Essence, Propria and Essentialist Explanation

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Abstract

In this paper I propose a notion of *propria* inspired by Aristotle, on which *propria* are non-essential, necessary properties explained by the essence of a thing. My proposal differs from the characterization of *propria* by Kit Fine and Kathrin Koslicki: unlike Fine, the relation of explanation on my account can't be assimilated to a notion of logical entailment. In disagreement with Koslicki, I suggest that the explanatory relation at issue needs not be necessary. My account of essence is conceptually parsimonious: it illuminates the contribution of essence to explanation without relying on obscure notions such as Aristotelian form or identity.

Keywords

essence – propria – explanation – Fine – Koslicki – Aristotle

1   Introduction

Many necessary properties seem not to be essential to their bearers. My cat is necessarily either furry or not furry. Yet being either furry or not furry doesn't appear essential to cats. My coffee mug is necessarily something if it is a mug. Yet being something if being a mug doesn't seem essential to coffee mugs. In both cases, the necessary properties at issue don't seem to point us to properties which pertain to what the relevant objects are in themselves.[1] That is, they fail to answer the question "What is x?"

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1   The phrase comes from Aristotle's invented expression for essence (*to ti en einai*) in *Metaphysics* Z. To inquire about the essence of a thing, understood in this sense, is to ask

Recently Kit Fine (1994) reminds us of the traditional connection between essence and the "What is x?" question through his famous singleton example.[2] Fine has shown compellingly that there is an intuitive sense of essence, according to which although the property of being a member of {Socrates} is necessary to Socrates, Socrates isn't essentially a member of {Socrates}. This is so, because being a member of the singleton set isn't part of what it is to be Socrates.

Granted that the essential properties of a thing are a proper subset of its necessary properties, and to that extent they can't be characterized in purely modal terms, still there are two important questions to look into:

First, granted that not all necessary properties of Socrates are essential to him, how should we characterize the non-essential necessary properties of a thing? In light of Fine's singleton example, we might want to say that the non-essential, necessary properties of x don't shed any light whatever on what x is. But this isn't quite right. For suppose Socrates is essentially rational. Suppose further that it is part of the essence of a rational animal that one has the capacity to speak some language or other. It follows that Socrates is necessarily capable of speaking some language or other. Yet unlike the property of being a member of {Socrates}, the capacity to speak some language or other does tell us something about Socrates. If there is an intuition according to which the capacity to speak a language isn't essential to Socrates, the reason isn't because it fails to tell us anything about Socrates.

Second, how should we construe the relation between the essential properties of a thing and its non-essential, necessary properties? The singleton example might tempt us to say that the non-essential, necessary properties of a thing are logical consequences of its essential properties. But this can't be the right story for properties such as Socrates's linguistic capacity: nothing about logic ensures that Socrates has the capacity whenever he exists. If there is a sense in which the capacity is a consequence of Socrates's essential properties,

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what it is to be that very thing. See Bostock (1994, 86) for further notes on this characterization of essence. For other expressions used by Aristotle to talk about essence, see Kung (1976, 361–362).

2   There is an on-going literature on whether or not Fine has successfully refuted the modal definition of essence by his counterexamples. Critics fall into two camps: the first camp tries to defend some sophisticated modal definition of essence by showing that they are immune from Fine's counterexamples. The second camp finds Fine's argument compelling and tries to get clear on details of the positive proposal that Fine canvasses in broad strokes in his 1994 paper. Zalta (2006), Correia (2007), Cowling (2013), Wildman (2013) and Banks (2017) belong to the first camp. In contrast, Koslicki (2012a, 2012b), Correia (2012) and Rosen (2015) belong to the second. For responses to a sophisticated modal account of essence in favor of Fine winning the debate, see Skiles (2015) and Torza (2015).

the consequence relation at issue seems to be metaphysical rather than merely logical.

I suggest that the Aristotelian notion of *propria* is the key to answering these questions. According to Aristotle, apart from their essential properties, objects also have non-essential necessary properties or *propria*.[3] For instance, it is a *proprium* of humans that they have the capacity to read and write: although humans are necessarily capable of reading and writing, the capacity isn't essential to humans, because it rides on other more basic capacities of our species (e.g. the capacity to manipulate symbols, the capacity to recall things from memory and so on). The main aim of this paper is to introduce and clarify a particular notion of *propria* inspired by Aristotle.

For those of us are who are sympathetic to Fine's criticism of the purely modal construal of essence, there are three reasons to be interested in *propria*:

First, the existence of *propria* is the main reason why essential properties can't be defined in purely modal terms. The modal definition fails because it lumps together the essential properties of a thing with its *propria*. To get to the bottom of the problem facing the modal account of essence, we need a clear construal of *propria*. Second, a clear construal of *propria* gets us a nuanced definition of accidental properties. Accidental properties are sometimes defined in purely modal terms, that is, as properties that an object instances in some but not all possible worlds.[4] Like the modal definition of essence, the modal

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3   The Latin term *proprium* (plural: *propria*) translates the Greek term *idion* (plural: *idia*). In *Topics* I 5, Aristotle characterizes an *idion* as a non-essential property that an object has, which is (1) uniquely instanced by the object, and (2) necessarily co-extensive with a term that rigidly refers to the object (102a18–19). Aristotle recognizes different kinds of *idia* (128b14–129a5), and not all of them satisfy these two conjuncts: the conjuncts are satisfied in the case of *idia* that are said of a thing by its own right (*apodidotai kath' hauto*). For instance, the capacity to read and write in the case of humans. However, Aristotle also recognizes *idia* that are said of a thing in relation to other objects or at a particular time. Conjunct (2) often fails to hold for *idia* of this kind. For instance, Callias might be said to have the relative *idion* of being the only person who walks in the gym at a particular time. And such a property is only contingently instanced by Callias. For some recent discussions of Aristotle's definition of *idion* and its comparison to the later usage of the term in the Hellenistic period, see Crivelli (2010, 402) and Fine, G. (2014, 269–271).

