rather than existence, does not address distinctness facts, and is not working within a grounding framework.
The view is sometimes attributed to David Lewis, partly due to the oft-cited remark:

> There is never any problem about what makes something identical to itself; nothing can ever fail to be. And there is never any problem about what makes two things identical; two things never can be identical. (1986a:192-3).

(See Nolan's (2005:37) gloss on Lewis's view, which Burgess (2012:90) takes to suggest the grounding claim.) Like Salmon, however, Lewis is not working within a grounding framework, and it's unclear that this framework provides an apt way of capturing his intention. Moreover, insofar as it does, he might equally be taken to hold that identity facts are ungrounded, or perhaps zero-grounded (as Fine 2016:8 suggests). More recently, Brian Epstein (2015:181) remarks in passing that substantive identity criteria should not be understood as grounding claims, since 'presumably, the fact that I am self-identical is grounded by the fact that I exist, nothing more'. Tom Donaldson (2020: §8) proposes that truthmakers for truths about existence are also truthmakers for truths about identity/distinctness. And Isaac Wilhelm (2020) defends the view that an identity is grounded in the entity it involves.

relations of identity and distinctness between your fundamental individuals. Rather, this was already covered in the very first step: before you gave them any properties, merely bringing the individuals into existence secured their identities. When you declared 'let there be Anne, let there be Bob, let there be Cath, …', you thereby made it the case that each of these individuals is identical to themselves and distinct from all the others. The mere fact that Anne exists suffices to make Anne identical to Anne, and the mere facts that Anne exists and that Bob exists suffice to make Anne distinct from Bob.[5]

'Exists' is to be understood as a predicate here: the fact that a exists must be distinguished from the quantificational fact that $\exists x\ x = a$, which seems to be grounded by the fact that $a = a$ rather than conversely (Fine 2012:60).[6] This paper proceeds under the controversial assumption that there are such non-quantificational existence facts. I will not attempt to defend this assumption here, but one important motivation for it is that we can ask why a given entity exists, where the fact that it is self-identical does not appear to provide an adequate or even a relevant answer.[7] Intuitively, Socrates's existence might be explained in terms of the existence of his parents, or of his parts, but it is hard to see what could be similarly explanatory about citing his self-identity. If anything, citing his self-identity seems to deepen the mystery: how could he be self-identical 'prior' to existing?![8] For those who are skeptical of non-quantificational existence facts, however, this paper

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[5] Presumably, if you had declared 'Let there be Hesperus, and let there be Phosphorus', you wouldn't have made it the case that *these* individuals were distinct. This is one way of raising the puzzle discussed below.

[6] There is no similar barrier to holding that the quantificational facts $\exists x\ x = a$ and $\exists x\ x = b$ ground the fact that $a \neq b$. This proposal also faces a version of the puzzle discussed below.

[7] Fine's chief motivation for recognizing non-quantificational existence facts is their usefulness in solving the following puzzle: facts of the form '$B(a)$' fully ground corresponding facts of the form '$\exists x\ B(x)$', and yet the former may obtain necessarily while the latter do not. In response, Fine suggests including non-quantificational existence facts among the full grounds. However, an alternative response denies the modal claims: in particular, that any facts involving a contingently existing individual obtain necessarily.

[8] For those unsatisfied with this appeal to intuition, the motivations discussed below offer some further support for the idea that there are existence facts which ground identity facts rather than vice versa.

can be thought of as offering one reason to embrace them: doing so allows for an elegant and well-motivated theory of what grounds identity facts.[9]

Let 'E' predicate existence, let '[p]' denote the fact that p, and let '>' stand for a many-one relation of full ground between a plurality of facts on the one hand and a single fact on the other. We can capture the view that existence facts ground identity facts with the following principles:[10]

(E > I): For all x, [Ex] > [x = x].

(EE > D): For all distinct x and y, [Ex], [Ey] > [x ≠ y].[11]

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[9] On an entity-grounding conception (Schaffer 2009, Wilhelm 2020) we might instead view identity facts as grounded in the individuals themselves; thus, Anne grounds the fact that Anne = Anne, and Anne and Bob jointly ground the fact that Anne ≠ Bob. (If there are existence facts, these are presumably also grounded in the individuals themselves.) Although I will not directly consider this view here, I take it that much of the discussion below carries over to it.

[10] Fine (2016) argues that identity criteria should be expressed using 'generic grounding' claims, understood as concerning 'arbitrary objects', where an arbitrary object is not any specific object, but something generic that stands in as a representative of each particular object (Fine 2016:13). This affords a natural formulation of the puzzle discussed below: what would make arbitrary *x* and *y* identical/distinct? It cannot be their existence, since in each case the question presupposes that *x* and *y* exist.
Fine's regimentation in terms of arbitrary objects introduces complexities that are extraneous to those I wish to discuss here, and so I set it aside in what follows, focusing on the more familiar universal claims. I suspect, however, that this choice of formulation may affect some of the issues discussed below.

[11] I take the grounding involved here to be strict (Fine 2012: §1.5), since it is weak grounding which cannot be 'reversed': identity/distinctness facts do not seem to help explain existence facts. Suppose identity/distinctness facts, perhaps together with some other facts, weakly ground existence facts. Then, according to Fine's definition of weak grounding in terms of strict grounding, identity/distinctness facts must form part of a strict ground for any fact which is strictly grounded by existence facts. But there seem to be facts which are strictly grounded by existence, e.g. the existence of corresponding sets or mereological fusions, for which identity/distinctness facts are not part of any strict ground.
I also take the grounding involved here to be immediate, at least in the case of identity (one might think that distinctness facts are grounded in existence facts *via* the corresponding identity facts).

The first half of the paper offers some arguments to motivate these principles. The upshot of this section is tentative, partly because I do not view the arguments as decisive and partly because the background assumption that there are existence facts of the relevant kind is left unaddressed. The second half addresses a puzzle for the view, raised by Alexis Burgess (2012): why do existence facts ground identity in some cases and distinctness in others? I consider some ways of distilling this puzzle into a precise objection to the view and argue that none of the resulting objections proves persuasive.

2. Motivating the View

An obvious motivation for (E > I)/(EE > D) is that they provide a simple and intuitive solution to the otherwise thorny question of what grounds identity facts. This section aims to show that they can also be given a more positive motivation.

2.1 Necessary connections

Perhaps the main prima facie attraction of the view that existence grounds identity is its ability to explain the following necessary connections:

(E→I) For any x, necessarily, if x exists then it is self-identical.

