Philosophical Studies
https://doi.org/10.1007/s11098-024-02124-8

Indiscernibility and the grounds of identity

Samuel Z. Elgin[1]

Accepted: 10 February 2024

Abstract
I provide a theory of the metaphysical foundations of identity: an account of what grounds facts of the form $a = b$. In particular, I defend the claim that indiscernibility grounds identity. This is typically rejected because it is viciously circular; plausible assumptions about the logic of ground entail that the fact that $a = b$ partially grounds itself. The theory I defend is immune to this circularity.

Keywords Grounding · Identifications · Identity of Indiscernibles · Higher-Order Metaphysics

"Identity is utterly simple and unproblematic. There is never any problem about what makes something identical to itself; nothing can ever fail to be."—(Lewis 1986, pp. 192–193).

1 Introduction

Everything is identical to itself. Socrates is identical to Socrates and Gyges's ring is identical to Gyges's ring. This is no mere contingency: some truth of the actual world that is false of others. Nothing could fail to be identical to itself. Nor is 'everything' restricted to concrete objects like philosophers and pieces of jewelry. Every property, relation, and set is self-identical as well.

Samuel Z. Elgin
elgin.samuel@gmail.com

[1] University of California, San Diego, USA

Published online: 10 April 2024

Some hold that nothing makes this so.[1] Identifications seem to be excellent stopping points for metaphysical explanation; they do not cry out for explanation themselves.[2] When confronted with a question like 'Why is Hesperus Phosphorus?' it is tempting to respond with epistemological or etymological information: with why we ought to believe that Hesperus is Phosphorus—or, perhaps, with why 'Hesperus' and 'Phosphorus' co-refer. But this is not the information that metaphysicians seek. We ask what it is *in virtue of* that Hesperus is Phosphorus—and it is far from obvious what an answer to that question even looks like.

Nevertheless, a growing number of philosophers deny that identifications are fundamental. Many are motivated by Purity: a principle that holds that the constituents of fundamental facts are themselves fundamental.[3] Because everything is self-identical, everything is a constituent of an identification. If identifications were fundamental, Purity would—quite implausibly—entail that everything is fundamental.[4] The challenge, for those who would avoid universal fundamentality, is to determine the grounds of identification.

Over the past decade, philosophers have defended a number of competing views. Fine (2016) argues that identifications are zero-grounded but may have substantive grounds; Litland (2023) argues that they are *only* zero-grounded; Wilhelm (2020) argues that they are grounded in the entities that occur within them; Rubenstein (2024) argues that they are grounded in *the existence of* the entities that occur within them; and Shumener (2020a) argues that they are grounded in the way their constituent objects stand in certain qualitative relations.[5]

One view has often been discussed yet has never been endorsed; the fact that $a = b$ is grounded in the fact that a and b bear all of the same properties. In a slogan: indiscernibility grounds identity. This strikes me as extremely natural—but it faces a serious problem. Plausible assumptions about the logic of ground entail that the fact that $a = b$ partially grounds itself—in violation of the irreflexivity of ground. The aim of this paper is to develop a theory of identity via indiscernibility that is immune to circularity.

The structure is as follows. I begin with a brief discussion of the language that the puzzle and resolution are expressed in, before deriving the circularity I aim to avoid. I then engage in an apparent digression: discussing an independent problem for

[1] Perhaps the most canonical example of this is the Lewis (1986) passage quoted above—but see Dorr (2016) for an argument along these lines. Dasgupta (2016) defends the related view that identifications are not apt for metaphysical explanation.

[2] Throughout this paper, an 'identification' is any fact of the form $a = b$—including both first-order and higher-order facts of this form.

[3] Arguably, the most canonical discussion of Purity occurs in Sider (2011). However, see Fine (2010a), deRosset (2013), Raven (2016) and Litland (2017) for other defenses of Purity—and Shumener (2020a, 2020b), Rubenstein (2024) and Litland (2023) for those who cite Purity as a reason to reject the fundamentality of identifications. For an argument against Purity, see Barker (2023).

[4] There are reasons to reject universal fundamentality besides its inherent implausibility. Schaffer (2015) argues that fundamental entities are ontologically costly in a way that derivative entities are not. If this is so, then universal fundamentality is extremely ontologically costly.

[5] Much of Rubenstein's paper consists of a challenge to the existence view posed by Burgess (2012). For a response to Wilhelm, see Lo (2020) and Mehta (2023). For a detailed discussion of many of these views, see Shumener (2017).

structured propositions. The digression is relevant, as resources developed in response to this problem provide the resources for a noncircular theory of identity. I go on to discuss the grounds of identity and distinctness, before addressing the virtues of the resulting account. While its primary benefit is that it avoids circularity, it is attractive for other reasons. It sidesteps concerns about irrelevant properties and totality facts and, most notably, explains why identity logically functions as it does. I close by discussing potential objections. Some (like the fact that this account precludes opacity) are bullets that I bite. Others (like the concern that there is covert circularity) are ultimately misguided.

2 The language and logic of ground

Few topics have entered the metaphysical vernacular as rapidly as grounding.[6] Indeed, talk of ground has become so ubiquitous that, were I to restrict myself to the standard formalism, little introduction would be needed. Unfortunately, I ultimately require more expressive power than is typical—so it is worthwhile to include some brief remarks on the language and logic of ground.

Theories of ground are often expressed in a simple propositional language with the binary connectives $\wedge$ and $\vee$, and a variably polyadic operator $<$—occasionally supplemented by propositional quantifiers. These resources are insufficient for my purposes. I require not only propositional (or even first-order) but *higher-order* quantifiers: ones that allow for quantification that binds variables of any syntactic category.

There are several reasons why higher-order quantification is needed. One way to regiment the claim that indiscernibility grounds identity is that, for every property F, Fa holds just in case Fb holds. This regimentation explicitly quantifies over properties themselves—so we require a language capable of that quantification from the outset. Additionally, a fully general theory of identity applies to higher-order (as well as to first-order) cases. While we can (and often do) assert that objects are identical, we also assert that properties, relations, and the like are identical. A philosopher might claim 'To be just is to have each part of one's soul do its proper work' or 'To be even is to be divisible by two without remainder.'[7] These sentences seem to involve property-identities; that is, they appear to assert that a relation analogous to objectual identity holds between the semantic values of predicates. A comprehensive theory of identity ought to account for these cases—and this involves expressing

[6] It is impossible to do justice to full literature on ground within the scope of this paper. For a standard introduction, see Fine (2012). The notion of ground has not gone unchallenged; see Wilson (2014) and Fritz (2022) for potential problems and Berker (2017) and Goodman (2023) for potential responses.

[7] See Rayo (2013), Linnebo (2014), Dorr (2016), Correia and Skiles (2019) and Elgin (2023) for recent discussions of generalized identity—and Litland (2023) for an argument that a theory of the grounds of identity ought to apply to these cases.

relations between properties.[8] Lastly (and perhaps most importantly), recent developments in higher-order logic are indispensable to my proposed resolution to the puzzle at issue. Higher-order formalism is unavoidable.

I employ a simply typed, higher-order language with λ-abstraction. Nothing metaphysically significant is meant by my use of the word 'type'; the types merely serve to mark the various syntactic categories of terms in our language. In any typed language, there are a number of basic types—as well as derivative types constructed out of the basic ones. Here, I employ a language with two basic types: a type e for the type of entities and a type t for the type of sentences. There are two ways of constructing additional types; for any types τ_1 and τ_2, $(\tau_1 \rightarrow \tau_2)$ and $[\tau_1]$ are both types. That is, there is a type consisting of a function that takes terms of type τ_1 as its input and has terms of types τ_2 as its output—as well as a type consisting of a plurality of items of type τ_1.[9] Nothing else is a type.

Terms of diverse syntactic category are represented in the standard way. Monadic first-order predicates are identified with terms of type $(e \rightarrow t)$, dyadic first-order predicates are of type $(e \rightarrow (e \rightarrow t))$, etc. Sentential operators like $\neg$ are of type $(t \rightarrow t)$, while the binary connectives $\wedge, \vee, \rightarrow$, and $\leftrightarrow$ are all of type $(t \rightarrow (t \rightarrow t))$. There are also quantifiers and terms for identity. In first-order languages, quantifiers perform double duty, serving both to bind variables and to make claims about generality. However, in higher-order languages these tasks come apart. Variable binding is accomplished solely with λ-abstraction, while quantifiers make general claims. Effectively, quantifiers are higher-order properties; $\forall$ is the property *has every object in its extension* while $\exists$ is the property *has an object in its extension*. Additionally, for every type τ there is a term $=$ of type $(\tau \rightarrow (\tau \rightarrow t))$ that expresses identity. So, both '$a = b$' and '$\lambda x.Fx = \lambda x.Gx$' are sentences in our language.