4   The modal definition of being an accidental property goes back to Aristotle. In *Topics* 102b4–6, Aristotle characterizes accidental properties as properties that may or may not belong to the same object. (Note that *propria* aren't a subset of accidental properties thus characterized, for the former are necessary properties of the object.) As many have noted, the modal characterization of accidents is motivated by Aristotle's philosophical doctrine of change which distinguishes substantial change from alteration. See Copi (1954, 707); Brody (1973, 351–352) and Kung (1976, 362) for elaboration on these two notions of change and their relation to Aristotle's modal definition of accidents.

definition of accidents is defective due to the existence of *propria*. Not all accidental properties are contingently instanced by their bearers. For there are accidental properties (i.e. *propria*) that are necessarily instanced by their bearers. Finally, a careful examination of the relation between *propria* and essence helps to shed light on a crucial distinction between metaphysical explanation and logical entailment. The latter, I argue, is neither necessary nor sufficient for the essential properties of a thing to explain its *propria*.

Here's the plan: first, I will lay out the Aristotelian definition of *propria*. Then I will look at two proposals for how to understand the 'following from'-relation between *propria* and essence. According to one proposal given by Fine, the 'following from'-relation should be understood as a constrained relation of logical entailment. I reject Fine's proposal. Instead, I side with Kathrin Koslicki in arguing that the relation should be understood as a relation of being explained by. However, unlike Koslicki who takes logical entailment to be necessary for the relevant explanation to obtain, I argue that logical entailment isn't required for essential properties of a thing to explain its *proprium*. In the third section, I will offer a positive account of what it takes for the essential properties to explain *propria*. The view of explanation that I advocate is a pluralistic one: essential properties explain *propria* by registering distinct kinds of priority relations. In the last section I will offer a characterization of essence based on my view of explanation and discuss its implications.

2   The Aristotelian Definition

According to a traditional definition of *propria* that goes back to Aristotle,

> property P is a *proprium* of x iff (1) P is a necessary property of x, (2) P is non-essential to x, (3) necessarily, P is uniquely instanced by x, and (4) P follows from some essential property of x.[5]

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5 Conjunct (4) isn't Aristotle's, although it might be seen as implied by Aristotle's discussion of proper accidents in *Metaphysics* 1025a30 and *Posterior Analytics* 75a42–b2. The conjunct is added by Mill in his characterization of the Aristotelian notion of *propria*, on which a *proprium* of a species is an attribute which follows from some attribute connoted by the name of the species (Mill, *A System of Logic*, 162). The idea that *propria* are properties that follow from the essence of an object goes back to Locke, according to whom the observable powers or qualities of an object are not themselves part of its essence. Rather, they flow from the essence of the object (Locke, *An Essay Concerning Human Understanding*, 296).

I will leave the first two conjuncts aside since they are rather straightforward. Two caveats on conjunct (3): First, conjunct (3) often fails when we attribute a *proprium* of a kind to individual members of the kind. For instance, when we speak of being capable of reading and writing as a *proprium* of Socrates, the capacity doesn't fully individuate Socrates from Plato. Since my main goal in this paper is to advocate an Aristotelian picture of essential attribution, which concerns primarily the essence of kinds rather than that of individual particulars, I hereby assume that the attribution of an essential property (or a *proprium*, for that matter) to individuals is parasitic upon that of kinds in the following way:

> for a kind K and an essential property or *proprium* F of K, all members of K have F, and further, for a particular member m of K, all essential properties and *propria* of m are essential properties and *propria* of K.

For instance, suppose humans are essentially rational. Further, suppose their capacity to reason partly grounds their capacity to engage in political activities, and that the latter is a *proprium* of humans. My stipulation says that Socrates is both essentially rational and necessarily capable of engaging in political activities, even though neither capacity is unique to Socrates.[6]

Second, although uniqueness requirement is key to the traditional definition of *propria*, sometimes it might be useful to consider a broader set of necessary properties that follow from the essence of a given object. For instance, suppose it is grounded in the essence of equilateral triangles that they have three sides necessarily. The necessary property would not be unique to equilateral triangles, since it is shared by other kinds of triangle. There are two ways to accommodate such properties: we can stick to the uniqueness requirement and treat such properties as *propria* of the common genus (triangles in this case).[7]Alternatively, we can broaden our characterization of *propria* (of isosceles in this case) to include any necessary property following from the essence of the object, uniquely instanced or not.

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6 In *Metaphysics* Aristotle sometimes talks in a way that seems to allow there being individual essences. For instance, he talks about the essence of Socrates (1032a8), Callias (1022a27), you (as an intended audience) (1029b14–15), and a particular house (1039b25). As Cohen (1978, 78) notes, it is unclear whether Aristotle intends to admit individual essence apart of that of kinds; or perhaps he was simply referring to individual objects without suggesting that they have individual essences apart from essential properties that they "inherit" from their proximate kinds.

7 This is Aristotle's way of dealing with non-essential, necessary properties had by objects of a common genus. See *Posterior Analytics* II 14, 17. (Thanks to an anonymous referee for drawing my attention to these sections from APo.)

Which way of accommodation should we follow? I see no reason to force a choice between the two. It depends on one's theoretical interest. In some cases, it is useful to zero in on the unique properties of a particular kind and to look into how they differentiate the kind from entities of the adjacent kinds. The uniqueness requirement is congenial for those who are interested in questions such as:

What chemical properties does lithium have in distinction from other alkali metals, given the unique physical properties of the element? What properties do isosceles triangles have in particular, in comparison to other types of triangle?

On the other hand, those who engage in projects which involve cross-kinds comparison might find a broader notion of *propria* useful. Consider research questions such as: What chemical properties could we expect from elements from the alkaline family, under which lithium falls? What pattern of radiation can we discover in different species of salamander that stem from the process of convergent evolution under similar yet distinct environments? What properties do triangles have in common with a polygon with n-sides? To utilize the notion of *propria* in one's talk about the non-essential, necessary properties of a kind in suchlike cases, one has to drop the uniqueness requirement and be content with necessary properties which support cross-kind comparison.