(EE→D) For any distinct x and y, necessarily, if x and y exist then they are distinct.[12]

The idea is that necessary connections like these cry out for explanation, and that a satisfactory explanation may be given in terms of general principles about grounding. For example, the

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[12] I don't think (E→I) has ever seriously been questioned, although the following closely related principle has:

(EE→I) For any identical x and y, necessarily, if x and y exist, then they are identical.

(See e.g. Lewis 1971 and Gibbard 1975.) (EE→D) is slightly more controversial, and any reason to doubt (EE→I) may well provide reason to doubt it also.

necessary connection between something's being scarlet and its being red may be explained by the general principle that for any scarlet thing, its being scarlet grounds its being red. And the necessary connection between something's existing and its singleton set existing may be explained by the general principle that for any thing, its existing grounds its singleton existing. (E > I) and (EE > D) may be taken to similarly explain (E→I) and (EE→D).

(Relatedly, (E > I) and (EE > D) might be motivated by Hume's prohibition on mysterious necessary connections between 'distinct existents'. Facts which are connected by grounding are not 'distinct' in the relevant sense: although [Socrates exists] and [{Socrates} exists] are *numerically* distinct facts, they are not *metaphysically* distinct (Schaffer 2016:76). Thus, Hume's prohibition should be conceived as excluding — at least *ceteris paribus* — necessary connections between metaphysically distinct facts: grounding connections render necessary connections non-mysterious.)[13]

Now, the relevance of (E→I) and (EE→D) would presumably be undermined if the identity facts would obtain regardless of whether the entities involved existed, for (E > I) and (EE > D) would not explain their absolute necessity but only the necessity of their obtaining in certain circumstances. Thus, I take this motivation to rely on understanding the identity facts in question as requiring the existence of the entities involved — hence, as contingent when these entities exist contingently. The underlying idea is that an entity must exist to stand in any relations, including those of identity and distinctness. I assume this understanding of identity facts throughout.[14]

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[13] Rather than viewing this principle as an absolute prohibition, I prefer to see it as a kind of methodological imperative: as far as possible, we ought to avoid positing necessary connections with no ground-theoretic explanation. (See Wang 2016 for criticism of an absolute prohibition.) The underlying principle is that necessary connections amongst facts which are not connected by grounding reflects unattractive redundancy in the basis of fundamental facts. Thanks to an anonymous referee for discussion.

[14] Letting '≠' denote the relation of distinctness, the claims that identity and distinctness require existence may be expressed as follows:

$$(I \to E) \qquad \Box \, \forall x \, \Box \, (x = x \to Ex).$$
$$(D \to EE) \qquad \Box \, \forall x \, \Box \, \forall y \, \Box \, (x \neq y \to (Ex \, \& \, Ey)).$$

These claims are instances of a version of Williamson's (2013: §4.1) 'Being Constraint' (with predicational existence replacing quantificational existence).

The following argument may be given against the conjunction of (I→E) and (D→EE):

i) $\Box \, \forall x \, \Box \, \forall y \, \Box \, (x \neq y \leftrightarrow \sim x = y).$

ii) $\Box \, \forall x \, \Box \, \forall y \, \Box \, (x = y \lor \sim x = y).$

iii) $\Diamond \, \exists x \, \Diamond \sim Ex.$

Therefore, $\Diamond \, \exists x \, \Diamond \, \exists y \, \Diamond ((x = y \lor x \neq y) \,\&\, \sim Ex).$

I am neutral here about the best response to this argument, though one natural option is to deny i) by distinguishing the 'positive' relation of distinctness from the merely 'negative' failure to be identical. (A full reconciliation of contingentism with the Being Constraint requires a general inequivalence between negations of predications (~Fa) and applications of negative predicates (λx.~Fx (a)), à la Stalnaker 1977.) For those who endorse i) – iii), it is natural to deny (D→EE). This needn't undercut the motivation for (EE > D), since it can plausibly be argued that distinctness facts are grounded in the existence of the individuals involved when they both exist and in their non-existence(s) when one or both do not.

Since this disjunctive treatment may seem less attractive for 'positive' facts, the defender of (E > I) is under more pressure to maintain (I→E). This requires holding either that everything exists necessarily or that some things are only contingently self-identical. The latter option might be developed by distinguishing 'strong' from 'weak' identity (Oliver & Smiley 2016: §11.2). Weak identity is defined in terms of strong identity ('=') as follows:

$$a \equiv b \ =_{df} \ a = b \ \lor \ (\sim \exists x \ x = a \ \land \sim \exists x \ x = b).$$

It might then be held that strong identity, unlike weak identity, requires existence. Hence, although everything is necessarily weakly self-identical, only things which necessarily exist are necessarily strongly self-identical. (E > I) could then be understood as addressing strong identity, with cases of merely weak identity grounded in the non-existence of the individual(s) in question. (Weak identity would be disjunctive in the way that distinctness might be held to be.)

We might also distinguish 'weak' distinctness (the negation of strong identity) from 'strong' distinctness, defined as follows:

$$a \neq b \ =_{df} \ \sim a = b \land \exists x \ x = a \land \exists x \ x = b.$$

(EE > D) could then be understood as addressing strong distinctness, with cases of merely weak distinctness grounded in the non-existence of the individual(s) in question.

In what follows, I flag those points at which the assumption that identity and distinctness are existence-requiring matters.

Of course, existence facts are far from unique in necessitating identity facts. For any (existence-requiring) properties P and Q, if the necessary connections above obtain, then the following also obtain: for any x, necessarily, if x is P then it is self-identical, and for any distinct x and y, necessarily, if x is P and y is Q then they are distinct. Why, then, should we take existence to be special amongst properties in not only necessitating but also grounding identity/distinctness?

The answer is that only existence is wholly relevant to identity/distinctness.[15] The fact that Socrates is a philosopher, for example, seems irrelevant to his being self-identical, and similarly, the facts that Socrates is a philosopher and Obama is a president seem irrelevant to their being distinct. Indeed, the counterfactuals 'had Socrates not been a philosopher, he would still have been self-identical' and 'had it not been the case that Socrates is a philosopher and Obama is a president, then Socrates and Obama would still have been distinct' are intuitively true. By contrast, given the existence-requiring understanding of identity and distinctness that I am assuming, existence facts do not specify anything beyond what is required for identity facts to hold. Indeed, it is intuitively true both that Socrates would not have been self-identical had he not existed and that Socrates and Obama would not have been distinct had it not been the case that they both existed. That identity facts are not only necessitated by but counterfactually depend on existence facts provides direct evidence for a grounding connection.