Unsurprisingly, there are also terms for *grounding*. When introducing the notion of ground, Fine (2012) makes a number of distinctions that impact the types of the operators. For our purposes, the most important distinction is between full and partial ground. A collection of facts Γ fully grounds p just in case Γ suffice (in the relevant sense) to make it the case that p—while q merely partially grounds p if it, along with some other facts, fully grounds p.[10] For example, while p fully grounds the disjunction $p \vee q$, it merely partially grounds the conjunction $p \wedge q$. Following Fine, it would be natural to stipulate that the symbol $<$ for full ground is of type

[8] Some, like Dorr (2016), might balk at the claim that these sentences are property-identities, on the grounds that they are compatible with nominalism, while property identities are not. For my purposes, 'property identity' can be replaced with a nominalized construction if the reader prefers—so long as that construction is expressed in a higher-order language.

[9] The importance of plural quantification was first recognized by Boolos (1984). For arguments that it is essential to a theory of ground, see Correia and Schneider (2012), Fine (2012), Fritz (2022). A quick argument is that one fact could be grounded in any number of others. The fact that $p \vee q$ is grounded in the fact that p, while the fact that $p \wedge q$ is grounded in the fact that p and the fact that q. To express claims of ground, we require the ability to hold that any number of facts serve as the grounds. I direct those interested in more detailed arguments (along the lines that there are important claims that are inexpressible without plural quantifiers) to the texts mentioned above.

[10] This way of framing the distinction is standard. However, see Witmer and Trogdon (2021) for an argument that full ground should be defined in terms of partial ground.

$([t] \to (t \to t))$ while the symbol $\prec$ for partial ground is of type $(t \to (t \to t))$. However, for our purposes it will be important to generalize these types. For every type τ, there is a symbol $<$ of type $([\tau] \to (t \to t))$ and a symbol $\prec$ of type $(\tau \to (t \to t))$ that express full and partial ground respectively.[11]

I make a number of logical assumptions. I assume that classical logic is true. I assume that sentences certified to be true by truth tables (in the standard way) are indeed true—and that sentences so certified to be false are indeed false. I also assume that valid proofs carried out in classical first-order logic yield true conclusions if their premises are true—and that higher-order analogues of these proofs hold as well.

I also assume that β-equivalent expressions co-refer (an assumption that I dub 'β -identification').[12] β-conversion is one of the basic inferential resources of higher-order logic; it licenses the inference from $\lambda x.Fx(a)$ to Fa. If a term with a bound variable applies to an object, β-conversion allows us to replace occurrences of that variable with the name of that object. This inference (from a term to its β-conversion) is relatively uncontroversial. A somewhat stronger—but nevertheless orthodox—principle (that I also accept) is that the two terms express the same thing. According to β-identification, not only may we infer Fa from $\lambda x.Fx(a)$, but they express the very same proposition.

I turn to the logic of ground. I proceed cautiously; standard assumptions have been repeatedly challenged—and plausible principles quickly lead to contradiction.[13] Nevertheless, I will not defend this system here. I hew to the orthodoxy—and take it that this logic is sufficiently entrenched to pass over in silence. For what it's worth, I make these assumptions on behalf of my opponent. They are used to derive the circularity I aim to avoid. Rather than objecting to my view, those who reject this logic have another path to embracing the claim that indiscernibility grounds identity.

It is often assumed that ground forms a strict partial ordering: that it is transitive and asymmetric and (hence) irreflexive. Generalizing the types of $<$ and $\prec$ as I have complicates this assumption. It will not do to simply hold that each instance

[11] I note that it is possible to generalize this formalism still further—so that $<$ is of type $([\tau_1] \to (\tau_2 \to t))$—but I have no use for this further generality. In formula that follow, I occasionally omit the types of terms if they are either contextually evident or if they are to be treated as schemata with instances in every type. I also omit parentheses when ambiguity does not result. Further, I omit the λ terms that immediately follow quantifiers—writing $\forall x.Fx$ rather than $\forall \lambda x.Fx$. I also note that this generalization of the types of $<$ and $\prec$ may appeal to proponents of entity grounding like Schaffer (2010, 2015), Wilhelm (2020). If $<$ and $\prec$ are of type $([t] \to (t \to t))$ and $(t \to (t \to t))$ (respectively), then entity grounding is ungrammatical. This generalization allows these claims to be stated in a grammatically correct way. I myself do not endorse entity grounding, but find it desirable for our choice in language not to settle the debate over whether entity grounding exists. Generalizing the types of $<$ and $\prec$ as I have allows the debate to be expressed in a manner that does not determine its outcome: a process of syntactic ascent reminiscent of the semantic ascent pioneered by Quine (1960).

[12] This is defended most explicitly in Dorr (2016).

[13] For example, while many assume that grounding is transitive, Schaffer (2012) argues that it is not—see Litland (2013) for a reply. Jenkins (2011) argues against the asymmetry of ground, and Dasgupta (2014) argues that we should regiment ground as a many-many relation, rather than many-one. The inconsistency I reference here is described in Fritz (2022).

of $<$ and $\prec$ are transitive—as this says nothing about their interaction.[14] Rather than merely stipulating that each of these relations is transitive, I further hold that if $\phi^{\tau} \prec p^{\mathrm{t}}$ and $p^{t} \prec q^{t}$ hold, then $\phi^{\tau} \prec q^{\mathrm{t}}$ holds as well.[15]

I assume that conjunctions are grounded in their conjuncts: that is, that $p, q < p \wedge q$.[16] Disjunctive and conditional facts play no role in my argument, so I remain silent on their grounds. However, biconditional facts (those of the form $p \leftrightarrow q$) figure prominently. I assume that they are grounded in the truth or falsity of their conditions—that is, either $p, q < p \leftrightarrow q$ or $\neg p, \neg q < p \leftrightarrow q$.[17]

Many maintain that universal facts are grounded in their collective instances—and that existential facts are grounded in their witnessing instances—that is, $Fa, Fb, ..., < \forall x.Fx$ and $Fa < \exists x.Fx$. This view faces a number of complications.[18] One puzzle concerns the domain of objects. Many hold that grounding is necessitating; if Γ fully ground p, then there is no possible world in which Γ all obtain while p does not. If there were a variable domain of objects across possible worlds (so that some worlds have more objects than others), then quantified facts would violate this connection between grounding and necessity.[19] In response, some suggest appending a totality fact (so the grounds of $\forall x.Fx$ involve not just its instances but also the fact that those are all of the instances that there are)—or, alternatively, accepting a constant domain of objects across possible worlds.[20] I remain neutral between these alternatives—and will flag the distinction when significant.

I make no further assumptions about the logic of ground.

[14] Note that, by contrast, there is no reason to complicate the claim that $\prec$ is asymmetric. Given the types of $\prec$, the only potential violations of asymmetry are for the type $(t \rightarrow (t \rightarrow t))$. Insisting that this relation is asymmetric guarantees that all instances—and their interactions—are.

[15] A similar modification is required for $<$—though the relevant change occurs for the principle Cut (if $p_1 < q_1, p_2 < q_2, ..$ and $q_1, q_2, ... < r$ then $p_1, p_2, ... < r$), rather than transitivity, due to the polyadicity of $<$.

[16] Throughout this paper, I generally appeal to a factive notion of ground; so the claim that $p, q < p \wedge q$ is intended to be restricted to facts. However, many of the points apply to a non-factive notion of ground as well. I will provide an understanding of ground that suggests that it may be that proxies for propositions stand in grounding relations, rather than propositions themselves. Along these lines, it might be natural to hold p and q ground a proxy for the proposition that $p \wedge q$, rather than the conjunction itself. Nothing I say here turns on accepting this alternative, so while I am not opposed to it in principle, I will not mention it further.

[17] Alternatively, these facts could be grounded in $(p \wedge q) \vee (\neg p \wedge \neg q)$. Note that this alternative entails, but is not entailed by, the suggestion in the main text. Nothing in my argument turns on which alternative we select. Donaldson (2017) takes a similar line in suggesting that $p \rightarrow q$ is identical to $\neg p \vee q$—and so is either grounded in $\neg p$ or in q.

[18] See Fine (2010b), Fritz (2021) for problems (and solutions) concerning the ground of quantified facts.

[19] To see why this is so, suppose that there are m objects in the actual world, and that each of these objects bears property F—so that $Fa, Fb, .., Fm < \forall xFx$. Intuitively, there could be a possible world with an additional object n that is not F. In that world, Fa, Fb, ..., Fm all obtain, while the universal fact $\forall x.Fx$ does not. So, the collection of instances fails to necessitate the universal fact.

[20] See Williamson (2013) for a defense of the constant-domain approach.