Since my goal is to revive a basic notion of *propria* that can be picked up by people with diverse research interests, I will waive the uniqueness requirement in my characterization of *propria*. (It is up to those who wish to restrict themselves to the unique properties of a kind to hold onto the requirement and thereby using *propria* in the narrow sense.) In doing so, I am consciously departing from the traditional usage of the term by Aristotle.

Conjunct (4) is central to the traditional notion of *propria*. To say that some necessary properties are *propria* is to carve out a logical space between the essential properties of x and its non-essential, necessary properties on the one hand, and between the *propria* of x and necessary properties such as 'being white or not white', 'being colored if being red' on the other. The latter might be called trivially necessary properties in view of the fact that they are instantiated by anything whatsoever, to that extent they don't shed light on what a particular individual or kind is. In both cases, it is crucial that we clarify the sense in which an object might be said to have some of its necessary properties "follow from" its essence:

To begin with, what is it for any property to "follow from" the essence of a thing? Is it for the former to feature in a proposition that is logically entailed by the essential definition of a thing? Or is it for the former to be causally related to the essence of the thing? Or is it for there to be some kind metaphysical determination holding between the essential properties of a thing

and its *propria*, causal or otherwise? Two competing proposals have been offered on how we should construe the "following from" relation. I will examine both proposals in the next section and explain what I see as wanting with each proposal.

3   Two Interpretations of "Following From"

In *A System of Logic*, Mill gives us a hint for how the *propria* of a thing might be said to "follow from" its essence:

> One attribute may follow from another in two ways; and there are consequently two kinds of *proprium*. It may follow as a *conclusion follows premises*, or it may follow as *an effect follows a cause*.
>
> MILL, *A System of Logic*, 148; emphasis in the original

Mill suggests that there are two distinct kinds of 'following from'-relation, one of which is logical, another causal. Mill's example for the logical construal of following from is how the property of having the opposite sides equal, a *proprium* of parallelogram, follows from the definition of parallelogram. And his example for the causal construal of following from is how humans' capacity to speak a language follows from our capacity to reason.

In his discussion of different senses of essence, Fine considers a proposal, according to which any logical consequence of an essential property is derivatively essential to the corresponding object (Fine 1995b, 56–57). First Fine distinguishes what he calls the constitutive essence of a thing from its consequential essence. Intuitively, the constitutive essence of Socrates consists of properties that comprise the core of being Socrates, which are not derivative from other properties of the individual. In contrast, the consequential essence of Socrates consists of properties that can be derived from his constitutive essence. Fine then writes:

> It is in principle possible that a logical consequence of a constitutive part of the essence of an object should itself be a constitutive part of the essence, but as a general rule this will not the case. Consider Socrates, for example. His essence will, in part, be constituted by his being a man. But being a man or a mountain will merely be consequential upon, and not constitutive of, his essence.
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> FINE 1995b, 57

The idea is that for a given object x and any constitutively essential property F of x, we can consider any property G that is logically entailed by F as consequentially essential to x, that is, as we might say, as a *proprium* of x. In an off-hand remark, Fine suggests that the distinction between constitutive and consequential essence might be seen as corresponding roughly to the traditional distinction between essence and *propria* (Fine 1995b, 57).

However, as Koslicki correctly points out, this proposal threatens to undermine Fine's own philosophical insight, given that it would imply that any trivially necessary property such as being colored if red is derivatively essential to Socrates (Koslicki 2012a, 192). This is bad given Fine's vision of what essence is supposed to accomplish: on his view, the essence of a thing should point us to the precise ground in virtue of which a modal truth obtains (Fine 1994, 9). Yet given that the fact that necessarily everything is colored if it is red doesn't obtain in virtue of the essence of Socrates, it would go against Fine's philosophical vision to make the property of being colored if red a consequence of the essence of Socrates.[8]

On the other hand, given that a necessary truth is logically entailed by a statement about the essence of anything whatever, the proposal suggests that it is a consequence of the essence of Socrates that 2+2=4. Yet this is undesirable. Given that the truth of the mathematical statement doesn't depend on the essence of Socrates in any way, it would seem wrong to ground the former in the essence of Socrates.

Fine anticipates both worries. To rule out the bad cases, he introduces two constraints on the process of deriving properties from an essential property. First, he introduces a criterion called generalizing out to rule out any trivially necessary property appearing in the consequence of a given essential property: roughly, the criterion says that a necessary property isn't essential to x whenever the property is instanced by anything whatever.[9] Second, he requires that

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8   Following Marcus' (1967, 94) treatment of tautological properties, we would want to distinguish the universal property of being colored if being red ($\lambda x(R(x) \rightarrow C(x))$) from an instance of the universal property ($\lambda x\, x = Socrates\ \&\ (R(Socrates) \rightarrow C(Socrates))$). Granted that the former isn't essential to Socrates, is the latter nonetheless essential to Socrates? The answer isn't immediately clear. If all it takes for a property to be essential to x is for x to have the property necessarily and for x to uniquely instance the property, then the property of being Socrates such that he is colored if he is red would be essential to Socrates. But perhaps not all necessary properties of a particular are essential to it, if as I shall argue later, the essential properties must fulfill some explanatory role in relation to the *propria* of a thing.

9   Given a proposition of the form P(y), where a property P is attributed to y, which is a constituent of the proposition (e.g. for the proposition Socrates is identical to Socrates, y=Socrates, and P=being identical to Socrates), let P(v) be the generalization of P(y) (being v=v in the

all objects that appear in the derivatively essential properties of x to be objects on which x ontologically depends (Fine, 1995b: 59–60). In our earlier example, given that Socrates doesn't ontologically depend on the number 2 or the number 4, the constraint says that it is not a consequence of the essence of Socrates that 2+2=4. As an upshot, we get a constrained notion of consequence, according to which a property P 'follows from' some essential property Q of x iff

(1) the proposition "x is Q" logically entails the proposition that "x is P"
(2) P can't be "generalized out", and
(3) all objects in P are objects on which x ontologically depends.