Of course, this motivation from necessary connections is defeasible, since there may be alternative explanations for these connections. One way to explain necessary connections is via a common ground. (In terms of Hume's prohibition: commonly grounded facts are not metaphysically distinct in the relevant sense.) For example, there is a necessary connection between the existence of the set {Obama, Trump} and the existence of Obama and Trump's fusion because they are each grounded in the existences of Obama and Trump (and cannot be grounded in any other way). In the case of existence facts and identity facts, however, it is hard to see what the common ground could be. As discussed above, facts involving any property other than existence would seem irrelevant to identity/distinctness, and besides, existence facts involving fundamental entities are naturally regarded as fundamental.

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[15] Thus, existence is *proportional* to identity/distinctness in something like Yablo's (1992) sense.

A more plausible alternative explanation appeals to the notion of essence rather than ground. It might be held that if a proposition 'lies in the nature of' some things, then its lying in their nature explains its necessity (Fine 1994a). Insofar as it lies in the nature of any individual that it is self-identical if it exists, and it lies in the nature of any pair of distinct individuals that they are distinct if they exist, the necessary connections from existence facts to identity facts may flow from the essences of the individuals involved.

Instead of arguing against essence-based explanations of necessities, I want to suggest that an attractive way of developing the idea invokes ground-based explanations (rather than making them redundant).[16] In particular, it might naturally be held that if it lies in the nature of some xx that p, then this explains why the existences of those xx ground [p], which in turn explains why necessarily, if the xx exist, then p. The next section explores this proposal further.[17]

2.2 Essentialism

Many have recognized a distinction between the properties that individuals have accidentally and those they have essentially (or 'by their very nature'). Intuitively, for example, Obama is essentially human but only accidentally a president, and the number 47 is essentially the successor of 46 but only accidentally my favorite number. Moreover, this distinction cannot be straightforwardly captured in terms of the properties that the individual has necessarily (i.e. the properties such that necessarily, if the individual exists, it has them). For example, Obama necessarily has the properties of being such that $2 + 2 = 4$ and being either a president or not a president, but arguably neither is essential to him (Fine 1994a).[18]

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[16] For criticism of essence-based explanations, see Teitel 2019, Robertson Ishii & Atkins 2020:§2 and the references therein.

[17] Rosen (2010:§13) and Dasgupta (2014:567) also suggest that essence facts explain grounding facts, but develop the idea in a different direction to that proposed here.

[18] For aficionados: I have in mind here 'constitutive immediate essence' in Fine's (1994b) terminology (arguably, the pre-theoretic notion).

In light of this, the intuitive idea that an individual's essential properties 'flow automatically' from the individual itself is better captured by the fine-grained notion of ground than the coarse-grained notion of necessitation, as per the following principle:

(E > P) For all x, if x is essentially P, then [Ex] > [x is P].[19]

The principle can be generalized to accommodate the further idea that some things stand in certain relations essentially (e.g., a pair of electrons are essentially duplicates but only accidentally two meters apart):

(EE > R) For all sequences of individuals $\hat{x}$, if $\hat{x}$ are essentially R, then $[[E\hat{x}]] > [\hat{x}$ are R]

(where, for any $\hat{x}$, $[[E\hat{x}]]$ is the plurality of facts that each member of $\hat{x}$ exists).

To illustrate, the following principles plausibly follow from (EE > R):

For all electrons x, [Ex] > [x is negatively charged].

For all sets x, [Ex] > [x is a set].

For all siblings x and y, [Ex], [Ey] > [x and y are siblings].

For any x, [Ex], [E{x}] > [x is a member of {x}].

(E > I) and (EE > D) are naturally regarded in the same spirit as these principles: it is plausible to hold that they are also applications of (EE > R), since the property of self-identity is essential to any individual, and the relation of distinctness is essential to any pair of individuals.

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[19] As an anonymous referee points out, this principle entails that if some entity exists essentially, then its existence is self-grounding. This consequence is not obviously problematic: together with the irreflexivity of ground, it might be thought to yield a compelling argument that no entity exists essentially.

Some points in clarification and defense of (EE > R). Firstly, (EE > R) is compatible with the idea that essence ought to somehow be reduced to ground (or other notions) rather than taken as an additional primitive, and might even be made compatible with skepticism about the notion of essence altogether. For one might hold that our essentialist intuitions really track certain truths about ground, viz. that certain facts hold merely in virtue of the existences of the individuals involved (in cases where this does not follow from any general principles of ground).[20] On this view, (EE > R) might be refined as follows: typically, when a property is intuitively essential to some individuals, its instantiation by those individuals is grounded by their existence. This replacement principle would similarly support (E > I) and (EE > D), since identity and distinctness are intuitively essential.

Secondly, (EE > R) is only able to explain the necessary connections between the existence of some things and their instantiation of their essential properties. This inflexibility might seem to make it less appealing than Fine's proposal that its lying in the nature of some xx that p explains the necessity of p. However, this seems outweighed by the observation that, in typical cases, Fine's proposal requires holding that the individuals in question either exist necessarily or can instantiate their essential properties without existing, or else making seemingly artificial suppositions about what lies in their nature. For example, it requires us to suppose that what is essential to Obama is not that he is human but that he is human if he exists, on pain of holding that Obama either exists necessarily or can be human without existing.[21]

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[20] (EE > R) cannot itself be strengthened into a biconditional reduction: Obama's existence grounds the fact that either Obama exists or snow is purple, but the property of either existing or being such that snow is purple is not essential to Obama.

[21] (EE > R) might also be motivated by Hume's prohibition, insofar as the necessary connection between some things' existence and their essential properties is mysterious if unaccompanied by a grounding connection. It's unclear how strong this motivation is, however, since perhaps it can be argued that if it lies in the nature of some xx that p, then the existence of the xx is *ipso facto* not metaphysically distinct from p in the relevant sense.

Thirdly, (EE > R) coheres neatly with another principle which has been claimed to connect essence to ground (Rosen 2010:119, Kment 2014:163):

(NN > R) For all sequences of individuals $\hat{x}$, if $\hat{x}$ are essentially R, then
[$\hat{x}$ are essentially R] > [$\hat{x}$ are R].

According to (NN > R), for example, Joe the electron's being negatively charged may be explained in terms of Joe's being essentially negatively charged, and 1 being less than 2 may be explained in terms of 1 and 2's standing in that relation essentially. (NN > R) entails (EE > R) given the further principle that existences ground essences (assuming the relevant instances of transitivity):

(EE > NN) For all $\hat{x}$, if $\hat{x}$ are essentially R, then [[E$\hat{x}$]] > [$\hat{x}$ are essentially R].

