Essence, Explanation and Kind-membership

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My dissertation centers on questions about essence, explanation and kind-membership.

In the first chapter, I examine a recent proposal which suggests that we define ontological dependence in terms of essence. Compared with the modal definition of ontological dependence, the essentialist definition promises to be sensitive to the direction in which specific dependence relation obtains. I argue that the promise is illusionary. The essentialist definition has the same defect facing the modal definition. The essence or real definition of a thing needs not always make reference to entities that are more fundamental; it can appeal to entities that are less fundamental as well. I then suggest that we distinguish the question whether we need essence in order to analyze ontological dependence from the question whether we need essence in order to explain particular features of specific dependence relations.

In the second chapter, I argue that the traditional notion of *propria* that we get from Aristotle can help shed light on the question "How do the essential properties of a thing differ from its non-essential, necessary properties?" and the question "How can the non-essential, necessary properties of a thing be 'derived from' its essence?". These questions are crucial for anyone who is interested in the project of

characterizing essence in non-modal terms. I propose a particular notion of *propria*, on which the essential properties of a thing are necessary properties of the thing that explain its *propria*.

In the third chapter, I examine a recent argument for coincidence between material entities, which appeals to various non-modal sortalish differences between a constituted object and its constituting matter. I offer a one-thinger reply to the argument. I suggest that the argument fails due to a mixed usage of names such as "David" and "Piece": the names can either be used to highlight distinct sortal profiles of a single material entity or to refer to the entity itself. Further, I defend a metaphysical picture on which an object can be member of distinct kinds by bearing distinct similarity relations to other objects in the same world.

BIOGRAPHICAL SKETCH

Chi started her philosophy education in Georgia State University in 2011, where she got her first M.A. in philosophy. She wrote her Master's Thesis on Kant's Humanity Formula in the *Groundwork* under the guidance of prof. Eric Wilson, in which she argues that the notion of "ends-in-themselves" as Kant uses it in his moral philosophy should be understood as referring to the capacity to appraise one's maxims of action from the point of view of pure reason. After getting her M.A., Chi continued her study in philosophy with the doctorate program at Cornell. During her study at Cornell, Chi broadened her interest in philosophy: she developed a serious interest in Ancient philosophy (esp. the metaphysics of Plato) and did her fifth-year tutorial with prof. Gail Fine. During her research on Aristotle, Chi got interested in Aristotle's pluralist account of explanation (*aitiai*) and its interaction with the notion of essence. As a continuity of this interest, she wrote her dissertation on the contemporary reception of Aristotle's approach to questions about essence and explanation under the supervision of prof. Karen Bennett. Trained as a historian, Chi is interested in drawing examples from the history of philosophy to shed light on contemporary questions. This method is illustrated in the second chapter of her dissertation, where she draws on Aristotle's notion of *propria* to shed light on the question "How do essential properties of a thing feature in metaphysical explanation?" which interest metaphysicians recently.

To my parents and friends

ACKNOWLEDGMENTS

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CHAPTER 1

Essence and Ontological Dependence

Consider examples such as Euclidean planes depend on congruent lines and points, Socrates's paleness depends on the existence of Socrates, and water molecules depend on the existence of oxygen and hydrogen atoms. These are *prima facie* examples of ontological dependence. Ontological dependence is often characterized as a species of metaphysical dependence holding between entities broadly construed, and it is often distinguished from causal or logical dependence. In its recent history ontological dependence has been characterized in purely modal terms. [1] The modal characterization is currently fallen out of favor, largely due to Kit Fine (1995a)'s powerful criticism. As a positive proposal, Fine suggests that we define ontological dependence in terms of essence. Many now agree with Fine on the point that metaphysical dependence in general is not analyzable in modal terms alone. [2] However, whether or not ontological dependence is better construed in terms of essence is controversial. [3] Throughout this paper I will take for granted that modality

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[1] The history of the modal definition goes back to Aristotle. Aristotle's definition of substance in *Categories* 5 (2b5-6) and *Metaphysics* 5.11 (1019a2-4) may be seen as supporting a modal characterization of dependence. Fine (1995a) ascribes to Husserl a modal account of dependence, on the basis of Husserl's discussion of dependence among species in *Logical Investigation*. See Correia (2008), Koslicki (2013) and Tahko (2016) for surveys of the recent literature on ontological dependence.

[2] Fine (1991) suggests ground as a primitive notion for understanding structure of reality. Many who follow him on this point have treated grounding as a non-modal notion, often with the consequence of rejecting formulating grounding claims in modal notions such as supervenience. For example, see Schaffer (2009): 364 and deRosset (2013): 1-2. It has been suggested recently that essence can be defined by a modal definition plus some notion of sparse property. See Wildman (2013) and Cowling (2013) for details of this view. For a critical response to the neo-modal account of essence, see Skiles (2015).

[3] For one thing, not everyone who accepts some version of ontological dependence believes in essence. Some prefer to talk about instances of ontological dependence in other labels: "building" for Bennett (2017), "grounding" for Schaffer (2009) and "structure" for Sider (2011). Within the essentialist camp, people disagree over how many senses of essence we need for distinguishing different species of

alone doesn't do justice to our ordinary and philosophical conception of dependence. Instead, I shall focus on Fine's positive proposal that says we should define ontological dependence in terms of essence.

One main claim of this paper is that Fine's essential definition is subject to criticisms parallel to the ones he mounts against the modal characterization of dependence. For one thing, essence understood in terms of real definition seems to lack the right logical structure for characterizing crucial formal features of ontological dependence. Further, there are clear cases where philosophical intuitions about dependence come apart from those about essence. Based on these observations, I conclude it is a mistake for the neo-Aristotelians to aim at a *definition* of ontological dependence in terms of essence. The question whether we need essence to *define* ontological dependence, I argue, should be carefully separated from the question whether we need essence to *explain* particular facts about ontological dependence. My main goal in this paper is to examine the first question. I claim there are reasons for thinking not just Fine's particular definition must fail, but *any* definition of ontological dependence in terms of essence must fail. In the final section of the paper I shall take up the question whether we need essence for explaining ontological dependence. My answer is: probably not. But I don't intend for my considerations there to be taken as decisive. Whether some notion of essence is necessary for explaining interesting features of dependence is a difficult question that requires another occasion to do it full justice. For this paper I shall be focusing mostly on the question whether we

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ontological dependence. According to one challenge, Fine's notion of essence isn't fine-grained enough to capture philosophical difference among distinct species of ontological dependence. See Koslicki (2012b) for more details of this criticism.

should define ontological dependence in terms of essence.

Here is the plan. First, I will review some key points that Fine makes in his discussion of the modal construal of dependence, where I extract from Fine two useful lessons for evaluating the adequacy of any attempt to define a key metaphysical notion. Next, I will consider some particular problems with Fine's definition. After that I will consider some more generic problems facing any definition of ontological dependence in terms of essence. Finally, I will examine a reply to my objection and explains why it fails to meet my challenge.

1. Lessons from Fine

On a natural construal of ontological dependence, for one entity to depend on another is for the former to exist only under the condition of that the latter exists. Informally, we may express the thought as: x can't exist unless y exists. This idea is captured nicely by a modal definition of ontological dependence. On a simple modal definition:

x ontologically depends on y iff necessarily, x exists only if y exists.

I labeled the definition as simple, for both directions of the biconditional might be contested in concrete cases. The *only if* direction, for instance, may be challenged by someone who denies mereological essentialism, on the ground that a particular table ontologically depends on its stump and board without it being necessary that whenever a particular table exists, some particular stump and board also exist. The *if* direction, on the other hand, might be resisted by someone who believes in necessary existents. Suppose numbers exist necessarily. Then necessarily Socrates exists only if number 2 does. But it would be absurd to say that Socrates depends on number 2 in any plausible sense of dependence.

The modal definition can be fixed in face of each challenge above: in the case of the table, one might change the definition into x ontologically depends on y at t iff necessarily, x exists at t only if y exists at t to stress the key intuition behind mereological essentialism, on which the existence of an object at a particular time depends on all of its parts existing at that time. In the case of number 2, a simple fix can be offered by excluding necessary existents from the domain of the dependee.

For our purpose, let us set aside these objections which stem from detailed considerations of particular instances. For one thing, as a general strategy against counterexampling, it is always possible for the proponents of the simple modal definition to deny that the alleged examples are genuine counterexamples by rejecting the philosophical intuitions supporting the examples. For instance, in reply to the counterexamples above, it is always up to the modal theorists to embrace mereological essentialism, or in the second case, to deny the existence of *abstracta*.

Further, whether mereological essentialism is true and whether there are abstract entities are controversial issues that one may want to avoid for the purpose of developing a preliminary account of ontological dependence, a project that may reasonably be associated with the search for a definition of dependence in modal terms. As the thought goes, if the goal of the modal theorist is to figure out the general principles for all instances of ontological dependence, then the appeal to counterexamples won't help shed light on such a project. Presumably, a counterexample counts as a genuine counterexample only if we have made some progress in answering the question whether "ontological dependence" labels a unified class of relation. If it turns out that by talking in terms of "ontological dependence",

we are dealing with a gerrymandered class of relations, the members of which bear little in common with one another, it will be pointless to refute any definition of ontological dependence by counterexample, simply because there isn't any interesting definition to offer for a miscellaneous class of relation.

With these generic points in mind, let us turn to Fine's criticism of the modal construal of dependence. The opponent that Fine has in mind is not just someone who may accept the simple modal definition that I offered above, but also anyone who takes "essentially" to be interchangeable with "necessarily". For someone of the latter persuasion, the sentence schema "essentially φ" is equivalent to "necessarily φ". Fine's ambition is to show that not just the simple modal definition must fail, but *any* modal definition that attempts to define ontological dependence in terms of modality must fail. To establish the latter claim successfully, Fine needs to take up the meta-philosophical question on what makes an adequate philosophical definition. More specifically, in order to show that no modal definition of dependence can succeed, one has to say in generic terms what one takes to be the common error of a modal approach to essence, where modality is treated as a primitive notion for analyzing how dependence works. As we shall see below, Fine's answer to this question may be seen as resting on the following two assumptions:

First, a good definition of a key metaphysical concept C must capture important formal features of C.