Taking the constrained notion of 'following from' as his primitive, Fine is now able to refine the distinction between the constitutive and consequential notion of essence. Unlike the earlier proposal that takes any logical consequence of an essential property to be consequentially essential to the relevant object, now we can say that a property is a *proprium* of an object (that is, consequentially essential to the object as Fine puts it) iff the property 'follows from' some constitutively essential property of the object in the constrained notion of "following from" characterized above. Does the constrained notion of following from give us a better approximation to the traditional distinction between essence and *propria*?

Koslicki argues not, on the ground that Aristotle's notion of 'following from' is a relation of being explained-by. On this view, for a *proprium* to follow from an essential property is for there to exist a demonstration (*apodeixis*), in which a proposition about essential properties of the relevant object plus some auxiliary assumptions, causally explain the proposition that the object has some *proprium*. Take the example of the capacity to read and write. The idea is that for the capacity to follow from some essential property of humans (say, being rational) is for there to be a demonstration, in which the proposition that humans are essentially rational plus some auxiliary assumptions explain the proposition that all humans are capable of reading and writing. Koslicki notes that for Aristotle the relevant notion of explanation can't be understood in terms of logical entailment alone (Koslicki 2012a, 189). Instead, a successful explanation must also track the underlying causal relation between the properties at issue (Koslicki 2012a, 196–201).

Note that if Koslicki is right, then Fine's restricted notion of consequential essence won't be enough to ensure that the essence of x successfully explains a

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previous example), such that P(v) is true for all v (with 'all' understood as ranging over all possible objects), and let C be the set of logical consequences of P(y). If P(y) and P(v) are both members of C, then P(y) can be generalized out of C. See Fine (1995a, 277–278) for his characterization of the criterion.

given *proprium* of x. For instance, assuming that Socrates is essentially rational, on Fine's definition, it is consequentially essential to Socrates that he is either rational or four-footed: since the property isn't had by anything whatever, it can't be generalized out. Further, since being rational or four-footed is a pure property that doesn't involve any object, it can't be ruled out by the dependence requirement, either. Yet given that intuitively the fact that Socrates is rational doesn't causally explain the fact that Socrates is either rational or four-footed, the latter doesn't "follow from" the essence of Socrates in the Aristotelian sense.

I think Koslicki is right to separate the causal construal of 'following from' from the logical construal that Fine favors. For as we have seen, even the constrained notion of 'following from' as Fine proposes it isn't enough for ensuring the existence of an explanatory relation, where the essence of a thing causally explains its *propria*. The question I want to consider here is whether logical entailment is necessary for a *proprium* to follow from an essential property. Recall that Fine takes logical entailment to be necessary for his restricted notion of consequence. What if we follow Aristotle's suggestion and take 'following from' to be a relation of being explained-by?

Koslicki seems to think that logical entailment is necessary for the essence of a thing to explain its *propria*. More precisely, she thinks that for there to be a genuine 'following from'-relation between, say, some essential property and *proprium* of the planets, the proposition about the essential property of the planets together with some auxiliary assumptions must logically entail proposition about the *proprium* of the planets. To illustrate by an example given by Aristotle, suppose it is essential to planets that they are heavenly bodies that are near. Further, suppose that it is a *proprium* of the planets that they don't twinkle. By Koliscki's lights, it is necessary that the proposition that all planets are heavenly bodies that are near, together with some auxiliary assumptions about light and distance, logically entail the proposition that all planets are heavenly bodies that don't twinkle.

The reason that Koslicki takes logical entailment to be necessary is because she wants to assimilate the relation of 'following from' to Aristotle's notion of 'demonstration' (*apodeixis*). As she puts it:

> In Aristotle's view, the proposition that planets do not twinkle follows from a proposition that states the essence proper of planets, in the sense that it can be *demonstrated* from such a proposition (viz., the proposition that planets are heavenly bodies that are near), together with an auxiliary premise (viz., the proposition that heavenly bodies which are near do not twinkle).
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> KOSLICKI 2012a, 196; emphasis in the original

Given that all demonstrations are valid deductive arguments on Aristotle's view, it would seem natural to pack logical entailment into the explanatory relation between essence and *propria*.[10]

Granted that logical entailment is necessary for demonstration, is Koslicki right about its being necessary for the relation of being explained by as such? Suppose it is a *proprium* of humans that they bleed when pricked, laugh when tickled and seek revenge when wronged. Further, suppose that the fact that humans are necessarily thus disposed is explained by the fact that we have a particular kind of body and mind essentially. Should we take a further step and accept that the proposition that humans essentially have that particular kind of body and mind logically entails that they are necessarily thus disposed?

Not obviously, at least when we take the relation of being explained-by at issue to be causal. After all, there is nothing logically inconsistent in claiming that although humans have a particular configuration of mind and body essentially, they don't bleed when pricked, or that they never seek revenge when wronged. The burden is on my opponents' part to show otherwise.

But you might protest that my disagreement with Koslicki turns on a misrepresentation of her view: after all, she might agree with me that there need not be any logical entailment between propositions stating the essence and the *propria* of a given object. This is because we also need some auxiliary assumptions for the entailment to hold. As the thought goes, it would be consistent with her proposal that the proposition that humans have a mind and a body essentially doesn't by itself logically entail the proposition that humans are necessarily disposed to revenge when being wronged, since for the logical entailment to hold we also need to supplement the initial proposition about essence with some auxiliary assumptions.

In reply I want to first note that not any auxiliary assumption that ensures logical entailment will do. It won't do to add as one's auxiliary assumption the definition of the very *proprium* to be explained, even though doing so would trivially guarantee logical entailment. Nor would it do to introduce auxiliary assumptions which involve an infinite conjunction of background facts. For logical entailment to be preserved, one must require the auxiliary assumptions to be finite and non-trivially relevant to the *proprium* under consideration.