This principle is intuitively plausible since some things essentially being some way requires their existence and nothing more. For example, if Joe hadn't existed he wouldn't have been essentially negatively charged, but given that he does exist nothing more is needed to make it the case that he has the essence he does.[22]

Finally, it might be thought that Joe the electron is essentially negatively charged, and yet the fact that Joe is negatively charged is fundamental, so not grounded in Joe's existence, contra (EE > R). However, there seems to be a tension between the claim that Joe is essentially negatively charged and the claim that Joe is fundamentally negatively charged.[23] For if Joe is essentially negatively charged, then his being negatively charged seems explainable: it can be explained in terms of his essence (as per (NN > R)), or perhaps merely in terms of his existence (as per (EE > R)). But if he

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[22] If things essentially have the essences they do, then (EE > NN) itself follows from (EE > R).

[23] See Wang 2019 for discussion of a similar tension having to do with the essences of fundamental properties.

is fundamentally negatively charged, then his being negatively charged does not admit of any explanation.[24]

Assuming that facts involving the instantiation of fundamental properties by fundamental entities are fundamental, there are two ways of resolving this dilemma which maintain (EE > R). First, we might deny that electrons have any fundamental properties essentially: either the property of being negatively charged is non-fundamental or it is not essential to electrons. Second, we might deny that electrons are fundamental entities: perhaps electrons exist in virtue of some fundamental, essence-free entities. On this picture, it may be fundamental that there is a (non-essentially) negatively-charged entity, in virtue of which there is an essentially negatively-charged electron.

2.3 Set formation

An alternative way of motivating (E > I) and (EE > D) is by appeal to the role of existence facts in grounding the existence of corresponding sets:

(SING) For all x, [Ex] > [E{x}].

(DOUB) For all distinct x and y, [Ex], [Ey] > [E{x, y}].

As per SING, the existence of Obama grounds the existence of the singleton set {Obama}. As per DOUB, the existences of Obama and Trump jointly ground the existence of the doubleton set {Obama, Trump}.[25]

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[24] One might deny the latter, on the basis that we should distinguish 'ground-based' explanation from 'essence-based' explanation (Glazier 2017:2875), where fundamental facts may admit of the latter. But if essence-based explanation is granted this special dispensation, why not 'existence-based' explanation also? Either way, Joe's being negatively charged would fail to be fundamental in the sense of lacking any metaphysical explanation.

[25] For any plural term NN, I take the result of enclosing it in set-brackets to be a name for the set whose elements are all and only the individuals denoted by NN, where this description fixes the name's reference but is not itself 'built into' the corresponding existence fact. If one views these set-denoting terms as short

These principles suggest the following idea. If existence facts are capable of outputting a singleton set or doubleton set (as the case may be), then they should likewise be capable of outputting the relation of identity or distinctness between the individuals in question (as the case may be). In this way, the existence facts' ability to generate sets indicates that the identity/distinctness of the individuals in question must already be 'encoded' within them.

We can capture this idea with the following argument from (SING)/(DOUB) to (E > I)/(EE > D):

> i) If some facts ground the existence of a set, then they ground the fact that the set
> has the cardinality it does.

> ii) If some facts ground a (finite) set's cardinality, then they contain a ground for
> the identity facts involving its members.

By i), since [E(Obama)] grounds [E({Obama})], [E(Obama)] also grounds [|{Obama}| = 1]. So by ii), since [E(Obama)] grounds [|{Obama}| = 1], it also grounds [Obama = Obama]. Similarly: by i), since [E(Obama)], [E(Trump)] ground [E({Obama, Trump})], they also ground [|{Obama, Trump}| = 2]. By ii), since [E(Obama)], [E(Trump)] ground [|{Obama, Trump}| = 2], they also contain a ground for [Obama ≠ Trump]. (Since neither plausibly grounds this fact alone — assuming that distinctness requires existence, they do not even necessitate it alone — it follows that they jointly ground it.)

In support of i), it might be argued that the cardinality of a set is essential to it, and that any facts which ground the existence of an entity also ground all its essential features. Intuitively, for example, since Obama is essentially human, no facts which generate an individual whilst 'leaving

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for definite descriptions instead, one could re-express the rules as follows: for all $\hat{x}$ and all y, if y = {$\hat{x}$}, then [[E$\hat{x}$]] > [Ey].

open' whether that individual is human can be said to have generated Obama (any more than a portrait which leaves open whether its subject is human can be said to portray Obama).[26]

Note that this principle follows from the principle (EE > R) discussed above (assuming the relevant instances of transitivity): if something's existence grounds its essential properties, then whatever grounds its existence thereby in turn grounds those essential properties. But it does not require (EE > R); indeed, it constitutes a natural fallback explanation for the necessary connection between a non-fundamental entity's existence and its essential features. To see this, consider how things would have to be for it to fail. Suppose that some facts XX ground Obama's existence but fail to ground his humanity. Then some further facts YY (perhaps together with XX) ground his humanity. But this threatens to make the necessary connection between Obama's existence and his humanity mysterious: why couldn't XX obtain in the absence of YY (and in the absence of any other facts making Obama human?)

In support of ii), it is plausible that the only grounding path leading to (finite) cardinality facts must go via all the identity facts involving the set's members. This follows from Fine's (2012) rules for grounding logically complex facts, given the following natural way of regimenting claims of the form

$$|S| = N$$

where N denotes the natural number n and S denotes some set:

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[26] This argument may perhaps be resisted by means of Fine's (1994: §5) distinction between mediate and immediate essence. For it might be claimed that:

> a) Whatever grounds a thing's existence need only ground its immediately essential properties.
> b) The immediate essence of a set is exhausted by its having the members it does, with its cardinality deriving only from the distinctness relations which are themselves immediately essential to those members.

There are some $x_1, \ldots, x_n$ such that: a) they are each members of S; b) they are pair-wise distinct; c) each of S's members is identical to one of them.

Part c) of this schema should be regimented as the restrictedly general claim '$\forall x \ (x \in S: (x = x_1 \vee \ldots \vee x = x_n))$', to avoid the cardinality fact being grounded in seemingly extraneous facts of the form '$[a \notin S]$'.[27]

Thus, for example, '$|\{Obama\}| = 1$' is regimented as follows:

$$\exists x \ (x \in \{Obama\} \wedge \forall y \ (y \in \{Obama\}: (y = x))).$$

Following Fine's rules, the corresponding existential fact is grounded in its instance:

$$[Obama \in \{Obama\} \wedge \forall y \ (y \in \{Obama\}: (y = Obama))]$$

which is partially grounded in its right-hand conjunct. This conjunct in turn is partially grounded in its instance [Obama = Obama]. Hence, if [E(Obama)] grounds the cardinality fact, it must do so via this identity fact.