Second, a good definition of a key metaphysical concept C must be sensitive to important philosophical disagreements over C.

Now let us turn to details of Fine's discussion. First, in line with the first

assumption above, Fine points out that paradigm cases of ontological dependence are asymmetric. Take for instance the example of Socrates and the singleton set of Socrates that has Socrates as its member. According to standard modal set theory, necessarily, Socrates exists iff his singleton does. But the existence of Socrates apparently doesn't depend on the singleton. For a different example, consider Socrates and a true proposition about Socrates: according to Aristotle, necessarily, if Socrates exists then there are some true propositions about Socrates, but the former by no means depends on the latter. [4] The key point is: it is one thing for two entities to co-exist necessarily, another for one entity to depend on another for its existence. [5] Modality as a logical notion seems to differ significantly from dependence. For one thing, claims about dependence often carry with them assumptions about *explanatory priority*: the fact that Socrates exists explains the fact that his singleton exists, but not the other way around. The explanatory priority is not captured by modality as a logical notion, for modal necessitation or the strict conditional is neither in itself symmetric nor asymmetric. [6] Further, the explanatory priority seems to reflect the *metaphysical priority* between Socrates and the singleton set: the former seems metaphysically prior

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[4] Aristotle uses this example in *Categories* 12 (14b9-20) to illustrate a type of priority that sustains reciprocal inference for being. T-schema, for instance, is reciprocal in Aristotle's sense for it allows us to go from p is true to the fact that p and from the fact that p to p is true. Then he points out that the fact that inference can go both ways should not mislead us into thinking that the underlying causal/explanatory relation is symmetric: the statement that affirms the existence of Socrates is true *because* Socrates exists. But Socrates doesn't exist *because of* any true statement about him.

[5] Note that the point is *not* to attribute to the modal theorist the following claim: x depends on y iff necessarily, x exists iff y does. The biconditional on the right is apparently false, and the modal theorist is reasonable to deny it. The point is rather that the reason that the biconditional is false isn't because of logic: the logic of conditional is silent on whether the biconditional or only one half of it obtains.

[6] This claim is compatible with there being modal consequence for dependence. The argument is parallel to the causal argument against Hempel's deductive-nomological model of scientific explanation (D-N): suppose one claims that D-N fails on the ground that scientific explanations should track causal relations among things, and that causal dependence is asymmetric. The claim should not be heard as denying modal consequences of either causal dependence or scientific explanation.

to the latter, in the sense that the singleton might be seen as owing its existence to the existence of Socrates. Or put in terms of the other direction, the existence of Socrates may be seen as metaphysically grounding the fact that there is a singleton of Socrates. The mistake of the modal approach to dependence, seen from this light, is that it fails to capture asymmetry as an important formal feature of ontological dependence. Consequently, the modal theorists risk neglecting the explanatory and metaphysical priority that accompanies paradigm cases of ontological dependence.

Further, in line with the second assumption above, Fine notes that the notion of modality is too crude for the purpose of diagnosing philosophical disputes over dependence. To use Fine's example, consider the debate over the priority of a person and her mind. According to one side of the debate, the person is metaphysically prior to her mind. According to the other, the mind is prior to the person. Fine observes that the disputing parties can agree on all the relevant modal facts while disagreeing on how the dependence works (1995a, 272). This claim needs some clarification. It is presumably false to say that the parties can agree on *all* modal facts, if one implication of the debate is about whether the person necessitates her mind or the other way around. I think a better way of seeing Fine's point is *not* to treat him as denying that the disputing parties may disagree on some modal facts. Rather, Fine's point should be construed as saying that merely focusing on the disagreements over modal facts is somehow short-sighted or superficial, for it doesn't get to the heart of the dispute at issue.

To see Fine's point, let us take a look at the person-mind debate again. In one sense, the debate is about the relative fundamentality between a person and her mind.

As we have seen earlier, modality as a logical notion is silent on the explanatory and the metaphysical priority that seems important for the discussion of dependence. Further, there is a sense that even the focus on relative fundamentality doesn't get to the bottom of the philosophical disagreement at stake: presumably, the rivals disagree on whether the person or her mind is metaphysically prior, because they hold different views on *what persons are*. As Fine (1995a, 272) notes, one side of the dispute may take persons to be mere modes of or abstractions from their minds, whereas the other may take minds to be modes of or abstractions from the persons. The further question behind the dispute, as one may think, is over the real definition of persons, that is, over what persons are: Are persons reducible to some aggregate of mental states that they occupy? Or are they something distinct from their mental states? The problem with the modal approach to dependence, seen from this light, is that in equating essence with necessity, it misses the real action of philosophical debates of this kind.

I find Fine's argument against the modal construal of dependence compelling. In particular, I find Fine's method for arguing against his modal opponents instructive: it allows him to offer a diagnosis of where the modal account of dependence goes awry without being bogged down by subtle details of the examples that one happens to use for illustrating ontological dependence. In the exchange between Fine and his modal opponents, it is up to his opponents to take issues with his point about metaphysical priority being essential for ontological dependence, or alternatively, with his point about essence being metaphysically deeper than modality. But note that a modal theorist would miss the dialectic by picking on Fine's particular example: Fine's deeper worries about the modal account of essence and dependence do not turn

on his choice of example. The central questions under consideration are rather: whether metaphysical priority is constitutive of paradigm instances of ontological dependence, and if so, whether we need a non-modal notion of essence to analyze ontological dependence. To take issues with Fine's choice of example is to miss the level of discussion that Fine intends for his criticism to be received.

So here are two useful lessons that I took from Fine:

The first lesson: in asking whether a philosophical definition of x in terms of y is adequate, we should ask how well y captures important formal features of x.

The second lesson: in asking whether x is adequately defined in terms of y, we should ask how well we can characterize important philosophical disagreements about x in terms of y. In particular, we should ask how well y informs us about where such disagreements stem from by identifying the central locus of disputes over x.

The lessons correspond to the methodological assumptions that I ascribed to Fine earlier. Eventually I shall show that Fine's own definition of dependence fails to heed the lessons above. But before moving on to Fine's positive proposal, I want to make a note on how I understand the relation between ontological dependence and relative fundamentality. I have been talking in terms of one thing being metaphysical prior to or more fundamental than another in my exposition of Fine. Here is what I take to be a plausible principle (MFT; abbreviates: more fundamental than):

If x ontologically depends on y, either partially or fully, then y is more fundamental than x by some ranking of fundamentality.

I accept the principle above as a defeasible generalization for how paradigm cases of

ontological dependence work. [7] However, I don't accept the converse of the principle, that is, I don't accept that:

If x is more fundamental than y, then y ontologically depends on x.

The converse is most likely false: the principle of non-contradiction (for any proposition p, it is not the case that both p and not p) may be more fundamental than the principle of *reductio ad absurdum* (p and not p implies any q), but the former doesn't depend on the latter in any plausible sense of ontological dependence. Further, as Karen Bennett points out, atoms are probably more fundamental than the molecules in the sense that molecules are made up by atoms, but a water molecule in Ithaca doesn't ontologically depend on atoms of oxygen and hydrogen in Miami (2011,15). For these considerations, whenever I say that the dependee is metaphysically prior or more fundamental than the dependent, I should be heard as endorsing only the first conditional above, not its converse.

2. Fine's essential definition and its problems

In this section I will first introduce Fine's positive proposal. Then I will raise some worries that are particular to Fine's definition.

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[7] Bennett defends a similar principle for what she calls building relations. The relevant principle says for all x and y and any building relation B, if x at least partially Bs y, then x is more fundamental than y. Bennett intends for the principle to hold normatively for all building relations. See section 3.2.2. of Bennett (2017). My stance towards the principle above differs from Bennett's in this regard: I take the principle to be a useful generalization that is potentially defeasible by successful arguments for reflexive and symmetric dependence. For one thing, the idiom of ontological dependence has less natural affinity with relative fundamentality in comparison to the idiom of building that Bennett relies on: we don't usually hear claims such as God depends on himself or contrary properties such as wet and dry depend on each other as saying something surprising against our pre-analytic notion of dependence. Moreover, I take the question whether some version of metaphysical priority obtains in all cases of ontological dependence as a substantive question that can't be settled by abstract considerations: if ontological dependence turns out to be symmetric or reflexive in some cases, then these are cases where the principle above doesn't apply. The more interesting question to ask is whether any of such exception offers a more useful paradigm for unifying distinct species of ontological dependence.

As an alternative to the modal definition of dependence, Fine (1995a, 275)

recommends the following definition that appeals to essence:

> x ontologically depends on y iff y is a part of the essence of x, that is, either y

is a constituent of an essential property of x, or y is an object that appears in a

proposition that obtains in virtue of the identity of x. [8]

Take the example of singleton of Socrates. The definition says that the singleton

depends on Socrates just in case Socrates appears in some true proposition about the

singleton which obtains in virtue of the identity of the singleton. In comparison to the

modal definition, one merit of Fine's definition is that it incorporates better the

intuition that in genuine instances of dependence, the dependee must contribute to the

existence of the dependent. The contribution is registered by Fine's definition, which

requires the dependee to be part of the essence of the dependent. The requirement

seems *prima facie* plausible: if Socrates' paleness depends on the existence of

Socrates, not the other way around, it seems reasonable to think that the dependence

holds asymmetrically because Socrates is a part of the essence of his paleness, but his

paleness isn't a part of the essence of Socrates.