But the general criteria of relevance are notoriously hard to specify. What makes the property 'being odd' or 'even' relevant to integers, but irrelevant to triangles? Is there any overlap between properties that are relevant to heavenly

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10   See *Posterior Analytics* I 71b25–6 for the requirement that all demonstrations must involve a valid syllogism.

bodies and properties that are relevant to humans? Or do the properties com-prise two non-overlapping spheres centered around heavenly bodies and humans respectively? Perhaps the concept of relevance defies any general analysis, or perhaps the concept is familiar enough such that we can count on our innate capacity to tell whether a property is relevant to a given object with-out consulting any general criterion. My inclination is to steer away from these difficult questions by waiving logical entailment as a necessary condition for characterizing the explanatory relation that interests Koslicki. It suffices to note that excluding deduction doesn't detract from the explanatory power of the kind of explanation that we are interested in: even if we can't deduce the explanandum from the explanans, it still seems highly plausible to say that the latter explains the former, on the ground that there is a causal relation between events involving the relevant properties.

Note that my point doesn't turn on essentialist explanations being partial in the relevant cases. Suppose we only offer a partial explanation for why humans seek revenge whenever wronged by appealing to the fact that humans have a particular kind of mind and body essentially. Whereas for a full explanation, we would also want to mention facts about the depraved character of our kind plus facts about the social role of retributive action. This doesn't need to lead us into thinking that the facts that serve as the relevant explanans of the full explanation must logically entail that humans are necessarily vengeful. Logical entailment is one thing, explanation another. Consider a plain case of causa-tion. The increase in the length of a pendulum plus some background con-ditions causes or causally explains the change in the period of its swing. No logical entailment is necessary for causal explanation in this particular case to obtain.[11] I claim that the same is true in the case of essentialist explanations involving *propria*.

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11   As far as I can tell, the only reason one might deny this is by confounding the necessita-tion between a full cause and an effect with the claim that on a D-N model of explanation, the relevant laws plus some auxiliary assumptions logically entail some particular facts that could be subsumed under the laws. To preclude such worry, I should note that it is the causal or metaphysical relation among facts or properties itself that I want to capture by the verb 'explain': in my mouth for one event to causally explains another is just for the first to cause the second. Although it might be said that logical entailment is necessary for causal generalization, it needs not be necessary for singular episodes of causation.

4   A New Proposal

In this section I want to offer a positive account of 'following from' by taking up the question of what it is for essential properties to explain *propria*.

Two preliminaries: First, philosophers use the verb 'explain' both in an epistemically loaded sense and in a non-epistemic sense as a shorthand for some special relations among facts, events or properties.[12] In the first sense, we say that Socrates' alleged practice of natural philosophy explains to the Athenian jury why he was prosecuted. One necessary condition for successful explanations understood in this sense is that they provide useful information that helps to answer particular why-questions in which whoever raises the questions is interested. This is not the notion of explanation on which I want to focus. Instead, in speaking of properties or facts explaining one another, I am using 'explaining' in a non-epistemic sense: certain chemical properties of a strong acid explain why it completely dissociates in water, and the definition of being a prime number plus some other facts about numbers explain why there are infinite many primes. I consider these as good instances of explanation even if no one finds the relevant information illuminating.

Second, on one popular characterization of essence, the essential properties of x are properties that answer the question "What is x?" or "What is it to be x?". Granted that the essence of x tells us what x is, we might still wonder how exactly it does so. Does the essence of x shed light on what x is by offering the identity condition for x?[13] Or does it do so by explaining why x (and in some cases, x alone) has some properties of interest? The latter construal is appealing for those of us who are interested in the role of essence in metaphysical explanation. Consequently, the kind of essentialist explanation that I intend to focus on has the following form: for an essential property F of x and a *proprium* G of x, the fact that x is F explains the fact that x is G. The question I want to pursue in the rest of this section is: What is it for some facts about essence to explain some facts about *propria*?

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12   See Lewis (1986, 217) and Kim (1994, 52) for examples of an epistemically loaded usage of the term 'explanation'. And see Gorman (2005, 283) and Schaffer (2016, 82) for non-epistemic usage of the term. The distinction is apparently not mutually exclusive: for instance, one may require a good scientific explanation to be both informative and backed by some causal relation among properties. Kim (1994, 54–56), for instance, advocates such a mixed position by requiring all successful scientific explanations by a theory T to answer both an epistemic question "What is that we know by T?" and the metaphysical question "What objective relation in the world does T register?"

13   Fine often uses 'essence' and 'identity' interchangeably in his writing, which gives some evidence that he takes the first route above to be the right construal of the question "What is it for x to be x?". See Fine (1995b, 54; 1995c, 243–244).

Here's a proposal:

> Let <p> abbreviate "the fact that p". <x is F> explains <x is G> only if:
> (1) <x is F> is metaphysically prior to <x is G>, and (2) <x is F> necessitates <x is G> in some non-logical sense of necessitation.

As the connective 'only if' indicates, my proposal is intended to stand as a partial characterization. For a complete characterization, we would probably want to take into account the laws of the relevant science. Further, we might also want to consider cases where a *proprium* is explained by more than one essential property of the relevant object, perhaps together with properties of other objects. A holist account of essentialist explanation shouldn't be ruled out at this stage. For instance, the fact that gold is dissolved in Aqua regia might be reasonably said to be explained by the essential properties of gold plus the essential properties of nitric acid and hydrochloric acid. In such cases, it would seem reasonable to expect the necessitation relation to hold between the conjunction of facts about the explanantia (perhaps plus further auxiliary facts) and the relevant fact about the explanandum.[14] Still further, for a full characterization we might want to consider a chain of explanation, in which the essence of x explains some facts about a *proprium* of x via other *propria* of x. For instance, the essence of humans might be said to explain our capacity to communicate in a particular language via sustaining our capacity to manipulate abstract symbols. In such cases, it would seem reasonable to require the chain of explaining to terminate on the side of the explanans.[15] I will set aside these complications and focus on the basic characterization above.

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14   It might also be reasonable to think that in such cases the cluster of essential properties are jointly prior to the given *proprium*, although no individual essential property within the cluster stands in the relation of priority to the *proprium*. Suppose it is a *proprium* of a particular knife that it has the power to cut well. The power might be said to be explained by the shape of the knife together with the material out of which it is made, although having a particular shape isn't in itself either prior or posterior to the power to cut well. The holistic treatment of essential properties of a species is underscored by Boyd's treatment of essential properties of natural kinds as homeostatic property clusters. See Boyd (1999, 142–144; esp. point 2 and 3 on 143 and 2010, 691).