Meanwhile, '$|\{Obama, Trump\}| = 2$' is regimented as follows:

$$\exists x \ \exists y \ (x \in \{Obama, Trump\} \wedge y \in \{Obama, Trump\} \wedge x \neq y \wedge$$
$$\forall z \ (z \in \{Obama, Trump\}: (z = x \ \vee z = y))).$$

By Fine's rules, the corresponding existential fact is grounded in its instance:

$$[Obama \in \{Obama, Trump\} \wedge Trump \in \{Obama, Trump\} \wedge Obama \neq Trump \wedge$$
$$\forall z \ (z \in \{Obama, Trump\}: (z = Obama \vee z = Trump))].$$

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[27] On restrictedly general facts and their grounds, see Skiles 2015:§4, Fine 2017:568, Baron-Schmitt 2021.

This conjunction is partially grounded in its conjunct [Obama ≠ Trump]. Hence, if [E(Obama)], [E(Trump)] ground the cardinality fact, they must do so via this distinctness fact.[28]

3. The Puzzle

In addition to providing an elegant and intuitive solution to the otherwise thorny question of what grounds identity facts, (E > I) and (EE > D)

> i) explain the necessary connections between existence and identity/distinctness;
> ii) plausibly follow from a general connection between essence and ground;
> iii) are implicated in other principles describing what existence facts ground.

However, (E > I) and (EE > D) generate a tantalizing puzzle, raised by Alexis Burgess (2012).[29] In both the case of identity and the case of distinctness, the entities in question exist. So why does

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[28] Let me briefly outline a further argument for (EE > D) in particular, along similar lines. The following grounding principles are plausible:

$$\text{For all distinct x and y, [Ex], [Ey] > [Ex \& Ey].}$$
$$\text{For all distinct x and y, [Ex], [Ey] > [E(x + y)]}$$

(where x + y is the mereological fusion of x and y).
Now consider some grounding fact which is an instance of one of these principles, such as:

$$\text{[[E(Obama)], [E(Trump)] > [E(Obama) \& E(Trump)]].}$$

It is plausible that whatever grounds this grounding fact must also ground [Obama ≠ Trump], since this distinctness fact is crucial to the obtaining of the grounding fact (without it, the grounds and grounded would not be suitably distinct). On standard views, (factive) grounding facts are grounded in the grounds, perhaps together with some facts about essences and/or metaphysical laws (Bennett 2011, deRosset 2013, Rosen 2010, Fine 2012, Dasgupta 2014, Wilsch 2016). Applying these views to the grounding fact above, the only facts in the proposed grounds which could plausibly ground the distinctness fact are [E(Obama)] and [E(Trump)] themselves.

[29] A similar problem is pressed by Erica Shumener (2020b:§7).

their existence ground their identity in some cases, and their distinctness in others? We would like to say: their existence grounds their identity when they are identical, and their distinctness when they are distinct. But this seems problematically circular: it is as if the 'grounding machine' is able to check which fact gets outputted in order to decide which fact to output![30]

Vivid as this puzzle is at an intuitive level, it is not obvious how to distil it into a precise argument. This section considers three attempts to do so. Instead of (E > I), some of these arguments target the following principle:

$$(EE > I): \text{For all identical x and y, } [Ex], [Ey] > [x = y]$$

This principle follows from (E > I), given the natural assumptions that

i) when x and y are identical, [x = y] is [x = x], and [Ex], [Ey] is [Ex];

ii) '>' is transparent: it is not sensitive to how facts are represented.

3.1 Contingency

The following principle is a natural strengthening of the idea that grounds necessitate:

Internal Necessitation: If, for some individuals x, y, intrinsic properties F, G, and qualitative relation R, [Fx], [Gy] > [Rxy], then for any individuals x, y, necessarily, if Fx and Gy then Rxy.

Internal Necessitation says that if a qualitative relation between some objects is grounded in their being some way individually, then any other objects which are that way individually must also stand in the same relation. For example, if [Al is 1kg] and [Bea is 2kg] ground [Al is lighter than

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[30] Burgess (2012:92) and Shumener (2020b:2092) note that relying on the identity/distinctness of the existence facts in question is bump-shifting: their identity/distinctness must itself be accounted for (and is plausibly grounded in the identity/distinctness of the entities involved!)

Bea], then for any objects x and y, x's being 1kg and y's being 2kg necessitates x's being lighter than y. Intuitively, the necessitation in Al and Bea's case is not to do with those particular individuals, but to do with the relevant properties quite generally.[31]

Internal Necessitation entails that if the existence of some x and y grounds their being identical, then any existing x and y must be identical, and likewise, if the existence of some x and y grounds their being distinct, then any existing x and y must be distinct![32] Hence, Internal Necessitation excludes both (EE > I) and (EE > D).

But Internal Necessitation faces counterexamples from other cases turning on the identity/distinctness of the individuals involved. For example, consider the relation of both being square (i.e. $\lambda x\, \lambda y.\, x\ is\ square \wedge y\ is\ square$). Take some square, S. Plausibly, [S is rectangular] and [S is equilateral] grounds [S is square]. In turn, [S is square] either grounds or is identical to [S and S are both square] (i.e. [$\lambda x\, \lambda y.\, x\ is\ square \wedge y\ is\ square$ (S, S)].)[33] Hence, [S is rectangular] and [S is equilateral] ground [S and S are both square]. But now consider an equilateral triangle, T. Clearly, it is not the case, and hence not necessarily the case, that if S is rectangular and T is equilateral, then S and T are both square.

Or consider the relation of having a joint charge greater than e (i.e. being an x and y whose mereological fusion has a charge greater than e). Plausibly, for any two electrons A and B, [A has charge e] and [B has charge e] ground [A and B have a joint charge greater than e]. But clearly, it is not the case, and hence not necessarily the case, that if A has charge e and A has charge e, then A and A have a joint charge greater than e (A and A have a joint charge of e, since the mereological fusion of A and A is just A).

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[31] Allowing F and G to be extrinsic or R to be non-qualitative leads to counterexamples.

[32] Assuming that existence is an intrinsic property and identity/distinctness are qualitative relations.

[33] [S is square] either grounds or is identical to [S is square and S is square], which in turn either grounds or is identical to [$\lambda x\, \lambda y.\, x\ is\ square \wedge y\ is\ square$ (S, S)].

Such counterexamples suggest that Internal Necessitation should be divided in two:

>Monadic Internal Necessitation: If, for some individual x, intrinsic properties F, G, and qualitative property P, [Fx], [Gx] > [Px], then for any individual x, necessarily, if Fx and Gx then Px.