3 The derivation of reflexivity

A natural way to regiment the claim that indiscernibility grounds identity is this: the fact that a is identical to b is grounded in the fact that, for any property F, Fa holds just in case Fb holds. More formally: $\forall X.(Xa \leftrightarrow Xb) < a = b$. Here, the ground*ed* fact is an identification, and the ground*ing* fact is a universal—a fact that itself is grounded in its instances. That is to say, the fact that a and b bear all of the same properties is grounded in the fact that Fa holds iff Fb holds, the fact that Ga holds iff Gb holds, etc.[21] One property is *is identical to a*; so the fact that a bears this iff b bears this partially grounds the fact that they bear all of the same properties.

This fact—the fact that a bears *is identical to a* iff b bears *is identical to a*—is a biconditional fact, and so is grounded in the truth or falsity of its conditions. We know from classical logic that a does indeed bear *is identical to a*. So, the fact that a bears *is identical to a*—and the fact that b bears *is identical to a*—collectively ground the fact that a bears this property iff b does. Given the transitivity of ground, it follows that the fact that b bears *is identical to a* partially grounds the fact that a is identical to b. But the fact that a is identical to b *just is* the fact that b bears *is identical to a*—so the fact that a is identical to b partially grounds itself.

Somewhat more formally, we can derive reflexive grounds as follows:

i.	$\forall X.(Xa \leftrightarrow Xb) < a = b$	Indiscernibility Grounds Identity
ii.	$Fa \leftrightarrow Fb, Ga \leftrightarrow Gb, \ldots < \forall X.(Xa \leftrightarrow Xb)$	Grounds of Universal Facts
iii.	$\lambda x.(x = a)(a) \leftrightarrow \lambda x.(x = a)(b) \prec \forall X.(Xa \leftrightarrow Xb)$	Instance of *ii*
iv.	$\lambda x.(x = a)(a), \lambda x.(x = a)(b) < \lambda x.(x = a)(a) \leftrightarrow \lambda x.(x = a)(b)$	*iii* and the Grounds of Biconditional Facts
v.	$\lambda x.(x = a)(b) \prec a = b$	Transitivity of Ground
vi.	$a = b \prec a = b$	β-Identification

Perhaps some suspect that the problem can be avoided by denying β-identification—thus resisting the inference from line *v* to *vi*. I doubt that this is the correct response. Most philosophers who reject β-identification (such as Rosen 2010; Fine 2012) do so because they maintain that terms are grounded in their β-conversions; that is, that $Fa < \lambda x.Fx(a)$. Such philosophers are also committed to the claim that $a = b$ partially grounds itself—so rejecting β-identification does not seem particularly promising.

There is an analogous puzzle concerning the grounds of distinctness (facts of the form $a \neq b$)—one that, to the best of my knowledge, has gone entirely overlooked by the literature.[22] If identity is grounded in indiscernibility, it is natural to suggest that distinctness is grounded in discernibility; what makes it the case that a is distinct from b is the fact that there exists some property borne by a and not by b. More formally: $\exists X.(Xa \wedge \neg Xb) < a \neq b$. Here, the ground*ed* fact takes the form of

[21] As previously mentioned, there may also be a totality fact along the lines of these being all of the properties that there are. Some may hold that a totality fact for properties is unnecessary; while it is contingent what objects exist, the same properties exist in every possible world. However, see Fritz (2023) for an argument for higher-order contingentism.

[22] My thanks to Alexander Skiles for pressing me on the grounds of distinctness.

distinctness, while the ground*ing* fact is existential—a fact that itself is grounded in its witnessing instances. That is to say, the fact that *Fa* holds and *Fb* does not hold grounds the fact that there exists a property borne by *a* and not by *b*.

Typically, the grounds for this existential fact are massively overdetermined. Distinct objects vary with a great many of their properties. The fact that Socrates is human while the Eiffel Tower is not grounds the fact that they are distinct—as does the fact that Socrates is a philosopher while the Eiffel Tower is not, the fact that Socrates is Athenian while the Eiffel Tower is not, etc.

If objects *a* and *b* are distinct, then one property that *a* bears that *b* does not is *is identical to a*. So, the fact that *b* does not bear *is identical to a* partially grounds the fact *a* bears a property that *b* does not—and hence the fact that $a \neq b$. But the fact that $a \neq b$ *just is* the fact that *b* does not bear *is identical to a*—so the fact that $a \neq b$ partially grounds itself. We can formalize this as follows:

i.	$\exists X.(Xa \wedge \neg Xb) < a \neq b$	Discernibility Grounds Distinctness
ii.	$\lambda x.(x = a)(a) \wedge \neg\lambda x.(a = x)(b) < \exists X.(Xa \wedge \neg Xb)$	Grounds of Existential Facts
iii.	$\neg\lambda x.(a = x)(b) \prec \lambda x.(x = a)(a) \wedge \neg\lambda x.(a = x)(b)$	Grounds of Conjunctive Facts
iv.	$\neg\lambda x.(a = x)(b) \prec a \neq b$	Transitivity of Ground
v.	$a \neq b \prec a \neq b$	β-Identification

Both identity and distinctness violate the irreflexivity of ground.

There are a number of potential responses to this puzzle. Of course, one option is to abandon the claim that indiscernibility grounds identity entirely. Alternatively, we could reject some of the logical principles used to derive reflexivity. More modestly, we might attempt to restrict the scope of properties we quantify over with ‘all of the same properties’—so as to exclude properties like *is identical to a*.[23] I myself prefer none of these approaches; I suggest a reinterpretation of the claim that indiscernibility grounds identity. Understanding this resolution requires a brief discussion of an independent problem for structured propositions, which I turn to now.

4 The principle of singular extraction

In recent years, theories of structured propositions have come under sustained assault.[24] One of their central commitments is that identical propositions contain identical properties—a commitment I dub the ‘Principle of Singular Extraction’ (the PSE). For example, if the proposition *Jill is a sister* is identical to the proposition *Jill is a female sibling*, then the property *is a sister* is identical to the property *is a female sibling*. This commitment reflects the thought that propositions are ‘built’ out of worldly material—in much the way that sentences are built out of words.

[23] Arguably, this is one way to interpret the approach taken by Shumener (2020a). I suspect that, on this strategy, the properties to exclude would be exactly those that make the Principle of the Identity of Indiscernibles a triviality. For discussions of which properties those are, see Katz (1983), Rodriguez-Pereyra (2006, 2022).

[24] See, e.g., Dorr (2016), Goodman (2017).

Propositions built from different components are distinct (even if they necessarily have the same truth-value). So, if two propositions are identical, they must be composed of the same elements; that is, they must contain the same properties.[25] If the proposition that *Fa* is identical to the proposition that *Gb*, then property *F* is identical to property *G*.

The PSE conflicts with β-identification. What follows is my preferred derivation of the conflict. Jointly, the PSE and β-identification entail *monism*: the claim that only one object exists. This can be established as follows:

i.	$\lambda x.(x = x)(a) = \lambda x.(x = a)(a)$	β-Identification
ii.	$\lambda x.(x = x) = \lambda x.(x = a)$	*i*, PSE
iii.	$\forall x.(x = x)$	Classical Logic
iv.	$\forall x.(x = a)$	*ii, iii*, Leibniz's Law
v.	$\exists y.\forall x.(x = y)$	*iv*, Classical Logic

Given β-Identification, the proposition *a is self-identical* is itself identical to the proposition *a is identical to a*. Because these propositions are identical, the PSE entails that they contain the same properties. Therefore, the property *is self-identical* is identical to the property *is identical to a*. We know from classical logic that everything falls in the extension of *is self-identical*—and so everything falls in the extension of *is identical to a*. And if all objects are identical to *a*, then only one object exists—and monism is true.

I suspect that monism is radical enough to deter most metaphysicians. Common sense dictates that there is a plurality; the world has cats, coffee cups, and continents—and these are not identical to one another. Whatever initial appeal the PSE has, it surely cannot compete with ordinary beliefs like that. Given that either common sense or the PSE must be rejected, the PSE will have to go. But perhaps some stalwart monists respond with a shrug—and see no reason to abandon the PSE. This is unwise, as the PSE has a consequence even more untenable than monism: outright contradiction.

The problem is that the previous derivation can be interpreted as a schema with applications in every type. Just as an argument with that structure establishes that there is only one object, analogous arguments establish that there is only one property, only one relation, only one sentential operator, and—most notably—only one proposition. Because there is only one proposition, p is identical to $\neg p$, and so the two have the same truth-value. More formally, we can derive the inconsistency as follows:

i.	$\lambda x.(x = x)(p) = \lambda x.(x = p)(p)$	$\beta -$ Identification
ii.	$\lambda x.(x = x) = \lambda x.(x = p)$	*i*, PSE
iii.	$\forall x.(x = x)$	Classical Logic
iv.	$\forall x.(x = p)$	*ii, iii*, Leibniz's Law
v.	$\neg p = p$	*iv*, Classical Logic
vi.	$p \leftrightarrow \neg p$	*v*, Leibniz's Law

[25] However, see Bacon (2023) for a theory of structured propositions without this commitment.