15   Both Aristotle and Leibniz require demonstrations that aim at establishing necessary truths to terminate in a finite number of steps. See *Posterior Analytics* 72b20–22 and Leibniz's remark on contingent truth (Leibniz, *Philosophical Essays*, 28; 98–100). The constraint seems reasonable when we consider the relation of explaining as a special metaphysical relation in which rational beings like us have a vested interest. A non-terminating chain of explaining is as bad as an algorithm that fails to offer a definite answer in a finite number of steps: in each case the goal of the respective rational inquiry is frustrated.

Conjunct (2) is added to rule out cases where a spurious *proprium* is introduced by operations of logic alone. For instance, suppose humans are essentially rational. Further, suppose that there is a sense in which the property of being rational might be said to be prior to the property of being either rational or such that 2 is a prime. (2) suggests in the sense of explaining I am proposing above, the fact that humans are rational doesn't explain the fact that humans are either rational or that 2 is a prime. The constraint is reasonable when we take the relevant necessity involved in essentialist explanation to be metaphysical rather than merely logical.

Conjunct (1) requires explication. What does it mean to say that an essential property is prior to a *proprium*? What kind of priority is at issue?

In the previous section, we saw that the essence of a thing sometimes causally explains why the thing has a particular *proprium*. But not all essentialist explanations are causal. Consider the example of triangles. Let our definition of a triangle be a polygon with three sides and three angles. On Aristotle's view, the property of 'being a polygon with three sides and three angles' is prior to the property of 'having the sum of the interior angles equal to the sum of two right angles'. The priority at issue is clearly non-causal. Rather, it seems closer to the truth to take the priority as reflecting the role of the properties in the relevant mathematical proof: starting with the definition of a triangle, we can show why all triangles have the relevant *proprium* by constructing a proof that ends with the statement about the sum of the interior angles. But the proof doesn't work in the reverse order: starting with the property of having the sum of interior angles equal to 180 degree, we don't get to prove that any figure with such a property is necessarily a triangle. (For a counterexample, consider a figure with its angles possessing the desired property, which nonetheless has sides that are not line segments.)

Mathematical definitions are not the only instance where facts about essence might be seen as prior to facts about *propria* in a non-causal sense. Consider the relation between the possession of piety and the love of gods. Suppose Socrates is both necessarily pious and loved by gods. As Plato would say, Socrates is loved by gods because he is pious. In other words, being loved by gods is a *proprium* of Socrates explained by his piety.

How should we understand the explanatory claim at issue? If my earlier characterization of the relevant sort of explanation is right, then the fact that Socrates is pious has to be prior to the fact that he is loved by the gods. But in what way? The priority at issue isn't causal: it is compatible with laws of nature that Socrates' piety isn't favorably received by gods. Nor need the love of gods be part of the definition of piety. A more promising answer would be to take the priority at issue as reflecting the order of desert: Socrates would deserve

the love of gods only if he is pious. In this sense we may say that his piety is what justifies the love of gods. Conversely, the love of gods doesn't occupy the same position as the piety of Socrates in the order of desert: no amount of divine love would make Socrates deserve the love were he to be wanting in piety.

There seems to be still another kind of non-causal priority. Consider an example of artifacts. Suppose it is essential to the Titanic that it is a transportation vehicle for a particular use on the sea. And suppose it is a *proprium* of the Titanic that it has a particular shape. On an Aristotelian view, the function of the Titanic is prior to its shape by necessitating the latter in some way.[16] How are we to understand the necessitation at issue? Apparently, it would be wrong to say that the function of the ship causes or brings about its being shaped in a particular way. Rather, it seems closer to the truth to say that Thomas Andrews designed the Titanic in such and such shape so that it could realize its function. Further, it also seems true that had Andrews made a different architectonic plan, the Titanic might have been in a different shape, although it could not be the Titanic unless it is a ship.

A lot more needs to be said to make clear the nature of the priority relation at issue. Here I only want to highlight that the priority of function in this case rides on how ends are prior to means. Means and ends don't stand in any definitional relation to one another. Nor does the end of an architect justify the means by which he builds in any plain sense of justification. Rather, it seems closer to truth to say that the end of the architect "prescribes" that the ship has a particular shape so that it can perform its function.

So far I have said that the priority relation between 'essence' and *propria* may come in various flavors. Yet note that there is one constraint on comparing facts about necessary properties for relative priority: the comparison must be restricted to properties that can be ascribed to objects of the same proximate kind: Socrates' property of 'having mass' is neither prior nor posterior to his capacity to learn read and write, any more than a bronze ball might be said to have the property of 'being spherical' prior or posterior to its power to conduct electricity. In each case, the properties under comparison fall under the

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16   The necessitation is known as 'hypothetical necessity' (*anangke ex hupotheseos*) in the Aristotle literature. Aristotle introduces the notion in *Physics* II.9 and *Parts of Animals* 1.1. Roughly, there is an instance of hypothetical necessity whenever the realization of some goal requires some particular means being taken. One example that Aristotle uses to illustrate the idea is that a saw must be made out of iron to perform the operation of sawing (*Physics* II.9, 200a10–12). It is a difficult task to analyze this notion and appraise its role in Aristotle's natural philosophy. See Cooper (1987) and Charles (1988) for further discussions.

expertise of distinct sciences (geometry vs. physics in the ball example); to this extent there isn't a single proximate kind to which all spherical objects and all objects that have the power to conduct electricity belong. More formally: let Rel (F, G) stand for a binary relation between any two properties F and G, where F either is prior to, of the same level as, or posterior to G. The constraint above says that F and G can relate to each other by Rel only if there is a unique proximate kind K, such that for any x such that x is necessarily F and any y such that y is necessarily G, x and y are members of K.[17]

The constraint might strike those of us who want to compare properties for relative fundamentality across different sciences as undesirable: on the picture I am presenting here, the physical properties of Socrates (having mass, being made up from molecules and etc.) are neither more or less fundamental than his psychological or biological properties. Instead, we would consider all of such properties as essential to Socrates, but in relation to different proximate kinds under which Socrates stands: he has mass essentially qua a physical object in the same league as electrons and protons, and he has the capacity for complex computation essentially qua an organism endowed with a particular type of brain.