>Dyadic Internal Necessitation: If, for some distinct individuals x, y, intrinsic properties F, G, and qualitative relation R, [Fx], [Gy] > [Rxy], then for any distinct individuals x, y, necessarily, if Fx and Gy then Rxy.

These replacement principles make no trouble for (EE > I) and (EE > D).[34]

3.2 Contrastivity

A natural way of expressing the puzzle about (E > I) and (EE > D) is that nothing explains what makes identical objects identical *rather than distinct*, or what makes distinct objects distinct *rather than identical*. It seems that nothing could fill in the blanks in the following contrastive schemas:

>[Ex] rather than *??* grounds [x = x] rather than [x ≠ x].

>[Ex], [Ey] rather than *??* ground [x ≠ y] rather than [x = y].

To contrast with the existence facts, the missing contrast would presumably have to involve the individual(s) in question not existing. But any condition involving their non-existence would not

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[34] The formulation of the puzzle in terms of Fine's (2016) notion of 'generic grounding' might be seen as a version of this contingency concern (n.9): roughly, we can't formulate (E > I)/(EE > D)) as unrestricted generic grounding claims since they would entail that every pair of things is identical/distinct. Converting this observation into an argument against (E > I)/(EE > D) turns on the connection between non-generic and generic grounding. Although I cannot explore the issue in any depth here, let me note that the proponent of (E > I)/(EE > D) may well reject the idea that any non-fundamental relation can be generically grounded. For example, they might hold that the relations of parthood or membership may — like identity and distinctness — be involved in facts which are grounded in the existences of the entities involved.

plausibly ground their being identical/distinct, since the latter conditions (I have been assuming) each require their existence!

It is thus tempting to see the puzzle about (E > I) and (EE > D) as somehow rooted in a difference-making or contrastive conception of ground.[35] The difficulty lies in establishing a general principle which yields an argument against (E > I)/(EE > D) from the failure of the contrastive schemas above. For example, let XX* be 'alternatives' to some facts XX just in case it is impossible for XX and XX* to obtain. Then the following principle is a natural way of capturing a difference-making conception of ground:

> (Contrasts) If XX > Y, then there are some alternatives to XX, XX*, and some alternative to Y, Y*, such that XX rather than XX* ground Y rather than Y*.

(E > I) and (EE > D) plausibly satisfy Contrasts, since it is plausible that [Ex] rather than [~Ex] grounds [x = x] rather than [~(x = x)], and that [Ex], [Ey] rather than [~Ex], [Ey] ground [x ≠ y] rather than [~(x ≠ y)]. (Recall that I am regarding identity facts as existence-requiring, so that [x = y] and [x ≠ y] are not each other's negations.)[36]

In order to exploit the failure of the schemas above, the general principle must require that the alternative to the explanandum be a 'positive' fact, involving the instantiation of an alternative relation by the individuals in question (as opposed to their merely failing to instantiate the relation in question). Call relations R and R* 'alternatives' when i) some individuals possibly stand in R,

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[35] For defense of this conception, see Schaffer 2012, 2016; for critical discussion, see Krämer & Roski 2017. The contrastive locution 'XX rather than XX* ground Y rather than Y*' (or 'the difference between XX and XX* makes the difference between Y and Y*') may intuitively be understood in terms of non-contrastive ground as meaning that XX grounds Y and, had XX* obtained instead of XX, they would have grounded Y* instead (where the latter might be understood in terms of 'non-factive ground').

[36] If distinctness does not require existence, Contrasts would yield an argument against (EE > D). But the argument generalizes to any case in which some 'negative' fact is grounded merely in the existence of the individuals involved.

ii) some individuals possibly stand in R*, and iii) no individuals possibly stand in both R and R*.[37] Then the required principle is:

> (Positive Contrasts) If relation R has an alternative, and XX > [Rxy], then there are some alternatives to XX, XX*, and some alternative to R, R*, such that XX rather than XX* ground [Rxy] rather than [R*xy].[38]

To illustrate, consider once more [Al is 1kg] and [Bea is 2kg] grounding [Al is lighter than Bea]. This obeys Positive Contrasts since, for example, it is plausible that [Al is 1kg], [Bea is 2kg] rather than [Al is 3kg], [Bea is 2kg] ground [Al is lighter than Bea] rather than [Al is heavier than Bea].

Positive Contrasts excludes both (E > I) and (EE > D), since for no relation R* (in the intended 'positive' sense) is it plausible that [R*xy] would have been grounded by any condition involving x or y's non-existence. However, the argument over-generalizes: any case in which the mere existence of some individuals grounds their standing in some relation violates Positive Contrasts. As discussed in §2.2, (E > I) and (EE >D) are naturally motivated by an essentialist view which envisages many similar principles, such as:

> For all electrons x, [Ex] > [x is negatively charged].

> For all electrons x and y, [Ex], [Ey] > [x and y are duplicates].[39]

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[37] If this is to capture the idea, 'relation' must be understood to exclude putative 'negative relations', so that there is no alternative relation R* for which [R*xy] = [~(Rxy)] (cf. Stalnaker 1977).

[38] The restriction to relations which have alternatives is required to avoid entailing that all facts involving the instantiation of alternative-less relations — such as the relation of co-existing, or being such that $2 + 2 = 4$ — are ungrounded.

[39] Due to their scope-restrictions, such principles also violate Monadic/Dyadic Internal Necessitation: excluded objects may exist without instantiating the relevant property/relation. This may be reason to prefer (E > I)/(EE > D) to other essentialist principles.

This general conflict with the essentialist view suggests that Positive Contrasts fails to capture anything distinctively problematic about (E > I) and (EE > D).

3.3 Circularity

(EE > I) and (EE > D) are restricted in their scope: the first to *identical* x and y, and the second to *distinct* x and y. But this scope-restriction is itself the condition being grounded. This suggests a kind of circularity: the scope-restriction must be satisfied for the rule to apply, but the scope-restriction is only satisfied because the rule applies.

This is not a straightforward form of circularity: the identity/distinctness of the individuals in question is not itself grounding their identity/distinctness. But their identity/distinctness does seem to be playing an indirect role: intuitively, it is only because they are identical/distinct that their existence grounds their identity/distinctness. This seems to violate the following principle:[40]

> (Non-Circularity) No fact partially explains how it is grounded
> i.e. for any XX, Y such that XX > Y, Y does not partially explain [XX > Y].

The indirect explanatory role played by the identity/distinctness facts in (EE > I)/(EE > D) seems analogous to that played by the scope-restrictions in the following competitor principles:

> *For all sets* x and y, if $\forall z$ ($z \in x \leftrightarrow z \in y$), then [$\forall z$ ($z \in x \leftrightarrow z \in y$)] > [x = y].