β-Identification and the PSE are incompatible; at least one of these principles is false. I have already endorsed β-Identification and so must reject the PSE. Propositions are not structured in the manner it claims.

5 Structure by proxy

One way to frame the problem for structured propositions is this: it is impossible, given the proposition Fa, to recover property F and object a—in the sense that there may be a distinct G and b such that $Fa = Gb$. For example, the properties $\lambda x.Rxx$, $\lambda x.Rxa$, and $\lambda x.Rax$ could all be understood to figure in the proposition Raa, so we cannot determine which is 'the' property contained within this proposition. Fine-grained accounts of propositions that depend upon the possibility of singular recovery—like the structured view—are false. This is especially troubling for grounding-theorists, as they often appeal to fine-grained distinctions between facts.[26]

But there is another term from which we *can* recover a unique F and a: the relation between properties and objects that only has $< F, a >$ in its extension—that is, the relation that property F stands in to object a and that no other property stands in to any other object. This is not a structured proposition. After all, it is not a proposition of any kind. It is a relation between properties and objects and so is not truth-evaluable. But precisely because it is a term from which we can extract a unique F and a, it can serve as a proxy for the structured proposition Fa—and figure within theories that typically appeal to propositional structure. In particular, it is natural to suggest that these proxies stand in grounding relations—thus allowing ground to make fine-grained distinctions.[27]

We can represent this proxy—that is, the relation that only F stands in to a—as:

$$\lambda X.\lambda x.(X = F \wedge x = a)$$

In natural language, we might read this term as *being a property X, and being an object x, such that X is identical to F and x is identical to a*. Of course, there is nothing special about the proposition Fa in particular. There are proxies for the propositions that Gb and Hc as well. It is valuable to construct a function that generates these proxies. This can be accomplished with the following:

$$\delta := \lambda X^{(e\to t)}.\lambda x^{e}.\lambda Y^{(e\to t)}.\lambda y^{e}.(X = Y \wedge x = y)$$

The δ function takes pairs of properties and objects as its inputs and has, as its output, the relation that only the input property stands in to the input object. For example, inputting F and a results in:

$$\delta(F, a) = \lambda X^{(e\to t)}.\lambda x^{e}.\lambda Y^{(e\to t)}.\lambda y^{e}.(X = Y \wedge x = y)(F, a) = \lambda X.\lambda x.(X = F \wedge x = a)$$

(Note that this identity depends upon β-identification). δ has an inherent syntactic restriction; it only generates proxies for propositions asserting that an individual

[26] See Fritz (2022).

[27] Fritz (2021) argues that this is so.

object bears a monadic predicate. It cannot generate proxies for propositions involving binary predicates, quantifiers, sentential operators, or anything else. We can generalize δ to provide a function that generates proxies for propositions of any syntactic structure as follows:

$$\gamma := \lambda X^{(\tau \to t)}.\lambda x^{\tau}.\lambda Y^{(\tau \to t)}.\lambda y^{\tau}.(X = Y \wedge x = y)$$

With the γ function at our disposal, the proxy for Fa can be represented as $\gamma(F, a)$, the proxy for $\neg Fa$ can be represented as $\gamma(\neg, Fa)$, and the proxy for $\forall x.Fx$ can be represented as $\gamma(\forall, \lambda x.Fx)$.[28] γ is thus more flexible than δ.

It is valuable to simplify this notation still further. Here, I represent the output of γ with bracket notation [ ] so that $\gamma(F, a)$ is represented as $[F, a]$. For the remainder of this paper, this is the notation I shall use—but the reader is free to expand this notation into a language solely with λ-terms, variables, and constants if they prefer.

As flexible as γ is, it has an inherent restriction: it is sensitive only to the outermost syntactic structure of a term. While we can represent a proxy for $\neg Fa$ as $[\neg, Fa]$, the expression $[\neg, [F, a]]$ is strictly ungrammatical; it does not refer to the relation that negation stands in to the relation F stands in to a. This is because the γ function is defined so that its second input must be the functional input of its first. Negation is of type $t \to t$; it takes sentences as its inputs. So, if $\neg$ is the first input of γ, then $[F, a]$ (which is of type $(((e \to t) \to e) \to t))$ cannot be the second. In other contexts, it would be valuable to define recursive functions sensitive to this internal structure—ones that would allow us to express these proxies grammatically.[29] However, for our purposes, this additional structure is unneeded—so I will avoid providing gratuitous formalism.

6 Identity and indiscernibility

Proxies distinguish between terms that differ in their syntactic structures. While many theories of propositional identity license the principle of involution (holding that Fa is identical to $\neg\neg Fa$), proxy theory distinguishes $[F, a]$ from $[\neg, \neg Fa]$.[30] The first term refers to the relation F stands in to a, while the second refers to the relation that negation stands in to $\neg Fa$. Given that proxies make such fine-grained distinctions, it is natural to appeal to them when fine-grained resources are needed. In particular, it may be that proxies stand in grounding relations.[31] Perhaps $[F, a] < Gb$—that is, perhaps the relation between F and a grounds the fact that Gb.

This suggestion resolves independent puzzles of ground. For example, Wilhelm (2021) notes that many theories of ground entail that double negations are grounded

[28] Note, however, that since the first variable in the γ function terminates in type t, γ must generate proxies for propositions—it cannot generate proxies for predicates, sentential operators, and all the rest.

[29] As in Elgin (Forthcoming).

[30] For some notable examples of theories that license involution, see Lewis (1986), Dorr (2016), and Fine (2017b, 2017c)

[31] This was suggested by Fritz (2021)—and is the reason why I generalized the types of $<$ and $\prec$ in the manner I have.

by their double negatums, while—as noted above—many theories of propositional identity hold that the two are identical. This can be consistently held if it is interpreted as the claim that $Fa < [\neg, \neg Fa]$ rather than the claim that $Fa < \neg\neg Fa$.[32] For the remainder of this paper, I will assume that proxies can—and do—stand in grounding relations.

Armed with proxy grounding, the claim that indiscernibility grounds identity can be interpreted in one of two ways. It might, as before, be interpreted as:

$$\forall X.(Xa \leftrightarrow Xb) < a = b$$

Alternatively, it might be interpreted as:

$$[\forall, \lambda X.(Xa \leftrightarrow Xb)] < a = b$$

The first holds that the fact that $a = b$ is grounded in the fact that a and b bear all of the same properties, while the second holds that it is grounded in the relation between the (second-order) universal quantifier and *being a property that holds of a iff it holds of b*. While the first view is susceptible to the circularity concern discussed above, the second is not. The logic of ground dictates that universal facts are grounded in their instances, but takes no stand on the grounds of $[\forall, \lambda x.Fx]$. We can consistently endorse the standard logic of ground and deny that $[\forall, \lambda X.(Xa \leftrightarrow Xb)]$ is grounded in $Fa \leftrightarrow Fb, Ga \leftrightarrow Gb, \ldots$ The circularity fails to materialize from the outset.

This is not the only proxy-theoretic interpretation of the claim that indiscernibility grounds identity. Rather than including proxies in the grounds of identification, we might include proxies in the identification itself—so that $\forall X(Xa \leftrightarrow Xb) < [\lambda x.x = a, b]$.[33] Or, alternatively, proxies might appear on both sides of $<$, so that $[\forall, \lambda X.(Xa \leftrightarrow Xb)] < [\lambda x.x = a, b]$.[34] Is there any reason to prefer one formulation over others?[35]

The extent I disagree with these alternatives is limited. Each maintains that indiscernibility grounds identity—and uses proxy theory to avoid the circularity that typically plagues these sorts of accounts. I view philosophers who endorse these views as friends, rather than enemies. Still, there is at least one reason to prefer the formulation I have here.[36] Those who accept the indiscernibility account are typically

[32] For another response to Wilhelmene inconsistency, see Litland (2022).

[33] Note that given the type of $<$, this expression is strictly ungrammatical in our language; we would need to generalize the type of $<$ in the manner suggested in footnote 11 for this to be expressed.

[34] If we were to modify the γ-function, it would be possible to generate more formulations still; perhaps $\forall \lambda X.(Xa \leftrightarrow Xb) < [[=, a], b]$—that is, perhaps the fact that a bears all the same property as b grounds the relation that (the relation that $=$ stands into a) stands into b.

[35] My thanks to an anonymous reviewer for pressing me on this point.