Before turning to criticisms of Fine's definition, I want to note that whether or

not Fine wants his definition to be taken as a reductive definition of ontological

dependence, he certainly intends for the *definiens* to be taken as a primitive of his

account. That is, for Fine (1995a, 273) the locution "some proposition involving y

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[8] As the way in which Fine (1995c, 245) sets up his logic of essence, x can either be an object or a
property. In the latter case, the property depends on y just in case there is some object instancing the
property which is either dependent upon or identical to y. Accordingly, we can represent statements
such as Socrates's paleness depends on the existence of Socrates by Fine's definition.

obtains in virtue of the identity of x" should not be construed as trying to analyze essence in terms of identity. Rather, we are advised to take the locution "a proposition p obtains in virtue of the essence of x" as a whole to be a primitive which we rely on in analyzing ontological dependence.

The definition by essence fixes the problem facing the modal account of dependence at a cost: it introduces essence as new primitive for the purpose of analyzing dependence. Fine, however, is prepared to motivate the introduction of a new primitive by drawing our attention to the payoffs brought by essence. One payoff, as we have seen, is that essence does a better job than modality in tracking the directionality of dependence. We get the asymmetry of dependence straight by availing ourselves of the expression "…obtains in virtue of the essence of…". In the case of the singleton, now we can say that Socrates doesn't depend on the singleton, on the ground that the latter isn't a part of the essence of Socrates.

Another payoff is that in comparison with modality, essence promises to be a more fine-grained notion for drawing necessary distinctions within ontological dependence. In what follows I shall show neither payoff comes out clearly under closer examination. Consequently, I conclude that Fine hasn't made a compelling case for introducing essence as a new primitive.

First let us start with claim that essence helps to fix the direction of dependence. Recall that one main problem facing the modal account of dependence is that modality as a logical notion is silent on which direction particular dependence relation goes. Consequently, we don't get asymmetry as a crucial feature of dependence coming out of the modal account. Asymmetry is important, for it allows

us to make inference about the metaphysical priority among entities: if x depends on y but not the other way around, it would seem natural to infer that y is metaphysically prior to x. Consequently, for essence to track the directionality of dependence, we would expect statements about essence to make reference to entities that are more fundamental.

The claim that statements of essence always make reference to what is more fundamental needs qualification. As it stands, the claim is trivially false in cases where the dependent entity happens to be what is absolutely fundamental: suppose according to Leibniz, monads depend on one another in their perception of the universe, and monads are absolutely fundamental, that is, they are metaphysical simples that are not made up by simpler substances. Then applying Fine's definition to monads won't get us what is *more* fundamental, simply because there is none.[9] To prevent such apparent counterexample, we may say that for instances of dependence that don't involve absolute fundamentals, essence always points us to entities that are more fundamental.

Should we grant Fine this qualified claim? Not according to Jessica Wilson. As a counterexample, Wilson (forthcoming, 12-3) invites us to consider the following position. Suppose an atomist wants to say:

1. Nucleons ontologically depend on quarks that compose them.

2. It is essential for the quarks that they compose the very nucleons that they do.

Now by Fine's definition, 2 would imply that quarks depend on nucleons, contrary to

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[9] Let m and m* be the only two monads in the universe. Further, let P(m) stand for m's perception of the universe. The dependence claim under consideration is: P(m) depends on the existence of m*. By Fine's definition, we get it is true in virtue of the essence of m* that P(m) obtains. MFT fails trivially in this case, because m and m* are equally fundamental by assumption.

1. Recall that on Fine's definition, for x to depend on y is for y to appear as an object in a proposition which obtains in virtue of the essence of x. [10] In this case, the relevant proposition is: quarks q1, q2, q3… compose nucleon n. The definition would yield the result that q1, q2, q3…ontologically depend on n. contrary to the atomist's assumption. So it looks like Fine's definition fails to get the direction of dependence right in this case.

Wilson's example makes reference to specific details of particle physics. But her point can be brought out by more mundane examples. To illustrate her worry, consider someone who claims that the rigidity of a plane figure depends on the arrangement of points and lines on the plane, and that it is essential for any particular point and line on a Euclidean plane that they support the rigidity of figures on the plane. Fine's definition will yield the false claim that says points and lines ontologically depend on the plane figure that they compose.

The crucial insight behind counterexample of this sort is that in spelling out the essence of the more fundamental entity, we might want to make reference to entities that are less fundamental. This is different from Fine's definition, where in specifying the essence of the dependent entity we only make reference to entities that are more fundamental. *Prima facie*, there is no reason to insist on one way or another: it seems plausible for the essence of some entities to make reference to objects or properties

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[10] To be charitable to Fine, we should probably not take just any object that appears in the identity claim about the dependent to be proper candidates for dependee. If one defines the essence of a point as a magnitude without size, it would be wrong to think that the definition means to suggest that points depend on some magnitude. But I think Wilson is right to press Fine on this point. As it stands, it is not clear what we are supposed to take as the dependees for statements such as it is essential for triangles that they are plane figures with three sides. As one may wonder: what are the relevant dependees? The genus? The differentia? Both? Or is ontological dependence relevant at all here?

that are less fundamental. For instance, a chemist may find it convenient to define chemicals of different essence by adverting to the distinct dispositional properties that chemicals exhibit. As Fine would agree, whether such a definition of chemicals is tenable is a substantive question that should not be settled by any definition of dependence.[11]

So it looks like Fine's definition faces the following dilemma: a proponent of the definition either has to accept counterexamples similar to the one raised by Wilson, thereby giving up the claim that essence always points us to entities that are more fundamental, or she has to deny the relevant statements about essence used by the counterexamples. To pursue the latter route in a non-*ad hoc* fashion, the essentialist would have to spell out what she takes to be the mistake for real definitions to advert to entities that are less fundamental. However that story may go, one thing she obviously can't say on the pain of circularity is that otherwise essence won't get the direction of dependence right. The key of Wilson's objection is that we won't be able to get the direction of the dependence right just by appealing to *any* plausible notion of essence. Essence by itself can't do the work.

I find Wilson's argument persuasive, although I think more can be said about why Fine's definition of dependence falls short of achieving its promise. I will take up this question in the next section. Now let us turn to the second payoff that Fine ascribes to essence, according to which essence allows us to draw fine-grained

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[11] In his own discussion of how to pick between different definitions of essence, Fine (1994, 5) suggests that "any reasonable account of essence should not be biased towards one metaphysical view rather than the other. It should not settle, as a matter of definition, any issue which we are inclined to regard as a matter of substance."

distinctions within ontological dependence. The basic idea is that we can count on different senses of essence to make necessary distinctions within dependence. To illustrate by Fine's example (1995a, 281), Socrates is an object that appears in the essence or real definition of his singleton immediately; whereas a human being pertains to the essence of the singleton only mediately. Suppose we recognize the distinction between these two senses of essence, we may want to make a corresponding distinction in dependence by distinguishing an immediate sense of dependence from a mediate sense of dependence. The idea is that we may then say that the singleton immediately depends on Socrates, and that the singleton mediately depends on a human being.

The suggestion outlined above has some wrinkles. As Fine notices, there are cases where we may not want to conclude that the notion of ontological dependence diverges just because there are important distinctions about essence to be made. For instance, we may recognize a reciprocal sense of essence, in which we say that it is the essence of John Watson to be the best friend of Sherlock Holmes, and vice versa. We may also recognize a sense of essence that is self-referential, such as the essence of God being self-caused. According to Fine, we don't thereby conclude that the corresponding dependence holds reciprocally or reflexively (1995b, 64-5). These are instances where Fine is happy to admit that our intuitions about essence don't offer good guidance on how the corresponding dependence works. So Fine's overall, strategy may be put as: count on difference in senses of essence to make necessary distinctions within ontological dependence, unless intuitions about dependence strongly advise otherwise.

Should we grant Fine this restricted application of essence in sorting out different senses of dependence? I think not for two reasons.

First, there are *prima facie* evidence for thinking that dependence is a more univocal concept than essence. As a general rule, it is undesirable to define a more univocal concept in terms of a less univocal one. Second, essence offers no independent handle on distinctions that we already recognize within dependence. Let me explain these points in turn. To start with the first point, consider Fine's example about the mediate vs. the immediate sense of essence. Suppose we grant Fine that there are two distinct senses of essence at play. Do we have any good reason for thinking the corresponding sense of dependence differs in a similar way? Not obvious. On the contrary, one may think if it makes sense to say that the singleton depends on a human being at all, we are talking about dependence in exactly the same way as we say that the singleton depends on Socrates: in both cases, the set depends on a particular member (i.e. Socrates) to whom we can refer in different ways (by proper name or by a definite description involving "human"). Further, in both cases, the existence of Socrates is what (partly) makes it the case that there is a singleton containing Socrates as its sole member.

Second, Fine's suggestion is reasonable only if essence grants us independent insights into how entities depend on one another. That is, it will be reasonable to admit essence as a primitive for the particular reason Fine considers, only if we can make necessary distinctions within ontological dependence by counting on judgments about essence without piggybacking on prior intuitions about dependence. However, it is not clear to me that this can be done. Consider the distinction between rigid existential

dependence vs. non-rigid generic dependence. In discussing ontological dependence, we may find it helpful to distinguish instances that require a particular entity as its dependee from instances that require the dependee to be some random individual of a particular kind. To illustrate, the singleton of Socrates depends on having a particular individual, i.e. Socrates as its dependee. In contrast, the existence of mankind only depends on there being some human being or other. It matters not in this case whether Socrates or Plato is among the set of dependee. Call the former rigid dependence and the latter generic dependence.

How shall we draw the distinction between rigid dependence and generic dependence by essence? One thing we can say is that for the singleton set to rigidly depend on Socrates is for the essence or identity of the singleton to require a particular entity (i.e. Socrates) as its constituent. Likewise, for generic dependence, we can say that for the species of human to depend on individual humans is for the essence of human to require some random set of people as its constituents.

Have we achieved a characterization of the distinction independently of dependence? Not obvious. For one thing, it is hard to see what it means for the identity of anything to require or necessitate something as its constituents, apart from the corresponding facts about dependence. It is hard to tell in abstract what constitutes the essence of a species, independently of considerations about how biological species depend on its members.