> *For all persons* x and y, if x is not psychologically continuous with y, then
> [x is not psychologically continuous with y] > [x ≠ y].

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[40] Shumener (2020b: n.43) notes this issue, citing Tobias Wilsch.

In these cases, it is natural to hold that the satisfaction of the scope-restriction serves as an 'enabler' which helps to explain any application of the rule.[41] For example, [∅ is a set] enables [∀z (z ∈ ∅ ↔ z ∈ ∅)] to ground [∅ = ∅], and hence [∅ is a set] partially explains this grounding fact.

The resulting argument from circularity is a natural successor to the arguments from contingency and contrastivity. The proponent of these earlier arguments is likely to view the satisfaction of the scope-restrictions in essentialist grounding rules as playing a direct role in explaining the grounded facts. For example, in the light of Internal Necessitation and Positive Contrasts, the principle

> For all electrons x and y, [Ex], [Ey] > [x and y are duplicates].

is naturally revised to:

> For all electrons x and y, [x is an electron], [y is an electron] > [x and y are duplicates].

But even if we side with essentialists in rejecting the need for such revisions, it seems plausible that these scope-restrictions play some — albeit, indirect — role in explaining the grounded facts, by enabling them to be grounded in the way they are. The argument from circularity succeeds even allowing that this explanatory role is only indirect.

However, given that (EE > I) can be replaced by (or reformulated as) the unrestricted (E > I), this argument seems ineffective against the idea that an individual's existence grounds its self-identity. Moreover, it doesn't seem to make dialectical progress against (EE > I)/(EE > D) given their essentialist motivation. For essentialists likely hold that in many other cases the satisfaction of the scope-restriction is itself essential to the individuals in question. We have already seen some examples above, to which we might add:

> *For all concrete objects* x, [Ex] > [x is concrete].

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[41] Perhaps better called an 'ennobler', in Yablo's (2004) terminology: see Baron-Schmitt (2021).

For all numbers x *and* y *such that* x *is less than* y, [Ex], [Ey] > [x is less than y].[42]

An essentialist might take these cases to show that Non-Circularity is an inappropriate constraint. However, to my mind, a more plausible response takes these cases to indicate that the satisfaction of the scope-restriction plays no role in explaining those grounding facts which are instances of essentialist grounding rules. This response can be developed by offering alternative explanations. Here, essentialists may simply adopt one of the proposals that have been defended in other cases (and which might be taken to motivate Non-Circularity in the first place). For example, they might hold that what explains the instances of these rules is simply the existence facts themselves; thus, what explains [[Ex] > [x is an electron]] is simply [Ex]. On this view, scope-restrictions may be necessary for stating essentialist grounding rules, but they play no role in explaining their instances. Alternatively, essentialists might hold that what explains the instances of these rules is that the grounded fact in question has a special status of being essential to those entities which satisfy it; thus, what explains [[Ex] > [x is an electron]] is not the fact that x is an electron but rather the fact that x is *essentially* an electron. Finally, given the view that grounding facts are explainable in terms of their subsumption under general metaphysical laws, essentialists may explain essentialist grounding facts by citing (EE > R) as one such law. On this view, what explains the particular grounding fact [[Ex] > [x is an electron]] is the general law that a thing's essential properties are grounded in its existence (perhaps together with the auxiliary fact that x is essentially an electron).[43]

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[42] These rules may be paired with complementary rules exhibiting a similar pattern to (EE > I)/(EE > D):

For all non-concrete objects x, [Ex] > [x is non-concrete].

For all numbers x *and* y *such that* x *is not less than* y, [Ex], [Ey] > [x is not less than y].

[43] The circularity concern may be articulated in terms of Wilsch's (2016) 'deductive-nomological account' of ground. The basic idea is that the grounds together with some metaphysical law are non-redundant premises in a proof of the grounded proposition. When a metaphysical law has a scope-restriction, the satisfaction of this restriction must feature in the corresponding derivation. But the grounded proposition cannot itself feature in this derivation without rendering all other premises redundant. Hence, propositions about distinctness cannot be non-redundantly derived from (EE > D).

Now, no such proposals seem to scratch the explanatory itch we started with: if one is wondering why the existences of Obama and Trump ground their distinctness, it hardly removes the mystery to be told that it is because they exist, because they are essentially distinct, or because it is a general law that some things' existences ground their essential relations. But this does not constitute any special reason to resist such proposals as they apply to essentialist rules: if you are puzzled about why Socrates generates {Socrates}, none of these proposals are likely to illuminate this case either.[44] These proposals are therefore just as available in the case of (EE > I)/(EE > D) as they are elsewhere.

4. Conclusion

I have provided some positive arguments for the view that identity facts are grounded in existence facts, and I have argued that the challenge raised by Burgess (2012) does not yield any persuasive objection to it. A theme of my discussion has been that individuals' essential natures — such as their identity/distinctness — govern how their existences generate certain facts, including facts about their natures. As Burgess's challenge brings out, this feels unsatisfying: we are left with the sense that facts grounded in this way have not been properly explained. In conclusion, I would like to address this residual dissatisfaction. My diagnosis is that we should distinguish 'worldly' from 'representational' explanation: the itch we feel concerns the latter, whereas the proponent of (EE > I)/(EE > D) is only offering the former.

However, the essentialist may view (EE > R) as the underlying law. This would allow the distinctness of two individuals to be derived from their existences, given (EE > R) together with the 'auxiliary premise' that they are essentially distinct. They might, more generally, regard grounded propositions as derivable from their grounds together with metaphysical laws and auxiliary essence-statements. (This is suggested by Dasgupta's (2016) idea that essence-statements stand to ground as definitions stand to proof: they may be used as steps in derivations of grounded facts, but are not themselves apt to be derived.)

[44] The complaint cannot be that the grounding facts in question would not have obtained in the absence of the grounded fact, since presumably this is generally true: had {Socrates} not existed, it would not have been grounded in Socrates's existence!

As I conceive it, worldly explanation traces worldly relations of determination: it is successful insofar as it describes the objective structure of determination within which the explanandum is embedded. Representational explanation, meanwhile, aims to convey understanding and dispel wonder: it is successful insofar as it illuminates the phenomenon in question given the interests, knowledge and capacities of its intended audience. Clearly, these two kinds of explanation are closely related: an important way to convey understanding of some phenomenon is to characterize the way it is determined. In some sense, worldly explanation might even be regarded as the de-psychologized 'objective core' of representational explanation.[45] But worldly and representational explanation differ in important ways.