[36] I also acknowledge that there is at least one reason to prefer the view that indiscernibility grounds $[\lambda x.x = a, b]$. Intentionalists—who hold that necessarily equivalent propositions are identical—maintain that all identifications are the same (at least if they also endorse the necessity of identity). If all identifications are true in the same possible worlds, then, according to intensionalism, they are all identical to the one necessary truth. But plausibly, the fact that Cicero is indiscernible from Tully grounds the fact that Cicero is Tully, and not the fact that Hesperus is Phosphorus. This can be accommodated if the grounded term is $[\lambda x.x = Cicero, Tully]$ rather than $Cicero = Tully$.

taken to *disagree* with philosophers who endorse other views about the grounds of identity. That is, those who claim that identifications are zero-grounded, entity grounded, or existence grounded, seem to be offering genuine alternative accounts of the grounds of identity. If the grounded term were $[\lambda x.x = a, b]$, we would not have settled what the grounds of $a = b$ are—and these other views would not be alternatives. For reasons previously discussed, there is pressure to think that $a = b$ has some grounds or other.[37] If the grounded term is anything other than $a = b$, this remains an open question; we have not settled what grounds the fact that $a = b$. On the formulation I prefer, this question is settled; the fact that $a = b$ is grounded in the indiscernibility of a with b, and nothing else.

A similar strategy resolves the circularity for distinctness. While the claim that discernibility grounds distinctness might be interpreted as:

$$\exists X.(Xa \wedge \neg Xb) < a \neq b$$

We could, alternatively, interpret it as:

$$[\exists, \lambda X.(Xa \wedge \neg Xb)] < a \neq b$$

While the first interpretation generates reflexive grounding, the second does not.

This account applies not only to first-order—but to higher-order—identity and distinctness; the formulas above are to be interpreted as schemata with applications in every type. We can represent the grounds of property-identity as:

$$[\forall^{((e\to t)\to t)\to t}, \lambda X^{(e\to t)\to t}.(X(\lambda x.Fx) \leftrightarrow X(\lambda x.Gx))] < \lambda x.Fx = \lambda x.Gx$$

The grounds of property distinctness are represented as:

$$[\exists^{((e\to t)\to t)\to t}, \lambda X^{(e\to t)\to t}.(X(\lambda x.Fx) \wedge \neg X(\lambda x.Gx)] < \lambda x.Fx \neq \lambda x.Gx.$$

This account applies to the grounds of identifications anywhere on the hierarchy of types.

7 Virtues

In one sense, this paper is largely defensive. I have not provided a positive reason to claim that indiscernibility grounds identity. Rather, I argue that one regimentation of this view avoids a serious concern. Nevertheless, there are virtues worth discussing.

7.1 The logic of identity

There is a close connection between the grounds of logically complex facts and the way those facts function in classical logic. Take, for example, the grounds of conjunction. On the standard view, we have: $(p, q < p \wedge q)$, $(r, s < r \wedge s), \ldots < \forall x, y(x, y < x \wedge y)$. That is, collectively, the fact that $p \wedge q$ is

[37] I allude here to the considerations of Purity mentioned at the outset of this paper.

grounded in p and q, the fact that $r \wedge s$ is grounded in r and s, etc. ground the fact that, for all facts x and y, the fact that x and the fact that y ground the fact that $x \wedge y$. In this sense, the grounds of conjunction explain why conjunction introduction universally succeeds as an inferential practice; there is a metaphysical explanation for why it is always the case that if it is a fact that p and a fact that q, then it is a fact that $p \wedge q$. Similarly, there is an explanation for why the biconditional logically functions as it does: $(p, q < p \leftrightarrow q), (r, s < r \leftrightarrow s), \ldots < \forall x, y(x, y < x \leftrightarrow y)$ and $(\neg p, \neg q < p \leftrightarrow q), (\neg r, \neg s < r \leftrightarrow s), \ldots < \forall x, y(\neg x, \neg y < x \leftrightarrow y)$. For all positive facts, the fact that p and the fact that q ground the fact that $p \leftrightarrow q$—and for all negative facts, the fact that $\neg p$ and $\neg q$ ground the fact that $p \leftrightarrow q$. There is thus a metaphysical explanation for why, for every biconditional, its conditions have the same truth-value as one another.

A natural question is whether a similar explanation is possible for the grounds of identification—whether the grounds of identity metaphysically explain why it logically functions as it does. On many theories of the grounds of identity, the prospects seem hopeless. For instance, I see no way for the claim that $a = b$ is zero-grounded to explain why Leibniz's Law holds. I take it as a significant advantage of a view if it can explain that logic of identity.

The indiscernibility account goes some way toward explaining why identity logically functions as it does. I say 'goes some way toward explaining' rather than 'fully explains' for several reasons. I will rely on an auxiliary assumption connecting proxies to facts—rather than simply the grounds of identity—and the explanation provided concerns entailment, rather than a grounding explanation. That is to say, if we take the fragment of classical logic without axioms concerning identity, this account entails that if an object is identical to anything, then it is identical to itself—and that terms that denote identical entities can be substituted for one another in any formula. To the best of my knowledge, this virtue is unique; no other theory of the grounds of identity explains its logic in this way.

Many philosophers take ground to be a relation between facts.[38] The fact that Socrates was Athenian may ground the fact that Socrates was Greek—but the fact that he was Spartan does not (there being no such fact *to* stand in grounding relations). Of course, if proxies stand in grounding relations, terms other than facts can ground. Still, those tempted by factive grounding—yet open to proxy theory—might hold that only *certain* proxies can ground: proxies for true propositions. If the proposition that *Fa* is false, then there is no fact that *Fa*, so the fact that *Fa* does not ground anything. Arguably, in this case, [*F*, *a*] is incapable of grounding anything either.

Those tempted by this line of thought might endorse the principle Facticity:

$$([\phi, \psi] < \varphi) \rightarrow \phi(\psi)$$

[38] Alternatively, some—like Fine (2012)—treat ground as a sentential operator (and so falsehoods are capable of grounding as well), while Schaffer (2009) treats ground as a relation between entities. Additionally, Litland (2023) suggests a notion of *antiground*—which stands to the grounding as falsemaking stands to truthmaking.

If the relation between ϕ and ψ grounds the fact that φ, then it is a fact that $\phi(\psi)$. Note that the construction of γ ensures that '$\phi(\psi)$' is a grammatical expression within our language—and, further, that it must be of type t (so it is the appropriate syntactic category to be a fact).

Let us suppose that $a = b$. Much of the logic of identity can be derived as follows[39]:

i.	$a = b$	Supposition
ii.	$[\forall, \lambda X.(Xa \leftrightarrow Xb)] < a = b$	Indiscernibility Grounds Identity
iii.	$([\forall, \lambda X.(Xa \leftrightarrow Xb)] < a = b) \rightarrow \forall X.(Xa \leftrightarrow Xb)$	Factivity
iv.	$\forall X.(Xa \leftrightarrow Xb)$	*ii, iii*, Modus Ponens
v.	$\lambda x.\phi^{[a/x]}(a) \leftrightarrow \lambda x.\phi^{[a/x]}(b)$	*iv*, $\forall$-Elim
vi.	$\phi \leftrightarrow \lambda x.\phi^{[a/x]}(a)$	β-Identification
vii.	$\phi^{[a/b]} \leftrightarrow \lambda x.\phi^{[a/x]}(b)$	β-Identification
viii.	$\phi \leftrightarrow \phi^{[a/b]}$	*v, vi, vii* $\leftrightarrow$ -Elim and Intro
ix.	$a = a$	*i, viii*, Classical Logic

The crucial lines are *iv, viii,* and *ix*. If $a = b$ then, according to line *iv*, a and b bear all of the same properties; according to line *viii*, a and b can be substituted for one another in any formula; and according to line *ix, a* is identical to itself.[40]

Perhaps some suspect that this does not go far enough in explaining the logic of identity.[41] While it establishes that an object a is identical to itself, it does not establish a quantified version of this: that all objects are identical to themselves. Without a theorem addressing all objects, the logic of identity may seem paltry.

There are (at least) two ways we might extend this derivation to include quantification. The first involves expanding our background logic by appealing to a controversial (and admittedly undecidable) principle first introduced by Hilbert (1899) and popularized by Carnap (1934): the ω-rule. According to the ω-rule, if there are infinitely many theorems $F(a)$, $F(b)$, etc. (for all constants), we may then infer $\forall x.Fx$. In practice, of course, such theorems could never be written down—as each occurrence of ω is infinitely long. But, if this rule is admissible, then we may derive a fully general theorem about identity. Because it is a theorem that $a = a$, that $b = b$ etc.—for all constants—we may conclude that $\forall x.(x = x)$. Everything is identical to itself.