The relativizing of explanation to particular kinds should not surprise us when we recall that on a standard Aristotelian picture, the attribution of essential properties and *propria* is sensitive to the particular proximate kind under which an individual particular stands: a piece of isosceles-shaped bronze is both necessarily extended in space and necessarily having the sum of its interior angles equal to that of two right angles. Yet being extended in space and having the sum of its interior angles equal to that of two right angles can be said as *propria* of the particular piece of bronze only relative to distinct proximate kinds under which the bronze stands (i.e. a piece of bronze and an isosceles-shaped object).[18] Consequently, by the light of my constraint, the two properties don't stand in any relation of relative priority to each other.

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17 The constraint might be seen as motivated by Aristotle's assumption that there is no demonstration for properties that are had by objects of different genus. See *Posterior Analytics* 75a38–75b20.

18 It has been pointed out to me by an anonymous referee that the view that I advocate here isn't Aristotle's, for Aristotle assumes that there is only one proximate kind for any given individual, and that the existence of the proximate kind is independent of how we classify the individual in a natural language. I am happy to take on board the idea that a realist of kind (natural or otherwise) should not make the existence of a kind dependent upon ways of classification in natural languages: it is the job of science rather than linguistics to decide whether a term denotes a genuine kind. However, I see no a priori reason to rule out the plurality of proximate kinds: if the final theory of physics decides that photons are both waves and particles, and that waves and particles can't be reduced to a further single

5   A New Account of Essence

In this section I want to offer an account of being an essential property by taking as my primitive the relation of explaining that I characterized earlier. Here's my proposal:

> A property F is essential to a kind K iff (1) K has F necessarily (2) for some *proprium* G of K, <K is F> explains <K is G>, and (3) there is no *proprium* R of K such that <K is R> explains <K is F>.

Two caveats: First, for readers who don't like the idea of treating kinds as particulars, the first conjunct can be replaced by the proposition that all members of K have F necessarily. There is probably no reason to insist on the universal quantification across the board. For some kinds (e.g. biological and social kinds), it might be good enough for the purpose of essential attribution that the paradigm members of a kind have F necessarily: is a mutant individual that has most but not all the essential properties of its proximate kind a member of the kind? Is a person who engages in most but not all the essential activities of the social group to which she belongs a member of the relevant social kind? There is no need for us to take sides on such questions in our general characterization of essence.[19]

Second, I take *propria* to be my primitive for the purpose of analyzing essence. But strictly speaking this isn't necessary. Instead, we can also take 'essence' as our primitive and define the *propria* of a kind as necessary properties that are explained by the essential properties of the kind. The fact that we can define 'essence' and '*propria*' reciprocally by taking either one of them as our primitive is not worrisome. The key notion here is the relation of explaining. Taking the relation of explaining as primitive, we can say that a necessary property of x is essential to x whenever it is explanatorily fundamental with respect to the fact that x has some *proprium* G.[20] Otherwise, the necessary

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kind in virtue of any existing law, we'd better accept a plurality of proximate kinds in this case rather than holding onto the uniqueness requirement.

19   See Sandstad (2016) for an interesting discussion on formal causation in Aristotle's biology which favors an account of essence uncoupled with the exceptionless requirement.

20   The explanatory fundamentality as I take it does not rule out the possibility for an essential property to be explained by other essential properties. Suppose Socrates is both essentially a human and an animal. We might want to say that the fact that he is an animal is explained by the fact that he is a human. What matters for my purpose is that the explanatory chain bottoms out at some point on the side of the *explanans*.

property is either a *proprium* or trivially necessary (if it doesn't feature in any explanation whatsoever).

In using the relation of what explains what as the key to separating essential properties from *propria*, my proposal comes very close that that of Michael Gorman. Gorman suggests that F is essential to x iff (1) F is a characteristic of x, and (2) F isn't explained by any characteristic of x. Further, he gives a parallel treatment of accidental properties, according to which G is essential to x iff (1) G is a characteristic of x, and (2) G is explained by some other characteristic of x (Gorman 2005, 284).

My account differs from Gorman's in two respects: First, Gorman's main aim is to offer a non-modal account of essence. Neither essential property nor accidental property is characterized in modal terms. My account, in contrast, is a refined modal account, in the sense that on my picture both essential properties and *propria* are proper subsets of the necessary properties of an object. I take modality to be part of the philosophical notion of essence: part of what it means for Socrates to be essentially rational is for him to have the capacity whenever he exists. Giving up the implication seems to risk abandoning one of the core intuitions that philosophers have about essence.

Second, Gorman draws a distinction between characteristic and feature, which he uses in turn to distinguish essential properties from accidental properties. Roughly, a property is a characteristic of x if it is really about x, and it is a feature otherwise (Gorman 2005, 279). I draw no such distinction. The reason is that I take the requirement of relevance to be a constituent of any genuine explanation: nothing should explain why Socrates (in contrast to, say, his dog) has the capacity to manipulate abstract symbols unless the *explanans* comprise properties which are about Socrates. If there is a sense in which being either white or non-white doesn't explain anything interesting about Socrates, it is simply because the pertinent explanation fails to obtain. The requirement of aboutness adds nothing in addition to the existing requirement that there being some objective explanatory relation obtaining between the relevant properties.

My way of characterizing essence in terms of metaphysical explanation also stands in contrast to Fine's approach to essence, which takes a notion of real definition as its starting point. Fine considers two ways to clarify the connection between essence and real definition: one through the analogy of a localized notion of meaning and analyticity, another through the relation of ontological dependence. The two analogies are supposed to shed light on different aspects of the real definition approach to essence with which Fine is working: the analogy by meaning is supposed to bring out the fact that essence

is sensitive to the ground of a modal fact, just as the truth of an analytic state-
ment is sensitive to the meaning of some terms rather than others (Fine 1994,
10). On the other hand, the analogy of ontological dependence is intended to
draw our attention to the fact that a real definition isn't merely offering a nec-
essary and sufficient condition for the defined object; it must also register the
dependence relation between objects appearing in the definiendum and the
definiens (Fine 1995a, 275).