One may defend Fine's definition against my criticism by taking both essence and ontological dependence as primitives. Fine flirts with this option at one point by writing that:

"It is of course, no surprise that dependence can be defined in terms of the objectually constrained form of essential truth, for the notion of dependence is already built into the constraints by which the relevant notion of essential truth is understood" (1995c, 243).

But having two primitives for the same task is redundant: if the exposition of essence always falls back on some claim about dependence, then by defining ontological dependence in terms of essence we have achieved no more than an explication of "dependence" by synonyms. Conceptual economy suggests that we get rid of essence. A more promising reply says that we need essence to explain why instances of dependence obtain in the way they do. So take the example of the singleton, the idea is that even though essence doesn't allow us to state the fact about dependence in fundamentally different terms, it helps to explain why the singleton depends on Socrates rather than the other way around. I will consider this reply in more detail in the last section. Here as a preliminary reply I want to say two things.

First, if essence can't be explicated in terms that don't presuppose dependence, then the suggested explanation is potentially circular: if for the essence of the singleton to explain why the singleton depends on Socrates rather than the other way around amounts to saying that the identity of the singleton depends on Socrates, whereas the identity of Socrates doesn't depend on the singleton, I am inclined to think we haven't achieved more than restating the relevant dependence claims in terms of the identity of the relata. No new information is added by the appeal to essence.

Second, as we have already seen in Wilson's objection, not just any notion of essence will fix the direction of dependence. If for essence to explain why the relative fundamentality in a particular case obtains in one way rather than another is just for

essence to point us to entities that are more fundamental, then as we have already seen, essence alone can't do the job. On the other hand, suppose the success of suggested explanation rests on treating essence interchangeably with notions such as ground or substance, concepts that are frequently used to indicate metaphysical priority, then such a connection between essence and ground has to be made explicit by stipulation. [12] Simply appealing to essence won't get us anywhere down the ladder of fundamentality.

3. More generic problems with essential definition

In the previous section I considered some problems particular to Fine's definition of dependence. One may reasonably think that we can fix the problems by tweaking Fine's definition. In this section I will argue no definition of dependence in terms of essence will succeed, for there are more generic problems facing the essentialist approach to dependence. I intend for my point to correspond to Fine's claim about the modal construal of dependence: just as Fine puts it, "no modal characterization of dependence could conceivably be correct. For it would appear to be possible that two philosophers could agree on all the relevant modal facts yet disagree on the relationships of dependence" (1995a, 272), I claim that no essentialist characterization of dependence could conceivably be correct. But my story is more complex than what Fine has in the quotation: for reasons I can't get into here, I don't think that there is an exact parallel in the case of essence. That is, I don't think it is right to say that two people can agree on all relevant facts about essence yet disagree on the relationships

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[12] Aristotle, for instance, claims that essential explanations, i.e., explanations that deduce a conclusion from an essential definition of the subject matter under inquiry are explanatory in *Posterior Analytics* (*Apo*) I 13.

of dependence.

My overall strategy is to take the lessons I took from Fine in the first section seriously and ask how well an essential definition of dependence performs on each score that Fine considers in his criticism. Recall that the first lesson from Fine says that a good philosophical definition must reflect important formal features of the *definiendum*. The second lesson says that a good definition must shed light on where philosophical disagreements over the *definiendum* stem from. Consequently, I shall consider two questions: (a) How well does essence reflect important formal features of dependence? (b) How well essence helps illuminating what philosophers disagree with one another in specific cases of dependence? My answer to both questions is: rather poorly.

To start with the first question. What are the formal features of ontological dependence? Here are some candidates. Likely, ontological dependence is irreflexive, asymmetric and transitive. In other words, it is *prima facie* plausible to think that nothing depends on itself. If A depends on B, then it is not also the case that B depends on A. And finally, if A depends on B and B on C, then A depends on C. Presumably, each of these features can be challenged in concrete cases. [13] I am not interested in defending any of these features here. It suffices for my purpose that they together form a good characterization of paradigm cases of ontological dependence.

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[13] Jenkins challenges the irreflexivity of ontological dependence in Jenkins (2011). Barnes (2018) raises counterexamples for ontological dependence being asymmetric in Barnes, forthcoming. Schaffer rejects transitivity in Schaffer (2012):126-9. Details of these examples are controversial. But again, I take the interesting question here to be what are the features that characterize the paradigm cases of ontological dependence. It is not clear to me that Jenkins, Barnes or Schaffer has made a compelling case for such theoretical utility of their examples.

Instead, I want to ask whether expressions of essence preserve these formal characteristics. So the question I want to consider is, for any entity A and B, do we want to say:

A doesn't depend on A iff A is not a part of its own essence?

A depends asymmetrically on B iff B is a part of the essence of A and A is not a part of the essence of B?

If A depends on B and B on C, then A depends on C iff if B is a part of the essence of A and C is a part of the essence of B, then C is a part of the essence of A?

It is hard to decide just by looking at the schemata. Let us consult a concrete example. Suppose it is plausible to think that the singleton set of Socrates doesn't depend on itself. Can we translate this claim by saying that the singleton isn't a part of its own essence? By Fine's lights, this amounts to saying that either the singleton never appears in any true proposition about its own identity, or being the same singleton isn't an essential property of the set. Both claims seem immediately false. How can the set ever fail to appear in any claim about its identity, if the claim is about what is it to be the same set? On the alternative construal, how can being the very singleton fail to be an essential property of the singleton? What else may be essential for the set, if not being the very set? So no luck for irreflexivity.

What about asymmetry? It seems to work well in the example of the singleton. In this case we have a nice correspondence between how the dependence works and what lies in the essence of the set. However, recall Wilson's objection that says Fine's initial definition succeeds in tracking the direction of dependence only by fixing more or less arbitrarily on the essence of the dependent and requiring that the statement

about essence makes reference only to entities that the dependent entity depends on. But as Wilson rightly points out, there is no reason to insist on either point across the board: there are cases where the dependence may be seen as holding in virtue of the essence of the dependee rather than the dependent, and there are cases where in specifying the essence of x we would want to refer to what depends on x, not just what x depends on. To incorporate Wilson's insight, we may want to revise our schema as follows:

A depends asymmetrically on B iff *either* B is a part of the essence of A and not vice versa *or* A is a part of the essence of B and not vice versa.

The revised schema incorporates Wilson's suggestion that the definition by essence shouldn't by itself decide whether the asymmetry holds in virtue of the essence of the dependent or the dependee. But the cost is that we no longer have a nice asymmetry on the right. Now instead of having B being a part of the essence of A, not the other way around, we have "either…or" as the main connective. The disjunctive claim is symmetric. So the parallel of asymmetry is threatened.

Finally, the transitivity schema seems to subject to obvious counterexamples. Take the singleton of Fine's favorite set, that is, the set of {{Socrates}}. This set depends on the singleton set, which in turn depends on the existence of Socrates. By transitivity, the initial set mediately depends on the existence of Socrates. But the transitivity relation fails in the case of essence. It is essential for the set {{Socrates}} to have {Socrates} as its member, and it is essential for {Socrates} to have Socrates as its member, but it is not essential for {{Socrates}} to have Socrates as its member. For according to standard set theory, Socrates isn't something that will show up in any

identity claim about what {{Socrates}} is.

In sum, we don't get a neat correspondence between essence and ontological dependence in their formal features. Like modality, essence doesn't fare well in capturing important formal features of ontological dependence.

Now let me turn to the second question. How well does essence illuminate us on what philosophers disagree with one another in concrete cases? First note one generic implication of Fine's definition. The definition says that x ontologically depends on y just in case that y is a part of the essence of x. The fixation on the dependent is optional. Alternatively, we may say that x depends on y just in case x is part of the essence of y. The key idea is that whenever one entity ontologically depends on another, there must be some further fact about how one entity constitutes or features in the essence of another. The insistence on such a global correspondence between dependence and essence may strike one as *prima facie* implausible. Don't we sometimes want to say just how one thing depends on another, without committing ourselves to a *further* claim about the essences of the objects?

For one thing, one may want to resist the particular claim about essence generated by the more generic form of essential definition I considered above. Take for instance Aristotle's claim in *Categories* 1.5 that secondary substances such as horses and humans depend on primary substances such as Bucephalus and Socrates. The revised definition instructs us to look into the identity condition of either the species or the individual members for the purpose of analyzing the dependence relation at issue. But this suggestion would be wrong-headed, if the reasons that Aristotle has for supporting the dependence claim have little to do with questions

about the identity of a species or an individual member of the species.

Further, many instances of ontological seem to obtain contingently: the Boston Philharmonic Orchestra contingently depends on its current members, and the Thames contingently depends on the torrents of water that it happens to carry at a particular time. Note that there is no room for dependence to come out contingently when it is analyzed in terms of essence: for if the dependee is a part of the essence or the identity of the dependent, then the identity of the dependent necessitates any of its dependee. But whether or not there are genuine instances of contingent dependence is controversial, too controversial to be settled as a matter of definition.

But the essential definition doesn't just entangle us with claims that we may not want to accept, it also seems to generate pseudo-disputes over dependence. Consider the example of a coffee mug. Suppose Ted and Jill both agree that the mug ontologically depends on its handle. But for Ted all mug pieces are parts of the essence of the mug, whereas for Jill the essence of the mug comprises none of the mug pieces. Rather, she takes the essence of the mug to reside solely in the fact that it is used as a coffee container. How should we characterize their disagreement by Fine's lights? Given that Ted and Jill disagree over whether or not the handle is a part of the essence of the mug, by Fine's account of dependence, we would have to say that they disagree over whether the mug ontologically depends on its handle: for the definition says x depends on y only if y is a part of the essence of x. By *modus pollens*, whoever denies that y is a part of the essence of x also has to deny that x depends on y. However, as I am imagining the example, Ted and Jill aren't bickering over how the relevant dependence works. They both agree that the mug ontologically depends on its

handle. Their disagreement is *solely* over what constitutes the essence of the mug: Ted thinks that the essence of the mug includes all of its mug pieces, and Jill denies that. So it looks like Fine's definition misidentifies what Ted and Jill disagree with each other, contrary to its promise.