Another path toward universality appeals to a more recent (and at least equally controversial) approach to quantifiers involving arbitrary objects.[42] Perhaps in

[39] The reason I say that 'much'—rather than 'all' of the logic of identity is that I still require the assumption that $a = b$. Admittedly, a more satisfactory account would derive these results without that assumption. Nevertheless, to the best of my knowledge this account goes further toward explaining the logic of identity than any available alternative.

[40] Relatedly, this is an account on which the identity of indiscernibles is *provably true* (at least on interpretations of the PII according to which objects that bear all of the same properties are identical). Because this formulation is provably true, we need not debate (Black, 1952) type counterexamples. Even if the universe contained nothing more than two homogenous spheres, these spheres would bear distinct haecceities and so would be discernible from one another in the sense that matters here.

[41] My thanks to Isaac Wilhelm for pressing me on this point.

[42] This approach is most notably defended by Fine and Tennant (1983), Fine (2017a)—and briefly suggested in Fine (2017d).

addition to individual people there are arbitrary people; perhaps in addition to individual numbers there are arbitrary numbers; and perhaps in addition to individual places there are arbitrary places. Quite generally, an arbitrary F has all of the properties held in common by all of the Fs—but no property had by only some of the Fs. Because every person is mortal, an arbitrary person is mortal, but because not every person is a philosopher, an arbitrary person is not a philosopher.

This is not the place for a full-throated defense of arbitrary objects. Their supporters typically argue that they are theoretically useful—and that objections to them are misguided. One of their primary uses is in accounts of quantification. Perhaps what makes it the case that every F is a G is the fact that an arbitrary F is a G. If this is so, then there is another path toward the claim that every object is self-identical. If the former proof were carried out for an arbitrary object, it would follow that that arbitrary object was identical to itself. And if an arbitrary object is self-identical, then all objects are self-identical. The theory of arbitrary objects thus offers another path toward the claim that everything is identical to itself.

7.2 Totality facts and irrelevant properties

Burgess (2012) discusses another puzzle for the indiscernibility account. As previously mentioned, some hold that universal claims are partially grounded in totality facts; what makes it the case that everything is F is not only the facts that Fa, Fb, etc. but also the fact that a, b, etc. are all of the objects that there are. One way to represent a totality fact is $\forall x(x = a \vee x = b \vee x = c...)$. In the present case, part of the ground of the claim that a and b bear all of the same properties is the totality fact concerning properties: $\forall X.(X = F \vee X = G \vee ...)$. So, if totality facts partially ground universal facts—and if universal facts ground identifications—then totality facts partially ground identifications. This, Burgess notes, is circular, as we would appeal to identity within the grounds of identity.[43]

This account avoids Burgess's concern. The grounds of identity are not a universal fact; they are a relation between quantifiers and properties. Even if totality facts partially ground universal facts, they need not ground identifications. So, the grounds of totality facts have no bearing on the grounds of identifications.

Relatedly, Burgess raises a concern of *irrelevant grounds*. One property is *being larger than the Eiffel Tower*. Part of what grounds the fact that Hesperus and Phosphorus bear all of the same properties is the fact that they both bear this property. So, part of what grounds the fact that Hesperus is Phosphorus is the fact that Hesperus is larger than the Eiffel Tower. If we represent this property with $\lambda x.Lx$, and Hesperus and Phosphorus with 'h' and 'p' respectively, we can derive this as follows:

[43] My own view is that this involves a regress, but is not circular. In the typed, higher-order framework we operate in, the term for identity of properties is strictly distinct from the term for identity for objects. So in the grounds of the identity (of objects) the same term for identity does not occur.

i.	$\forall X.(X(h) \leftrightarrow X(p)) < h = p$	Indiscernibility Grounds Identity
ii.	$\lambda x.Lx(h) \leftrightarrow \lambda x.Lx(p) \prec \forall X.(X(h) \leftrightarrow X(p))$	Grounds of Universal Facts
iii.	$\lambda x.Lx(h), \lambda x.Lx(p) < L(h) \leftrightarrow L(p)$	Grounds of Biconditional Facts
iv.	$\lambda x.Lx(h) = L(h)$	β-Identification
v.	$L(h) \prec h = p$	Transitivity of Ground

But, intuitively, this does not seem to be so. Hesperus's relative size compared to the Eiffel Tower seems to have nothing whatsoever to do with the fact that Hesperus is identical to Phosphorus.

This, too, the present account avoids. Because the grounds of an identification are a relation between quantifiers and properties—rather than a universal fact—there is no need for the fact that Hesperus is larger than the Eiffel Tower to partially ground the fact that Hesperus is Phosphorus.

8 Objections and replies

There are a number of potential objections to the indiscernibility account. Some reflect genuine costs; others are misguided.

8.1 Opacity

The most glaring objection is that this precludes *opacity*. A predicate is said to be opaque if it permits violations of Leibniz's Law: if, for some identical *a* and *b*, *a* bears property *F* while *b* does not. The most canonical example of opacity involves belief ascriptions.[44] It may be that Hesperus bears the property *was believed by Babylonians to appear in the evening sky*, while Phosphorus does not—despite the fact that Hesperus is identical to Phosphorus. If this is so, then identical objects need not bear all of the same properties.

If identical objects can differ in the properties that they bear, then the account I provide is false. I hold that indiscernibility grounds identity; all and only indiscernible objects are identical to one another. Because Hesperus is identical to Phosphorus, one of them bears *was believed by Babylonians to appear in the evening sky* if and only if the other does.

There are a number of responses to putative opacity that are friendly to Leibniz's Law. Perhaps the term 'Hesperus' shifts its reference when it appears in the sentence 'Hesperus was believed by Babylonians to appear in the evening sky.' If this is so, then the fact that 'Hesperus' cannot be replaced by 'Phosphorus' in this sentence is no threat to Leibniz's Law. Or, as pragmatic minimalists argue, perhaps people speak figuratively when uttering these types of sentences—and while the direct

[44] See Frege (1892). While attitudinal ascriptions are the most well-known case of opacity, they are not the only one. Other putative examples involve material constitution (see Geach (1967), Lewis (1971), Gibbard (1975), Fine (2003)), vague identity (see Evans (1978), Heck (1998), Williamson (2002), Edgington (2002)), counterpossibles (see Kocurek (2020)) and real definitions (see Correia (2017)).

content of these assertions is false, they nevertheless communicate something true.[45] Alternatively, it could be that we are systematically mistaken about the truth-values of these sorts of sentences—as error theorists suggest.[46] Or perhaps contextualists are correct—and there is a subtle semantic shift in context that accounts for apparent substitution failures.[47]

I do not take a stand on which of these alternatives is correct, only that some alternative is. I hold that Leibniz's Law is true in its full generality. In defending my account, I deny that genuine opacity exists.

8.2 Revenge

Others might object on the grounds that, while the primary benefit of this account is that it avoids reflexivity, there remains a deep sense in which it is circular. The notation obfuscates this circularity, some might claim, but does not change the fact that identity figures within the grounds of identity. I have conveniently expressed the grounds of an identification as $[\forall, \lambda X.(Xa \leftrightarrow Xb)]$—but this is merely shorthand for $\lambda Y^{((e\to t)\to t)\to t}.\lambda y^{(e\to t)\to t}.(Y = \forall \wedge y = \lambda X.(Xa \leftrightarrow Xb))$. Identity figures (*twice!*) in this expression, so this holds that identity grounds identity.

There are two potential responses to this challenge. There is a way in which the circularity charge misses its mark. There are different terms for identity for the different types in our language. One predicate corresponds to the identity of objects, another to first-order monadic properties, another to first-order dyadic predicates, etc. For any identification, there are indeed identity signs in both the grounds and the grounded terms. However, the identity signs that appear in the grounds always fall higher in the hierarchy of types than the identity sign that appears in the grounded fact. For example, while the grounds of the fact that Hesperus is Phosphorus mention identity, these identities concern the second-order universal quantifier and a second-order property. Terms for the identity of objects do not appear—and so the same identity does not figure in the grounds of identification.

There is another way to resist the charge of circularity. My theory concerns the grounds of identity *facts*; the fact that Cicero is identical to Tully and the fact that to be made of water is to be made of H_2O. Although there is an identity sign in the grounds of these identifications, there is no *identity fact*. On my view, the grounds are not facts but relations. What the identity sign picks out is *being identical to the universal quantifier* and *being identical to a property that holds of a iff it holds of b*. These are not identity facts, for the simple reason that they are not facts at all. So identity facts do not figure in the grounds of identity facts. This account is thus not circular.