Crucially for our purposes, worldly explanation is transparent, whereas representational explanation takes place 'under a guise'. The way a fact is expressed makes no difference to the determination relations it stands in, but is crucial when it comes to conveying understanding. To illustrate, consider the following pairs of explanations:

1. Someone sees Hesperus because
   a. Ptolemy sees Hesperus.
   b. Ptolemy sees Phosphorus.

2. Water exists or snow is purple because
   a. Water exists.
   b. H_2O exists.

In each pair, assuming the relevant factual identifications, the second explanation is a successful worldly explanation if the first is. But, for audiences who are ignorant of these identifications, only the first member of each pair could succeed as a representational explanation. Whilst the first

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[45] This is a natural interpretation of 'explanatory realism': the idea that explanations function to characterize worldly determination structure — see e.g. Lewis 1986b, Kim 1988, Ruben 1990, Schaffer 2016.

member expresses the explanans-fact in a way that highlights its connection to the explanandum-fact, and hence conveys understanding, the second obscures this connection.[46]

Instances of (EE > I)/(EE > D) are like the second members of the pairs above: the explanans-fact is expressed in such a way that the connection to the explanandum-fact is obscured, and understanding is not conveyed. This is because one may know the general principles (EE > I)/(EE > D), understand two names perfectly well, know that their referents exist, and yet be unable to tell whether their referents are identical. Thus, being told merely that *a* and *b* exist fails to reveal the connection to their identity/distinctness. To see this connection, we need to know whether the expressions in question co-refer, and this cannot be 'read off' the names themselves. In the case of identity facts, however, unlike the examples above, the obscurity seems deep and permanent: we cannot recast the explanation in a way which reveals the connection. No audience who does not already understand the identity fact in question can be apprised of independently understandable factual identifications which allow them to understand it on the basis of the existence facts.[47]

But even the in-principle nature of this barrier to representational explanation does not preclude worldly explanation. We can imagine explanations cast in a Lagadonian language, which uses each individual as a name for itself. For a cosmic mind that 'thinks' in such a language, referring expressions wear the distinctness of their referents on their sleeves, allowing identity facts to be 'understood' in terms of existence. Far from smuggling the explanandum into the explanans, this language would reveal what the explanans determined all along. (We might, more generally, think of some things' essential natures as corresponding to what may be 'read off' a Lagadonian symbol.)

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[46] Related distinctions have been made in the grounding literature. For example, Correia (2010:257) distinguishes 'conceptual' and 'worldly' conceptions of facts, arguing that grounding is concerned with the latter. By contrast, Jenkins (2011:273) defends the view that 'mode of presentation' matters to grounding claims, and Fine (2012:47) allows that the truth of grounding statements depends not only on the propositions expressed by the sentences involved 'but also upon *how* these propositions are expressed'.

[47] Our understanding of identity facts ultimately rests on conceptually basic identities involving primitive symbols, which constitute stopping-points for representational explanation, beyond which no deeper understanding is available (cf. Dorr 2016:41).

Moreover, understanding (EE > I)/(EE > D) as providing worldly explanations shows that apparently more satisfying alternatives needn't be rivals. Just as there can be successful worldly explanations which fail as representational explanations, there can also be successful representational explanations which fail as worldly explanations. Consider the following:

      3. All vixens are foxes because
            a. To be a vixen is to be a female fox.
            b. To be a vixen is to be a vixen.

      4. For all x and y, if x is below y, then y is above x because
            a. For x to be below y is for y to be above x.
            b. For x to be below y is for x to be below y.

There is clearly a sense in which the first members of each pair convey understanding. But, assuming the relevant factual identifications, these explanations are purely representational: since we should reject the second member as a worldly explanation, we should also reject the first.

Rather than characterizing how the explanandum-fact is determined, these explanations work by re-presenting it under an antecedently understood guise. For example, the information that to be a vixen is to be a female fox allows us to understand (3) as the less mysterious [all female foxes are foxes]. Similarly, the information that for x to be below y is for y to be above x allows us to understand (4) as the less mysterious [for all x and y, if x is below y, then x is below y].

As I conceive them, proposals to ground identity facts in 'substantive' relations work similarly. Here is an illustrative case:[48]

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[48] Similar points apply to the grounding of identity/distinctness between persons in psychological continuity between their temporal stages, between numbers in equinumerosity between sets, between properties in their causal powers, and so on. The point applies to both 'one-level' and 'two-level' criteria (Williamson 1990), where these criteria are understood as grounding claims.

(SETS) For any sets x and y:

If $\forall z \; (z \in x \leftrightarrow z \in y)$, then: $[\forall z \; (z \in x \leftrightarrow z \in y)] > [x = y]$.

If $\exists z \; \neg(z \in x \leftrightarrow z \in y)$, then: $[\exists z \; \neg(z \in x \leftrightarrow z \in y)] > [x \neq y]$.

The idea that some relation between x and y grounds their identity/distinctness seems perplexing when construed as a worldly explanation: intuitively, the identity of the relata must be settled prior to the business of hanging relations between them.[49] There is a clear sense, however, in which instances of (SETS) nonetheless convey understanding: they allow us to re-present the explanandum-fact under a less mysterious guise. In the case of identity, these explanations reveal that for some individuals xx (the members of both x and y) the explanandum-fact in question is just $[\{xx\} = \{xx\}]$. And in the case of distinctness, they reveal that for some plurality xx (the members of x) and some distinct plurality yy (the members of y), the explanandum-fact is just $[\{xx\} \neq \{yy\}]$. In each case, understanding that the fact may be expressed in this way is tantamount to understanding the fact itself: if the audience persists in failing to understand why the fact thus exhibited obtains, nothing can be done.[50]

In this way, alternatives to (EE > I)/(EE > D) which appear well-placed to scratch the explanatory itch are better understood as providing complementary representational explanations than rival worldly explanations. We needn't maintain that these alternatives are not appropriately 'metaphysical' in character: (SETS), for example, plausibly illuminates the metaphysical nature of identity facts involving sets (and of sets themselves).[51] But the significance of such explanations should be distinguished from that of the worldly explanations which I have been defending, according to which identity is determined by mere existence.

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[49] Cf. Lewis 1986a:192–3, Salmon 1987:517, Epstein 2015:181.

[50] In the case of (3a) and (4a), the representational explanation can be completed by characterizing the way in which the fact (under its new guise) is determined. By contrast, identity might seem to be a 'limit case' in the sense that knowing how identity facts are determined adds nothing to our understanding.

[51] Similarly, substantive grounds for personal identity promise to illuminate the metaphysical nature of persons, and so on.

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