Here is what I take to be the problem with Fine's approach: in suggesting a *definition* of ontological dependence in terms of essence, he risks collapsing two distinct philosophical questions. The definition forces us to seek correspondence between dependence and essences in all cases of dependence. More specifically, the definition instructs us to look for difference in dependence whenever judgments about essence diverge. But as I noted, there is no reason to believe in such global correlation between essence and ontological dependence. For one thing, people who are committed to some view of ontological dependence may not believe in essence. For these people, we just don't need essence to say what depends on what, and in general, to say what ontological dependence is. Further, for people who are sympathetic to essence, it is far from clear that essence is useful for clarifying how dependence in general works.

One problem, as we have seen, is that expressions of essence and dependence don't match in their formal features: we don't get an accurate characterization of dependence being irreflexive, asymmetric and transitive in terms of essence. Another problem is that there are clear cases where it seems possible to agree on facts about dependence yet disagree on the essence of entities under consideration. If essence is indeed metaphysically prior to ontological dependence as Fine believes, such mismatch would be puzzling. In the next section I am going to consider a reply to my

criticism that says we need essence to *explain* interesting features of dependence. I will say why I find this reply wanting.

4. Essence as explanation for ontological dependence

Earlier in this paper I find myself speaking back and forth between essence as what *defines* ontological dependence and essence as what *explains* why particular ontological dependence obtains. In doing so I am simply following the way that others talk in the literature. Fine, for instance, describes the modal view that he argues against as trying to *explain* dependence in modal terms (1995a, 272). Alternatively, he suggests that we *understand* dependence in terms of essence (1995a, 275). Kathrin Koslicki, who follows Fine in arguing for an essential definition of ontological dependence, writes at one point:

> "But even if we are sympathetic to the idea that ODD (a definition she offers for ontological dependence earlier in the paper) yields a serviceable general schema by which to approach these putative cases of ontological dependence, it is still possible to dig deeper in our diagnosis of *why* the entities whose real definitions are purportedly stated above are ontologically dependent on the entities which allegedly feature in these real definitions" (203). (Emphasis of Koslicki)

The assumption that I want to highlight is that the project of defining ontological dependence must go hand in hand with the project of explaining how ontological dependence works.[14] But this assumption is probably unjustified. Explanation is one thing, definition another. In general, we don't assume that if one thing explains another, the *explanandum* must be defined by the *explanans*. For instance, if

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[14] This is not to deny that Fine recognizes a formal difference in the relevant claims. In his logic papers, Fine uses the notation$_x$ to abbreviate the primitive fact about essence that says something holds in virtue of the essence of x. One frequent use that Fine makes with this new operator is to make claims about what grounds the fact that x can't exist unless y exists. See Fine (1995a, 273).

Xanthippe's becoming a widow is explained by Socrates's death, we don't take a further step and say that the former event is defined in terms of the latter. If the fact that p (writes <p>) is explained by the combination of <pvq> and <~q>, we don't conclude that <p>must defined in terms of <pvq> and <~q>. So why aiming for any *definition* of ontological dependence, if the project is really about *explaining* particular aspects of ontological dependence? So I suggest that we separate the following two questions:

1. Do we need essence to define ontological dependence? That is, do we need essence to analyze the particular relation of dependence at issue?

2. Do we need essence to explain ontological dependence? That is, do we need essence to say why particular instances of dependence obtain in the way they do?

I am inclined to think the answer to the first question is no, given what I have said in section 3. But someone may reasonably argue that the correct answer to the second question is yes. It is this line of response that I want to examine here.

One reason for thinking that we need essence to explain ontological dependence is to make sense of the asymmetry of dependence. So take the example of {Socrates}. The thought is that the fact that the singleton depends on Socrates rather than the other way around is explained by facts about the essence of the singleton. The full explanation will be that the asymmetry holds, because Socrates is a part of the nature of the singleton, yet the singleton isn't a part of the nature of Socrates. Recall that this is one of Fine's main reason for arguing that we need essence for explaining ontological dependence.

At the end of section 2, I considered some reasons against explanation by

essence. But even if I grant the neo-Aristotelians that essence does do the trick, I deny that this is the best explanation we can offer, at least for this particular case. Here is a more straightforward explanation: the asymmetry holds, because Socrates can exist without the singleton, but the singleton can't exist without Socrates. (Note that this answer need not be construed as endorsing any modal definition of dependence. It only means to offer an explanation of why the particular asymmetry obtains. Again, explanations are not definitions.)

One may feel that the modal explanation is saying something more superficial or less ultimate than the essential explanation. I share that intuition. But I find it hard to pinpoint what the extra explanatory power consists in. So instead of going for the elusive prey, here is my second option: the asymmetry holds because Socrates is responsible for the existence of the singleton, but the singleton isn't responsible for the existence of Socrates. What do I mean by "responsible for"? I mean something along the line of x determining y or x bringing about y, except in a non-causal sense. Another way to put the idea is to say that the existence of Socrates contributes to the existence of the singleton, but not the other way around.

Here are some tentative reasons to prefer the modal or the quasi-causal explanation over the essential explanation. For one thing, neither the modal nor the quasi-causal explanation requires that we posit any new theoretical primitive. Second, they *seem* more informative by relying on concepts that are rooted in our workaday language. Essence, in contrast, is probably better considered as a philosopher's concept. Third, like essence, both the modal and the quasi-causal explanation capture the idea that Socrates is metaphysically prior to the singleton. On the modal

explanation, the relative fundamentality is captured by the fact that the more fundamental entity can exist independently of the less fundamental; whereas the less fundamental can't exist independently of the more fundamental. On the causal explanation, it is marked by the capacity of the more fundamental entity to determine or bring it about the less fundamental.

Let us consider a different argument for why we need essence to make sense of ontological dependence. The claim is that we need essence for explaining law-like patterns of dependence holding among distinct instances of dependence. [15] So take three singletons as our example: the singleton of Socrates depends on the existence of Socrates, the singleton of Plato depends on the existence of Plato, and the singleton of Gorgias depends on the existence of Gorgias. One question to ask is: in each case, what does it mean for each set to depend on its particular member? A different question to ask is: in all three cases, what makes it the case that entities like sets depend on their members? Intuitively, these two questions are asking about different things. The former is asking for an analysis of the dependence relation in use. The latter, by contrast, is asking for explanation of a regular pattern that emerges among instances of dependence. As the argument goes, essence is particularly useful for answering the second question. For by admitting essence, we can answer the second question by saying that the law-like pattern of dependence obtains because of the *essence* of the singletons, that is, what it is for anything to be a singleton set.

Note that the putative explanatory power of essence in this example seems to

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[15] The line of argument that I present here is due to Dasgupta (2014, 570, 572). He uses it to argue against a reductionist view, according to which grounding facts are grounded in their grounds. The view that I am sketching later is similar to a view that he labels as "brute connectivism".

arise from us covertly thinking in terms of the mathematical definition of sets. This should become clear if instead of talking in terms of essence, we say that the reason that there is a law-like pattern of dependence is because according to the axiom of extensionality, to be a singleton is to be a set with a sole member. Consequently, the mystery of explanation is dispelled, if instead of appealing to essence of sets, we advert to the essence of the dependees, that is, to the essence of Socrates, Plato and Gorgias. The latter apparently is of no help for discharging the explanatory demand. However, suppose the definition of sets is what is actually doing the explanatory work. Why appeal to essence instead of definitions? So my questions are: first, why essence of the dependent rather than the dependee? Second, why not definition if that is what is actually helping with the explanation?

Suppose we set aside questions above and grant for the essentialists that essence does do the explanatory work when we treat it as a form of definition. Is this a good reason for positing essence? I think not. I admit that the argument shows that something is needed to do the explanatory work. But I reject the suggestion that essence is what we need for such work, for there are more economical alternatives. Here is one tentative alternative: the law-like pattern of dependence obtains because the dependents bear relevant similarity to one another, and the dependees bear relevant similarity to one another. This alternative appeals to two relations of resemblance, one between the dependents, one among the dependees. This alternative seems unsatisfactory, for similarity is a notorious fussy notion. The problem is that objects can be said to be similar with respect to many aspects. But surely not all ways of grouping objects under the rubric of similarity get us the desired pattern of law-like

dependence. To illustrate, consider substituting the original triple for a new triple consisting of Xenophon, Aristotle, and Meno. The new triple bears interesting similarity with the old one, in the sense that the new triple consists of students of the members of the old set. But the new trio do not stand in any dependence with our initial sets of singletons. So this alternative doesn't seem to satisfy the explanatory demand raised by the essentialists. In particular, it fails to explain why a law-like pattern of dependence obtains for some set of similar objects but not for others.

To circumvent the difficulty, we may settle on a deflationary thesis. According to this thesis, the law-like pattern of dependence obtains because in each case, the singleton ontologically depends on its particular member. Understood in this vein, the question of the essentialist is: why does the singleton of Socrates depend on the existence of Socrates, and the other two singletons depend on their members in a similar fashion? My answer is: it is because in the first case, the singleton of Socrates depends on Socrates, in the second case, the singleton of Plato depends on Plato, and in the third case, the singleton of Gorgias depends on Gorgias. This alternative is deflationary in the sense that it denies that there is any further fact to be explained, apart from facts about particular instances of dependence. In particular, it denies that two questions that the essentialist appeals to require separate answers.

A lot more can be said about the arguments that I considered on the essentialists' behalf as well as my sketchy replies. Further pursuits of these threads require a different paper. But one thing seems clear: if the success of the argument for the need of essence in *defining* ontological dependence rests on the essentialists' winning the disputes about explanation I considered above, then odds don't look good

for the essentialists. For one thing, whether or not one thinks that some notion of essence is needed for explaining particular features of ontological dependence, that is a *separate* question from the question whether ontological dependence itself should be defined in terms of essence. The project of explanation and the project of definition are separate projects. Reasons for one don't add up with reasons for the other. If it is the project of explanation that the neo-Aristotelians are after, I suggest it is misguided for them to start with the project of definition.