45 For defenses of pragmatic minimalism, see Salmon (1986), Soames (1987).

46 See Braun (1988, 2002), Saul (2007) for examples of error theorists.

47 See Dorr (2014) for a defense of this approach.

8.3 Relative complexity

Another potential objection concerns the relative complexity of proxies that ground identifications.[48] Often, logically simple facts are held to ground logically complex facts; for example, many maintain that the (relatively simple) fact p grounds the (relatively complex) disjunctive fact $p \vee q$. The indiscernibility account violates this pattern—as a relatively simple identification is grounded in a logically complex proxy. By contrast, those who maintain that identifications are zero-grounded (like Litland (2023)) or entity grounded (like Wilhelm (2020)) preserve the pattern of the complex being grounded in the simple—which might be interpreted as a mark in favor of these alternate views.

There are several potential responses to this concern. First, we ought to be generally cautious when making judgments about the relative complexity of facts. Often, a fact is held to be complex due to the syntax of the language that we use to express it. For example, we might conclude that the fact that water is wet is simpler than the fact that water is not not wet, on the grounds that 'water is wet' is expressed more concisely than 'water is not not wet.' But there are independent reasons to deny that facts can be identified in as fine-grained a manner as the language we use to express them.[49] If we cannot distinguish between facts based on our syntax, then the relative complexity of our syntax may be an unreliable guide to the relative complexity of the facts. So, we ought to be cautious when making judgments about the pattern of simple facts grounding complex facts.

Second, there is a sense in which the indiscernibility account does *not* violate the point about relative complexity—depending on how it is formulated. The claim that relatively complex facts do not ground relatively simple facts is compatible with this account. After all, the grounds of identifications are proxies, and proxies are not facts. So long as the claim that the simple grounds the complex is restricted to facts (and not to proxies), this account does not violate the traditional pattern.

Third, while there are plausible examples of the simple grounding the complex, there are others where the complex plausibly grounds the simple. If we take the length of expression as a guide to complexity, then even orthodox examples violate this pattern; Fa is simpler than $\exists x.Fx$, because 'Fa' is a shorter string of characters than '$\exists x.Fx$'. More controversially, a number of metaphysicians have been tempted by a view connecting essence to ground.[50] Perhaps if it lies in the essence of an object x that S is true, then the fact that S is grounded in the fact that it lies in the essence of x that S. For example, if it lies in the essence of water that water is H_2O, then the fact that water is H_2O is grounded in the fact that it lies in the essence of water that water is H_2O. This is a natural example where relatively complex facts

[48] My thanks to an anonymous reviewer for pressing me on this point.

[49] The 'reasons to deny' that I allude to here concern the cardinality of the set of facts. If there were distinct facts for every syntactically distinct sentence, the cardinality of the set of facts would be larger than itself. This problem was noticed first by Russell (1903) and—apparently independently—by Myhill (1958).

[50] See, e.g., Rosen (2010), Kment (2014), Dasgupta (2016), Skiba (2022).

ground relatively simple facts—so although the indiscernible account holds that a complex proxy grounds a simple fact, this is not a substantial cost.

8.4 The identification identification

Perhaps some hold that the relation between indiscernibility and identity is incorrect. Rather than grounding identity, indiscernibility *just is* identity.[51] What it is for Hesperus to be identical to Phosphorus is for them to be indiscernible. And if identity just is indiscernibility, then neither indiscernibility nor identity ground one another (after all, nothing grounds itself).

Once again, there are a few different responses to this challenge. I note that the claim that indiscernibility just is identity is strictly compatible with my view. We might represent the identification identification as:

$$\forall X.(Xa \leftrightarrow Xb) = (a = b)$$

This may be so—so long as $\forall X.(Xa \leftrightarrow Xb)$ has the same grounds as $a = b$; that is, if $[\forall, \lambda X.(Xa \leftrightarrow Xb)] < \forall X.(Xa \leftrightarrow Xb)$. Nothing in my theory rules out this possibility. Minimally, my account does not preclude the possibility that identity is indiscernibility.

Elsewhere, I (Forthcoming) defend an account of real definition in terms of higher-order proxies. Rather than describing the grounds of the proposition Fa, it is a theory of the definition of the proposition that Fa. In that framework, we might account for identity in terms of how it is defined—and hold that identity is, by definition, indiscernibility. We could represent that claim with '$Def(a = b, [\forall, \lambda X.(Xa \leftrightarrow Xb)])$.' Not only is this conception of identity *compatible* with the claim that indiscernibility is identity, but it *is a theorem* that indiscernibility is identity. Those tempted by the identification identification might also be tempted by this alternate framework.

9 Conclusion

A version of the claim that indiscernibility grounds identity is immune to circularity; the fact that $a = b$ need not partially ground itself. A related maneuver resolves circularity arising from the grounds of distinctness facts. The resulting account avoids related concerns about irrelevant grounds and totality facts and—most notably—explains why identity logically functions as it does. Although it precludes opacity, it is not covertly circular and is compatible with the claim that indiscernibility just is identity. A viable theory is that identity is grounded in indiscernibility.

[51] Dorr (2016) suggests that this is so.

What remains—and what I leave for future work—is to formalize a general theory of proxy grounding.[52] For the purposes of this paper, I take no stand on this more general theory, except to deny that proxies stand in the grounding relations that generate reflexivity. This paper is a proof of concept, rather than a final theory of ground. By embracing proxy grounding, we can, in a non-circular manner, accept that indiscernibility grounds identity.

Acknowledgments My thanks to Michael Bevan, Catherine Elgin, Alec Oakley, Ezra Rubenstein, Erica Shumener, Zarachary Thornton, and Isaac Wilhelm for their comments on an earlier version of this paper - as well as the attendees of the University of Southampton's workshop on Grounding and Metaphysical Explanation and the 2024 Pacific Division of the American Philosophical Association for their helpful feedback.

References

Bacon, A. (2023). A theory of structured propositions. *The Philosophical Review*, *132*, 173–238.

Barker, J. (2023). Against Purity. Ergo 9.

Berker, S. (2017). The unity of grounding. *Mind, 127*(507), 729–777. https://doi.org/10.1093/mind/fzw069

Black, M. (1952). The identity of indiscernibles. *Mind,* (61), 153–164. https://doi.org/10.1093/mind/LXI.242.153

Boolos, G. (1984). To be is to be the value of a variable (or to be some values of some variables). *Journal of Philosophy, 81*, 430–49.

Braun, D. (1988). Understanding belief reports. *Philosophical Review, 107*, 555–95.

[52] While I do not provide a fully general theory of proxy grounding, it is worth noting how this account coheres—or, rather, *doesn't* cohere—with other accounts of proxies in the literature. When introducing the notion of proxy grounding, Fritz (2021) subscribes to a principle of the grounds of quantified facts that is incompatible with this account. There are classic puzzles concerning the grounds of quantifiers; if an existential fact is grounded in its instances, then the fact that some fact is true appears to partially ground itself. Following Krämer (2013), we might formalize this as $\forall\phi(\phi \rightarrow (\phi \prec \exists p\phi)$. If we allow p to witness ϕ and instantiate p with $\exists p(p)$, we have that $\exists p(p) \rightarrow (\exists p(p) \prec (\exists p(p))$—in violation of the irreflexivity of $\prec$. Fritz suggests resolving this puzzle by replacing one of the terms with a proxy for a structured proposition. In particular, he suggests that $\forall\phi(\phi \rightarrow (\phi \prec [\exists, \lambda p.\phi])$. This allows a consistent way to regiment the claim that existential truths are grounded in their witnessing instances. While he does not discuss the grounds of universal facts, it would be natural for him to hold that $\forall\phi(\forall x.\phi \rightarrow (\phi \prec [\forall, \lambda x.\phi]))$. This is incompatible with my view, as $\forall\lambda X.(Xa \leftrightarrow Xb) \prec [\forall, \lambda X(Xa \leftrightarrow Xb)] < a = b$—and so the fact that $a = b$ would partially ground itself for reasons already belabored. However, that Fritz could resolve the puzzle of reflexivity by replacing either term with a proxy for that term. While he replaces the second, I would opt for replacing the first. So far as I can tell, this suggestion is perfectly compatible with the theory I present here.