It will take another occasion to do justice to Fine's characterization of
essence in terms of real definition. Here I only want to note that neither of the
two analogies on which Fine relies for illuminating the notion of essence offers
us a self-contained handle on what essence amounts to: the first analogy pre-
supposes that a localized notion of meaning or analyticity makes sense. The
other presupposes that a relation of ontological dependence is central to an
Aristotelian notion of real definition. These are controversial assumptions that
one may or may not want to accept. Further, for those of us who are interested
in the question what makes a necessary property essential, the discussion of
real definition is unhelpful: on any view of real definition, a real definition of
x has to specify the essential properties of x. Yet we need an independent grip
on what it is for any property to be essential before making sense of any talk
about real definition.

My definition is revisionary: it says that for the purpose of essential attribu-
tion, we can't just start with an individual object and ask ourselves what prop-
erties are essential to it. Instead, we must always first locate the object under
some proximate kind and decide whether any property is essential by asking
whether it helps explaining why the relevant kind has this or that *proprium*.
This might strike some readers as unintuitive: don't we have some intuitive
grasp of what constitutes the essence of an individual, say, Socrates, without
having to first put him under some kind? Further, granted that we attribute
essential properties primarily to kinds, can't we spell out what those properties
are, without appealing to any notion of *propria*?

For the first question, I suppose intuitions vary among philosophers. In
my own case, I don't think that I have any pre-analytic grasp of what consti-
tutes the essence of anything. Rather, I am inclined to think of the concept of
'essence' as a theoretical notion that philosophers invent for answering spe-
cific questions.

For the second question, we can of course talk about a kind having this or
that essential property without appealing to any notion of *propria*. But what is
gained by such a way of talking? For one thing, it makes essential attribution
unnecessarily mysterious. As one might wonder: on what ground do we count

or discount any property as essential? The question becomes pressing when we are faced with instances of trivially necessary properties such as being a member of {Socrates}. We might have the feeling that the property isn't essential to Socrates. But why? Now with the aid of *propria*, we have an answer: the property isn't essential to Socrates, because it doesn't explain why Socrates has any of his *propria*.

I want to close by noting two implications of my definition of being an essential property. First, my definition is deflationary in the sense that it doesn't appeal to further metaphysical notions such as identity or Aristotelian form in characterizing essence.[21] Rather, on my account, the essential properties of x consist of properties which explain, in a non-derivative way, why x has its *propria*. We don't need to posit any further property (identity or Aristotelian form) that unifies the essential properties of a kind: the unity of a kind is nothing more than the complete set of explaining relations between its essential properties and *propria*. On my picture, the essence of gold isn't something over and above the minimum set of properties that explain all the *propria* of gold. Rather, the essence of gold is just such a set of properties that play the relevant explanatory role.

Second, my definition carefully distinguishes the logical necessity from the non-logical necessities. Since for there to be any explanatory relation between essence and *propria*, the essential properties must necessitate the *propria* in a non-logical way, no essentialist explanation as I understand it can be sustained by logical necessitation alone. We need a clear distinction between the logical necessity and the non-logical necessities in order to distinguish the essence and *propria* of a given object from trivially necessary properties such as 'being white or non-white', 'being colored if being red'. Previously, with the aid of the question "What is x?", we can exclude the trivially necessary properties of from the essence of x on the ground that these properties are instanced by anything whatever. Now with the aid of a notion of explaining, we can do better: for a given x, we can say that none of the trivially necessary properties are essential to x, for none of them features in any explanation concerning x.

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21   See Lowe (2013, 144–153) for an alternative suggestion that we construe essence in terms of identity. Lowe's identity construal of essence is inspired by Locke's characterization of essence (*An Essay Concerning Human Understanding*, 417) as "the very being of anything, whereby it is, what it is". Further, see Oderberg (2011, 101–103) for the suggestion that we identify the essence of a thing with the form of the thing, that is, a special universal that unifies all *propria* of the thing. Oderberg's appeal to forms is motivated by what he calls a "unity problem" (2011, 90) for any collection of essential properties, Oderberg thinks that we need to explain what holds those properties in common.

Note that these two approaches to exclude the trivially necessary properties do not exactly line up with respect to their effects: not all the trivially necessary properties ruled out by the constraint of explanation are universally instanced by anything whatever. For instance, the property of being the member of {homo sapiens}, for instance, isn't instanced by anything other than humans. My account says that this property is neither an essential property nor a *proprium* of humans, given that it doesn't show up in any explanation concerning humans.

6   Conclusion

In this paper I introduced an Aristotelian notion of *propria*, according to which objects have *propria*, that is, non-essential necessary properties that follow from their essences. The existence of *propria* complicates our taxonomy of necessary properties. The category of 'non-essential necessary properties' is no longer a monolithic group: Socrates not only has necessary properties such as being a member of {Socrates} that are not in any way explained by his essential properties, but also *propria* such as being capable of reading and writing, which is explained by his basic capacities as a human being. In addition, Socrates also has trivially necessary properties such as 'being white or non-white', 'being colored if being red' which he shares with anything whatsoever.

The admission of *propria* enables us to arrive at a definition of essence, on which a necessary property F is essential to a kind K iff F is explanatorily basic with respect to some *proprium* G of K. In comparison to the existing characterizations of essence, my definition of essence is theoretically parsimonious, in the sense that it doesn't require that we admit further conceptual tools such as identity or Aristotelian form in order to make sense of essence. Further, my definition of essence draws a sharp distinction between logical necessitation and metaphysical necessitation I suggest that the latter is required for the essence of x to explain its *propria*.

Colloquium at Qsinghua University in Spring 2020 for their stimulating questions and feedback.

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