The definition project, as we have seen, is subject to difficulties that are parallel to ones Fine identifies with the modal approach to dependence. Like modality, expressions about essence don't seem to stand in the correct logical form for the purpose of defining ontological dependence, and there are important intuitions about dependence that don't come out straight when we put them in terms of essence. Essence, as it appears, is a messier and less unified notion than dependence. The challenging task for the essentialists will be to sharpen the notion of essence by sorting out diverging philosophical intuitions affiliated with essence. In doing so, an essentialist would probably need to address questions such as ones I raised earlier in this section about essence and definition.

<div align="center">CONCLUSION</div>

In this paper I examined Fine's definition of ontological dependence. I argued that the definition faces problems similar to ones Fine sees in the modal construal of dependence: for one thing, essence doesn't always get us entities that are more fundamental. Further, expressions of essence don't seem to stand in the right logical form for the purpose of characterizing important formal features of dependence. Still

further, the essential definition entangles us with claims that we may not wish to make about dependence, and it generates pseudo-disagreements over dependence that deviate from the actual philosophical dispute in concrete cases. To help moving the dialectic forward, I suggested that we separate the project of defining ontological dependence in terms of essence from the project of using essence for explaining particular features of ontological dependence. My main claim is that essence is of little use for the first project. In comparison, the project of explanation is more promising. But I submit that in order for essence to do the promised work, more needs to be said about what essence is and how explanation by essence works.

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CHAPTER 2

Propria, Essence and Essentialist Explanation

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 being a cat. My coffee mug is necessarily something if it is a mug. Yet

being something if being a mug doesn't seem essential to something to be a coffee

mug. 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 their own right*. [1]That is,

they fail to answer the question "What is x?". Recently Kit Fine (1994) reminds us of

the traditional connection between essence and the "What is x?" question through his

famous singleton example. [2] It is hard to deny 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 his singleton. This is so,

because being a member of the singleton 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, there are two sets of question to look into as a follow-up to

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[1] The phrase comes from Aristotle's invented expression for essence (*to ti en einai*) in *Metaphysics* Z. In this sense, to inquire about the essence of a thing is to ask what it is to be the thing in its own right (*hekastoi*). 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): 361-62.

[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) fall under 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).

Fine's criticism of the modal construal of essence:

First, granted that it is not essential to Socrates that he is the member of {Socrates}, how can we distinguish the essential properties of x from its non-essential, necessary properties? In the light of the examples above, we might want to say that the non-essential, necessary properties of x don't shed light on what x is. But this claim itself needs further clarification: What is it for any property of x to fail to answer the question "What is x?"? Is it for the property to fail to be a part of the identity of x? Or is it for the property to be explanatorily secondary in comparison to other necessary properties of x? Intuitively the questions about the order of explanation between properties isn't asking about the same thing as the question about what constitutes the identity of an individual: the capacity to engage in abstract reasoning is presumably not fundamental to humans, although it might be seen as constituting the identity of a mathematician. It might be said that John the mathematician won't be the same person when he loses such capacity.

Second, what is the relation between the essential properties of x and its non-essential, necessary properties? Are all non-essential, necessary properties of x logically entailed by the essential properties of x? Or do some non-essential, necessary properties of x grounded in the essential properties of x without being logically entailed by the latter?

I suggest that the traditional notion of *propria* is the key to answering these questions. According to Aristotle, objects have non-essential necessary properties that

"follow from" their essences, which he calls by the name "*propria*". [3] On a classic

example, 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 had by 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 modal

construal of essence, there are several 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 a better grasp of

counterexamples that appeal to *propria*, we need a more general characterization of

the notion and its difference from the corresponding notion of essence. I argue that by

taking a notion of explanation or grounding as primitive, we can define both the

essence of x and its *propri*a: the former are necessary properties that ground or explain

the *propria* of x; whereas the latter are necessary properties that are explained by the

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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 learn grammar 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): 269-71.

essential properties of x.

Second, a general account of *propria* helps us to get clear on the notion of accidental properties. Accidental properties are sometimes defined in modal terms, that is, as properties that an object may or may not instance whenever the object exists. [4] The existence of *propria* suggests that this definition is defective: not all accidental properties are contingently instanced by their bearers. There are accidental properties (i.e. *propria*) that are necessarily instanced by their bearers.

Third, looking into the relation between *propria* and essence helps to shed light on a crucial distinction between grounding as a relation backing explanation and logical entailment. The latter, I argue, is neither necessary nor sufficient for some essential properties of x to explain its *propria*.

Here's the plan: first, I will lay out Aristotle's definition of *propria*. Then I will look at two proposals for how to understand the "following from" relation between essence and *propria*. 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 and side with Kathrin Koslicki in arguing that the relation should be understood instead 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

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[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. 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, 351-2) and Kung (1976, 362) for elaboration on these two notions of change and their relation to Aristotle's modal definition of accidents.

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 that I

shall be putting forward is a pluralistic one: an essential property can be said to

explain a *proprium* by reflecting distinct kinds of priority relations. In the last section I

will offer an account of essence based on my account of explanation and discuss its

implications.

1. Aristotle's definition of *propria*

According to Aristotle, a 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]

     Here are two classic examples offered by Aristotle: it is a *proprium* of humans

that they are able to learn grammar, and it is a *proprium* of triangles that the sum of

their interior angles equal to two right angles. On Aristotle's view, humans necessarily

have the capacity to learn grammar, that is, to read and write. And triangles

necessarily have the sum of their interior angles equal to the sum of two right angles. [6]

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[5] Conjunct (4) in my definition is perhaps best said of proper accidents (*ta kath' hauta sumbekeibota*), i.e., accidental properties of a thing that attach to the thing in its own right (*Metaphysics* 1025a30-34). Some examples that Aristotle offers for proper accidents in *Posterior Analytics* I 4 are: being either odd or even as a property of integers, being straight or crooked as a property of lines and dying in a sacrifice as a property of sacrificed animals. My construal of proper accidents as a species of *propria* is controversial. See ft.14 for further discussion.

[6] The first example requires some comments: what about people with disabilities for reading and writing? Aren't they human? In general, do we want to require that all members of a given kind to instance all *propria* of the kind necessarily? It is tempting for an Aristotelian to answer affirmatively. Yet I am inclined to think that the temptation should be resisted for two reasons. First, *propria* are subject to sub-divisions: suppose it is a *proprium* of humans that they are capable of speaking a language. It would be a *proprium* of humans that they are capable of speaking German or some other natural language. But the latter seems too specific to be required for every human. Further, the presence of some dispositional *propria* are not fully determined by the essence of the pertinent kind, in which case for the essence to necessitate the *propria* we also need the relevant background conditions. For instance, the *proprium* to laugh at funny jokes might be said to be determined by the essence of humans together with some contingent social facts about jokes. In such cases, we would probably want to waive

Yet the capacity to read and write isn't essential to humans, in the sense that it doesn't give an adequate account of what humans are. Similarly, although specifying the sum of the interior angles might help a student of geometry uniquely identify triangles by distinguishing them from other types of polygons, it falls short of accounting for what triangles are. The question what constitutes an adequate answer to the "What is x?" question is a difficult one, which I will put aside for the purpose of this paper (although I will say something about how I construe the question in section 3).[7]

Two remarks on conjunct (3):

First, in both examples offered by Aristotle above, the relevant *proprium* is attributed primarily to a kind rather than individual members of the kind.[8] (To ease the ascription of properties to kinds, I shall consider kinds as particulars throughout this paper.) Conjunct (3) often fails when we attribute a *proprium* of a kind to its individual members. For instance, when we speak of being capable of learning grammar as a *proprium* of Socrates, the capacity doesn't fully individuate Socrates from Plato or Meno. Since my main goal in this paper is to advocate an Aristotelian picture of essential attribution, which concerns primarily with the essence and *propria* of kinds, I hereby assume that the attribution of essential properties and *propria* to

the necessary instantiation of the *proprium* as a prerequisite for someone to be human, given that the instantiation of the *proprium* partly depends on contingent facts extrinsic to humans.

[7] The "What is F?" question goes back to Plato. In many of his early dialogues, the character Socrates is obsessed with questions such as "What is piety?", "What is courage?", "What is virtue?". On the standard view that Plato puts forward in his early dialogues, an adequate answer to the "What is F?" question has to cite a property that is shared by all instances of F and instances of F alone. In addition, the property also has to be explanatory by being sensitive to the ground of properties characteristic of F: being loved by gods, for instance, won't count as a good answer to the question "What is piety?", for it fails to cite the reason because of which pious actions are so loved by gods. For further references on this topic, see G. Fine (2000, 7-9).

[8] Strictly speaking, only proximate kinds bear essential properties for Aristotle. See *Metaphysics* Z (1038b30-34; 1039b7-10).

individuals is parasitic upon the attribution of essential properties and *propria* to the relevant kinds in the following way: for a kind K and an essential property or *proprium* F of K, all and only members of K have F (the uniqueness requirement might be waived in some cases for *propria*, as I shall explain later). In addition, for a particular member m of K, all essential properties and *propria* of m are essential properties and *propria* of K. [9]

I take the first conjunct to be uncontroversial among proponents of essence: given a particular object, the object has all of its essential properties necessarily. The second conjunct is added to set aside, for the purpose of ascribing essence or *propria* to individuals, any property that is uniquely instanced by a particular individual. All essential properties and *propria* on my picture are discriminating only with respect to kinds. Consequently, nothing I am saying about essence or *propria* in this paper should be expected to bear on the behavior of individual essences or haecceities.