Braun, D. (2002). Cognitive significance, attitude ascriptions, and ways of believing propositions. *Philosophical Studies, 108*, 65–81.
Burgess, A. (2012). A puzzle about identity. *Thought, 1*(2), 90–99.
Carnap, R. (1934). *Logische Syntax der Sprache*. Springer.
Correia, F. (2017). Real definitions. *Philosophical Issues,27*(1), 52–73.
Correia, F., & Schneider, B. (2012). Grounding: an opinionated introduction. In Fabrice Correia & Benjamin Schnieder (Eds.), *Metaphysical Grounding: Understanding the Structure of Reality* (pp. 1–36). Cambridge University Press.
Correia, F., & Skiles, A. (2019). Grounding, essence and identity. *Philosophy and Phenomenological Research, 3*, 642–70.
Dasgupta, S. (2014). On the plurality of grounds. *Philosopher's Imprint, 14*(20), 1–28.
Dasgupta, S. (2016). Metaphysical rationalism. *Noûs, 50*(2), 379–418.
deRosset, L. (2013). Grounding explanations. *Philosopher's Imprint, 13*, 1–26.
Donaldson, T. (2017). The (metaphysical) foundations of arithmetic? *Noûs, 51*(4), 755–801.
Dorr, C. (2014). Transparency and the context-sensitivity of attitude reports. In Empty Representations: Reference and Non-Existence, ed. Manuel Garcia-Carpintero & Genoveva Marti. Oxford University Press pp. 25–66.
Dorr, C. (2016). To be F is to be G. *Philosophical Perspectives, 30*(1), 39–134.
Edgington, D. (2002). Williamson on vagueness, identity and Leibniz's Law. In P. Giaretta, A. Bottani, & M. Marrara (Eds.), *Individuals, Essence and Identity: Themes of Analytic Metaphysic.* Dordrecht.
Elgin, S. (Forthcoming). Definition by proxy.
Elgin, S. (2023). The semantic foundations of philosophical analysis. *The Review of Symbolic Logic, 16*(2), 602–23.
Evans, G. (1978). Can there be vague objects? *Analysis, 38*, 208.
Fine, K. (2010). The question of ontology. In David C., David M., & Ryan W. (Eds.), *Metametaphysics: New Essays on the Foundation of Ontology* (pp. 157–77). Oxford University Press.
Fine, K. (2012). A guide to ground. In Fabrice C. & Benjamin S. (Eds.), *Metaphysical Grounding* (pp. 37–80). Cambridge University Press.
Fine, K. (2017). Truthmaker semantics. In Bob, H., Crispin, W., & Alexander, M. (Eds.), *A Companion to the Philosophy of Language* (2nd ed., pp. 556–77). Wiley.
Fine, K. (2003). The non-identity of a material thing and its matter. *Mind, 112*(446), 195–234.
Fine, K. (2010). Some puzzles of ground. *Notre Dame Journal of Formal Logic, 51*(1), 97–118.
Fine, K. (2016). Identity criteria and ground. *Philosophical Studies, 173*(1), 1–19.
Fine, K. (2017). Form. *Journal of Philosophy, 114*(10), 509–35.
Fine, K. (2017). A theory of truthmaker content I: Conjunction, disjunction and negation. *Journal of Philosophical Logic, 46*(6), 625–74.
Fine, K. (2017). A theory of truthmaker content II: Subject-matter, common content, remainder and ground. *Journal of Philosophical Logic, 46*(6), 675–702.
Fine, K., & Tennant, N. (1983). A defense of arbitrary objects. *Proceedings of the Aristotelian Society, Supplementary Volumes, 57*, 55–89.
Frege, G. (1892). Sense and reference. *Zeitschrift für Philosophie und Philosophische Kritik, 100*, 25–50.
Fritz, P. (2021). Structure by proxy with an application to grounding. *Synthese, 198*, 6045–63.
Fritz, P. (2022). Ground and grain. *Philosophy and Phenomenological Research, 105*(2), 299–330.
Fritz, P. (2023). Being somehow without (possibly) being something. *Mind, 132*(526), 348–71.
Geach, P. (1967). Identity. *Review of Metaphysics, 21*, 2–12.
Gibbard, A. (1975). Contingent identity. *Journal of Philosophical Logic, 4*(2), 187–221.
Goodman, J. (2017). Reality is unstructured. *Analysis, 70*(1), 43–53.
Goodman, J. (2023). Grounding generalizations. *Journal of Philosophical Logic, 52*(3), 821–58.
Heck, R. (1998). That there might be vague objects (so far as concerns logic). *The Monist, 81*(2), 274–96.
Hilbert, D. (1899). *Grundlagen der Geometrie*. Teubner.
Jenkins, C. (2011). Is metaphysical dependence irreflexive? *The Monist, 94*(2), 267–76.
Katz, B. (1983). The identity of indiscernibles revisited. *Philosophical Studies, 44*(1), 37–44.
Kment, B. (2014). *Modality and Explanatory Reasoning*. Oxford University Press.
Kocurek, A. (2020). On the substitution of identicals in counterfactual reasoning. *Noûs, 54*(3), 600–31.
Krämer, S. (2013). A simpler puzzle of ground. *Thought, 2*(2), 85–9.
Lewis, D. (1986). *On the Plurality of Worlds*. Oxford University Press.
Lewis, D. (1971). Counterparts of persons and their bodies. *The Journal of Philosophy, 68*(7), 203–211.
Linnebo, Ø. (2014). 'Just-Is' statements as generalized identities. *Inquiry, 57*(4), 466–82.

Litland, J. (2023). Grounding and defining identity. *Noûs, 57(4),* 850–876
Litland, J. (2013). On some counterexamples to the transitivity of ground. *Essays in Philosophy, 14*(1), 19–32.
Litland, J. (2017). Grounding ground. *Oxford Studies in Metaphysics, 10*, 279–316.
Litland, J. (2022). A note on wilhelmene inconsistency. *Analysis, 81*(4), 639–647.
Lo, T. C. (2020). In defense of fact-only grounding. *Philosophical Studies, 179*(9), 2891–2899.
Mehta, N. (2023). Grounding identity in existence facts: A reply to Wilhelm. *Analysis, 83*(3), 500–6.
Myhill, J. (1958). Problems arising in the formalization of intensional logic. *Logique et Analyse, 1*, 78–83.
Quine, WVO. (1960). *Word and Object*. MIT Press.
Raven, M. (2016). Fundamentality without foundations. *Philosophy and Phenomenological Research, 93*, 607–26.
Rayo, A. (2013). *The Construction of Logical Space*. Oxford University Press.
Rodriguez-Pereyra, G. (2006). How not to trivialize the identity of indiscernibles. In P. F. Strawson & A. Chakrabati (Eds.), *Universals, Concepts and Qualities: New Essays on the Meanings of Predicates* (pp. 205–23). Ashgate.
Rodriguez-Pereyra, G. (2022). *Two arguments for the identity of indiscernibles*. Oxford University Press.
Rosen, G. (2010). Metaphysical dependence: Grounding and reduction. In Bob, H. & Aviv, H. (Eds.), *Modality, Metaphysics, Logic and Epistemology.* Oxford University Press.
Rubenstein, E. (2024). Grounding identity in existence. *Philosophy and Phenomenological Research, 108*(1), 21–41.
Russell, B. (1903). *The principles of mathematics*. Cambridge University Press.
Salmon, N. (1986). *Frege's puzzle*. MIT Press.
Saul, J. (2007). *Simple sentences, substitution, and intuitions*. Oxford University Press.
Schaffer, J. (2009). On what grounds what. In David, M., David, C., & Ryan W. (Eds.), *Metaphysics: new essays on the foundations of ontology* (pp. 247–83). Oxford University Press.
Schaffer, J. (2012). Grounding, transitivity and contrastivity. In Fabrice, C. & Benjamin, S. (Eds.), *Metaphysical Grounding: Understanding the Structure of Reality* (pp. 122–38). Cambridge University Press.
Schaffer, J. (2010). Monism: The priority of the whole. *The Philosophical Review, 119*(1), 31–76.
Schaffer, J. (2015). What not to multiply without necessity. *Australasian Journal of Philosophy, 93*(4), 644–64.
Shumener, E. (2020). Identity. In R. Michael (Ed.), *Routledge Handbook of Metaphysical Grounding* (pp. 413–24). Routledge.
Shumener, E. (2017). The metaphysics of identity: Is identity fundamental? *Philosophy Compass, 12*(1), 1–13.
Shumener, E. (2020). Explaining identity and distinctness. *Philosophical Studies, 177*(7), 2073–96.
Sider, T. (2011). *Writing the Book of the World*. Oxford University Press.
Skiba, L. (2022). In defense of hybrid contingentism. *Philosopher's Imprint, 22*(4), 1–30.
Soames, S. (1987). Direct reference, propositional attitudes, and semantic content. *Philosophical Topics, 15*, 47–87.
Wilhelm, I. (2020). An argument for entity grounding. *Analysis, 80*(3), 500–7.
Wilhelm, I. (2021). Grounding and propositional identity. *Analysis, 81*(1), 80–81.
Williamson, T. (2002). Vagueness, identity and Leibniz's law. In P. Giaretta, A. Bottani, & M. Marrara (Eds.), *Individuals, essence and identity: themes of analytic metaphysic.* Dordrecht.
Williamson, T. (2013). *Modal logic as metaphysics*. Oxford University Press.
Wilson, J. (2014). No work for a theory of grounding. *Inquiry, 57*(5–6), 535–79.
Witmer, G., & Trogdon, K. (2021). Full and partial ground. *Journal of the American Philosophical Association, 7*(2), 252–271.