Second, although unique instantiation is often presupposed on the traditional notion of *propria*, I see no good reason to stick to this constraint in all attributions of *propria*. Aristotle's requirement for all *propria* to be uniquely instanced seems to be motivated by linguistic rather than philosophical considerations. [10] On the other hand, what is crucial about *propria* is that they are necessary properties that "follow from"

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[9] 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 in, 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.

[10] In *Topics* 102a21-3, Aristotle notes that no one *calls* anything an *idion* which may also possibly belong to something else. Smith (1997,62) notes that the usage of *idion* to mean a unique or private property of an object is preserved by an archaic English usage of the term "property", which is no longer present in the current philosophical usage of the term.

essence in some way. In other words, *propria* are derivative necessary properties that

an object has in virtue of its essence. Whether or not such properties are uniquely

instanced seems to depend on the specific kind of entity that we are dealing with:

although it is reasonable to think of the *propria* of a triangle as being uniquely

instanced (or probably necessarily uniquely instanced) by triangles, it is less

reasonable to require that natural kinds such as gold or mosquitoes have all of their

derivative necessary properties uniquely instanced. Can't gold be said to have a

proprium such as being disposed to react with *aqua regia*, which is both grounded in

its essence (its chemical structure) and shared by a few other elements? Can't

mosquitoes be said to have a particular structure of wings as its *proprium*, which is

both grounded in its genetic makeup and shared by birds and bats as a result of

convergent evolution? I see no good reason to rule out by stipulation derivative

necessary properties of this sort in our theorizing about *propria*. Consequently,

throughout this paper I will waive the requirement of unique instantiation in the

conditions for being a *proprium* of a given object.

Conjunct (4) is at the heart of our understanding of *propria*. To say that some

necessary properties are *propria* is to carve out a space between essential properties

and necessary properties that are grounded in essence on the one hand, and between

propria and necessary properties such as being white or non-white, being colored if

being red on the other. The latter might be called trivially necessary properties given

the fact that they don't seem to shed light on what a particular individual or kind is.

For both tasks, 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. First of all, 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 a corresponding proposition about essence? Or is it for the former to be caused by the essence of the thing? Or it is for there to be some non-causal determination holding between the relevant properties? Two competing proposals have been offered regarding how to construe the "following from" relation, and I will examine them in the next section and explain what I see as wanting with each proposal.

2. Two construals of the "following from" relation

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*." (1879, 148; his emphasis)

The basic proposal is 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 other properties featuring in the definition of being a parallelogram (i.e. having four sides, having the opposite sides consisting of straight lines parallel to one another). And his example for the causal construal of "following from" is how the capacity to speak a language, a *proprium* of human, follows from the capacity to reason. Details of the examples need not worry us here. It suffices to note that they are variants of Aristotle's classic examples of *propria*. For now, let us focus on the key idea that a *proprium* can either "follow from" an essential property

by logical entailment or by causation.

In his discussion of different senses of essence, Fine considers a proposal, according to which any logical consequence of an essential property is considered as derivatively essential to the corresponding object (1995b, 56-7). First Fine distinguishes what he calls the constitutive essence of a thing from its consequential essence. Intuitively, the constitutive essence of Socrates is the basic 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." (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* (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 (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 (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 vision to make the property of being colored if red a consequence of the essence of *Socrates*. [11] On the other hand, given that a logical 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 if number 2 is even, then something is even. Yet this is undesirable. Given that the necessary truth about the number 2 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. [12] Second, he requires that all objects that appear in

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[11] Following Marcus' treatment of tautological properties in Marcus (1967, 94), we would want to distinguish the universal property being colored if being red ($\lambda x(R(x) \rightarrow C(x))$) from an instance of the universal property (λx 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 this should strike us as wrong: the connection between Socrates and the necessary property doesn't seem to be the right sort to justify essential attribution.

[12] 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 previous example), such that P(v) is true for all v (with "all" understood as ranging over all possible objects), and let C be 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, 277-8) for his characterization of the criterion.

the derivatively essential properties of x to be objects on which x ontologically

depends (1995b, 59-60). In our example above, given that Socrates doesn't

ontologically depend on the number 2, the constraint says that it is not a consequence

of the essence of Socrates that if number 2 is even, then something is even. As an

upshot, we get a restricted 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 thinks 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 learn grammar. 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 learning grammar. Koslicki notes that for Aristotle the relevant notion of explanation can't be understood in terms of logical entailment alone (2012a,189). Instead, a successful explanation must also reflect a causal relation between the relevant essential property and *proprium* (2012a, 196-201).

Note that if Koslicki is right, then Fine's restricted notion of consequential essence wouldn't be enough to ensure the existence of an explanatory relation between an essential property and its consequence. 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 human 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 the fact that Socrates is human doesn't explain the fact that Socrates is either rational or four-footed, the latter doesn't "follow from" the essence of Socrates in Aristotle's 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 getting us an essentialist explanation, where the essence of a thing must causally explain its *propria*. The question I want to consider 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 of the planets and their *propria*, the proposition about the essential property of the planets together with some auxiliary assumptions must logically entail the 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. On Koliscki's view, 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). (2012a, 196; her emphasis)

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*.[13]

However, as a matter of reading Aristotle, I think it is a mistake to assimilate "following from" to the relation of demonstrating. [14] An alternative way to understand "following from" is to look at Aristotle's discussion on how the proper accidents (*sumbebeikota kath' hauta*) of a kind originate from the essential properties of the kind. [15] But let us set Aristotle exegesis aside and consider whether there is any independent reason to think that if some fact about the essence of x explains some fact about a *proprium* of x, there must be a logical entailment between propositions which feature the relevant essential properties and *propria*. Suppose by the light of Shylock, 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

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[13] See *Posterior Analytics* A 71b25-6 for the requirement that all demonstrations must involve a valid syllogism.

[14] For one thing, assuming that both essence and *propria* are expressed by predicates, the "following from" relation is a relation between terms (i.e. the middle and the extreme in Aristotle's words) rather than a relation between premises and conclusion of a syllogism. For Aristotle terms don't stand in the relation of entailment; rather, they relate to one another by subordination (in the case of secondary substance) or predication (in the case of non-substance categories). Further, although Aristotle does require that a middle term being explanatory, the requirement is best understood as independent of the fact that demonstrations are deductively valid. The official story that we are told in *Physics* II 3 is that all explanations must cite the primary cause (*ten proten aitian*) of the explanandum under consideration. It is at best unclear that all instances of explanation that involve some primary cause are backed by a corresponding deduction: is there a deduction from the function of a dagger to the particular material out of which it is made? Is there a deduction from the final end of a virtuous agent (say, to live a good life) to her particular means for achieving it? In both cases, even if the deduction in demand fails, that seems to detract little from the corresponding explanatory claims. Similar point can be made for particular instances of efficient causation.

[15] My reading of proper accidents (*sumbekeikota*) as a type of *propria* ("*idion kath' auto*") as Aristotle labels it in *Topics* V) is based on the overlap of examples that Aristotle uses for these two notions. Two examples that Aristotle uses for "*idion kath' auto*" in *Topics* V 1 are being political animals and being a mortal capable of acquiring knowledge; both examples fall under the description that Aristotle offers for proper accidents in *Metaphysics* 1025a30 and *Posterior Analytics* 75a42-b2. The explanatory reading of 'following from' comes out more naturally when we consider examples of proper accidents. See Bronstein (2016): 47-48 for an exposition of proper accidents in *Posterior Analytics* that favors my view of treating proper accidents as *idion kath' auto*. Whether proper accidents are *propria*, as Aristotle defines them in *Topics*, is controversial; see Barnes (1970):139-140 for a different take on the issue.

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 inconsistent in claiming that although humans have a body and a mind essentially, they don't bleed when pricked, or that they never seek revenge when wronged. The burden is on my opponents' part to show first that there is a logical inconsistency hidden somewhere.

But now 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 grant that there is always some way to introduce auxiliary assumptions to ensure logical entailment. One way to do so is to introduce as an auxiliary assumption the proposition about the relevant *proprium*. Given that any proposition logically entails itself, the initial proposition about essence coupled with such an addition would logically entail the proposition about the relevant *proprium*.

But surely this can't be what Koslicki has in mind! For she would want the auxiliary assumptions to be *relevant* to the given fact about *propria*. But note that once we introduce relevance as a constraint on the introduction of auxiliary assumptions, we have changed the initial view that I ascribed to Koslicki, which mentions nothing about relevance.

On the other hand, suppose my opponent does intend for the auxiliary assumptions to be relevant. We would expect her to say more about how we should proceed with admitting the relevant auxiliary assumptions for different cases of explanation. But the general criteria of relevance are notoriously hard to specify: is there any property that all relevant facts about planets share in common with facts that are relevant to humans? What makes the property being odd or even relevant to integers, but irrelevant to triangles? Perhaps the concept of relevance defies any general analysis. Or maybe the concept is familiar enough such that we can effectively tell whether a property is relevant to a given object without consulting any general criterion for relevance. It would be better to avoid getting into such difficult questions in the first place 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 general 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 causation. The increase in the length of a pendulum

plus some background conditions 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.[16] I claim that the same is true in the case of essentialist explanations

involving *propria*.

3. A pluralist account of essentialist explanation

In the last section I looked at two construals of the "following from" relation. I said

that logical entailment is not necessary for a *proprium* to be explained by the relevant

essential property. In this section I want to offer a positive account of "following

from" by taking up the question of what it is for an essential property to explain a

proprium.

      Two preliminaries:

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[16] As far as I can tell, the only reason one might deny this is by confounding the necessitation 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.

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. [17]In the first sense, we say that Socrates' alleged practice of natural philosophy explains to someone who is unfamiliar with him why he was prosecuted. One necessary condition for successful explanations understood in this sense is that they provide useful information that helps answering 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 would find the relevant information illuminating.

Second, on one popular characterization of essence, the essential properties of x are properties that explain "What is x?" or "What is it to be x?". The question itself requires clarification. As it stands, it is far from clear what is the fact about x that the essential properties of x are supposed to illuminate. In asking "What is x?", are we after explanations for the existence of x? The identity of x? Some necessary, non-

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[17] See Lewis (1986, 217) and Kim (1994, 52) for examples of an epistemically loaded usage of the term "explanation"; 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, 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?". See Kim (1994, 54-56).

essential properties of x? Or some other facts about x?[18] For my purpose, I understand the "What is x?" question as asking what it is for x to have some *proprium*. And the kind of essentialist explanation that I am interested in 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*?

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 a 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 by our characterization of essentialist explanation at this stage. For instance, being insoluble in nitric acid, a *proprium* of gold, might be reasonably said to be explained by facts about the essence of gold plus facts about the essence of nitric acid. In such cases, it would seem *prima facie*

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[18] The ambiguity of the question partly arises from the ambiguity of the expression "to be": both in Greek and in English, the question "what is it for x to be" could be taken to mean different things. There are at least three ways to take the question: (1) as "what is it for x to exist?" (2) as "what is it for x to be numerically the same x?" (3) as "what is it for x to be so-and-so?". Fine often uses "essence" and "identity" interchangeably in his writing, which gives some evidence that he takes (2) to be the right construal of what x is. See Fine(1995b,54) and Fine (1995c, 243-44).

reasonable to require that for each specific F and G, the fact that x is F is prior to the fact that x is G, and that the conjunction of facts about Fs (perhaps plus some auxiliary facts) as a whole necessitates the fact about G. [19] 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 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.[20] I will set aside these complications for now and focus on the simplified characterization above.

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 being rational might be said as 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.

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[19] It could also be said that in some cases, a cluster of essential properties are jointly prior to a *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 p. 143) (2010, 691).

[20] 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 in Leibniz (1989):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.

The constraint is reasonable when we take the relevant necessity involved in essentialist explanation to be natural rather than 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 might causally explain why the thing has a particular *proprium*. But not all instances of essentialist explanation involve priorities that are causal by nature. 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. How should we construe the priority relation at issue? The relation 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 proofs: starting with the definition of a triangle, we can construct a proof for the theorem that all triangles have the sum of their interior angles equal to the sum of two right 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 Socrates' practical wisdom and his being loved by gods. Suppose

Socrates is essentially capable of acquiring practical wisdom, and that necessarily the capacity is loved by gods. As Plato would say, Socrates is loved by gods because he is capable of acquiring practical wisdom. So being loved by gods is a *proprium* of Socrates (or better, people endowed with the capacity in general).

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 capable of acquiring practical wisdom has to be prior to the fact that he is loved by the gods. But in what way? The priority isn't causal: it is compatible with laws of nature that Socrates' capacity isn't received favorably by gods. Nor need the love of gods be part of the definition of practical wisdom. One promising way to construe the priority is to take it as reflecting the order of justification: the gods would be justified to love Socrates only because he is capable of acting prudently. In this sense we may say that his capacity is what makes him deserve the love of gods. In contrast, the love of gods doesn't stand in the same justificatory relation to the capacity of Socrates: if Socrates were to lack the capacity to become wise, then no amount of love from the gods would make him worthy of the divine affection.

There seems to be still another kind of non-causal priority. Consider an example of artifacts. Suppose it is essential to ocean liners that they are transportation vehicles for use on the sea, thus it is essential to the Titanic that it is a transportation vehicle for 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. [21] How are we to understand the necessitation at issue? Certainly 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 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 if 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 different 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 grammar, any more than a bronze ball might be said to have the property of

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[21] 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* 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 discussion on this notion and further references.

being spherical prior or posterior to its power to conduct electricity. In each case, the properties under comparison fall under the expertise of distinct sciences (geometry vs. physics in the ball example); to this extent there isn't a single kind to which all spherical objects and all objects that have the power to conduct electricity belong. [22] 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. [23] 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 ways of classifying Socrates: he essentially has mass when we treat him as an ordinary physical object in the same league as electrons and protons, and he has the capacity for complex computation essentially when we treat him as an organism endowed with a particular kind of brain.

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[22] There is a set which has all spherical objects and all objects that have the power to conduct electricity as its members. But the set doesn't correspond to a unified kind: a kind sustains lawful generalizations that are related to one another in a systematic way in a way that the union of all spherical objects and all objects that conduct electricity don't.

[23] 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.

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 proximate kinds 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 since 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, by the light of the constraint, the two properties don't stand in any relation of relative priority to each other.

4. An account of essence and its implications

In the last section I considered a characterization of essentialist explanation and various ways in which essential properties might be seen as prior to *propria*. 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 property R of K such that <K is R> explains <K is F>. [24]

For reasons I shall explain later, (1) should not be construed as expressing

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[24] Gorman (2005, 284) offers a definition of essential that is in some way similar to mine. On his definition, F is essential to x iff (1) F is characteristic of x, and (2) not explained by any other characteristic of x. Conjunct (1) is added to rule out trivially necessary properties such as being a member of {Socrates} from the essence of Socrates. Although I am sympathetic to the idea that all essential properties of x must be *about* x, I am inclined to think that the idea is a consequence of the explanatory role of essential properties. See ft. 25.

metaphysical necessity. But first of all, a couple of 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. (Similar treatment for the attribution of *propria* to kinds.) There is probably no reason to insist on the universal quantification across the board. Instead, 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 as a matter of definition.

Second, the second conjunct proposes that each kind has at least one *proprium*. Further, it presupposes that my characterization of explanation in the last section is on the right track. These are controversial assumptions that I am willing to accept for the purpose arriving at a non-modal definition of essence. If it turns out that some kinds have no *proprium*, or that my favored characterization of explaining is misguided, then my proposed definition of essence will be compromised. In such cases, I would have to grant that essence doesn't feature in metaphysical explanations in a way that agrees with my assumptions.

Third, 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

some 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. Assuming that no trivially necessary properties (being either furry or non-furry, being self-identical and so on) feature in any relation of explaining, we can define the *propria* of a given kind as necessary properties that are explained by other necessary properties of the kind. Correspondingly, we can define the essential properties of the kind as necessary properties that explain other necessary properties of the kind, which are not themselves explained by any other property of the kind. [25]

My way of characterizing essence in terms of a relation of explaining 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 a non-modal notion 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 statement is sensitive to the meaning of some terms rather than others (1994, 10). On the other hand, the analogy of ontological dependence is

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[25] A worry: am I being too liberal with my definition here? Suppose it is a necessary property of *homo sapiens* that they are members of the set {*homo sapiens*}. Doesn't my definition commit me to such a property being essential to our kind, given that the property explain why *homo sapiens* are members of the transitive closure of {{*homo sapiens*}}? I don't think so. The example doesn't involve any explanatory relation that I am interested in: it is reasonable to require that all properties that enter a relation of essentialist explanation regarding x to be about x. The property of being members of {*homo sapiens*} is a property of the set of *homo sapiens*, not a property about *homo sapiens*.

intended to draw our attention to the fact that a real definition isn't merely offering a necessary and sufficient condition for the defined object; it must also register the dependence relation between objects appearing in the *definiendum* and the *definiens* (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 presupposes 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 attribution, we can't just start with an individual object and ask ourselves what properties 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 kind has some *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 constitutes the essence of

anything. Rather, I am inclined to think of the concept of essence as a theoretical

notion that philosophers invent for answering specific questions. But suppose we

assume for the sake of argument that there is some pre-analytic notion of essence that

might be seen as tied up with the "what is x?" question. The intuition seems to be at

best underdetermined. As we saw earlier, there are many ways to unpack the "what is

x?' question, and not all of them support good forms of essentialist explanation.

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*. [26]

  I want to close by noting two implications of my definition of being an

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[26] Likely explanation doesn't end here. It is plausible to go further by saying that in general being members of a set is a property *about* sets rather than the proximate kind of Socrates. Or one might say that the purported explanation fails because the objects on which the pertinent property depends (i.e. the singleton set of Socrates and sets) doesn't depend in any way on Socrates or his proximate kind.

essential property.

First, my definition is deflationary in the sense that it doesn't appeal to further metaphysical notions such as identity or form in characterizing essence.[27]Rather, on my account, the essential properties of a thing consist of properties that explain why the thing has its *propria*, which are not explained by other properties of the thing. Further, we don't need to posit any further entity 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*. 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 this special role of explaining.

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 among properties 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 phrase "what x is", we can exclude

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[27] 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 (1975, 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.

such trivially necessary properties from the essential properties of a thing on the ground that they 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 explains why x has any of its *propria*. Note though not all the trivially necessary properties ruled out by the constraint of explaining are universally instanced by anything whatever. The property of being members of the set of humans, 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 neither explains any property about human, nor explained by any essential property of humans.

CONCLUSION

In this paper I introduced an Aristotelian notion of *propria*. According to Aristotle, apart from their essential properties, objects also have *propria*, that is, non-essential necessary properties that "follow from" their essential properties. 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 properties such as being a member of {Socrates} that are not in any way explained by his kind essence, but also *propria* such as being able to learn grammar, 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 that he shares with anything whatever. Further, the admission of *propria* allows us to arrive at a definition of essence, on which a necessary property F is essential to a kind K iff F explains some *proprium* of K, and F is not explained by any property of

K. My definition of essence is deflationary, in the sense that it doesn't require that we take on board any further philosophical notion such as identity or form in order to make sense of the concept of essence. Further, my definition of essence draws a shape distinction between mere logical necessitation and non-logical necessitation; the latter is required for an essential property to explain a *proprium*.

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CHAPTER 3

The Double Lives of Ordinary Objects

Philosophers disagree over how many objects can fit into the region of space fully occupied by Michelangelo's David. The one-thingers side with the common folks in answering one; whereas the multi-thingers argue that the right answer is two, distinguishing the statue from the piece of marble making it up. [1]The multi-thinger has a powerful argument in her favor, according to which no identical objects can differ in any of their properties. She notes that since Piece, the particular piece of marble constituting David, is a metamorphic rock and David isn't, the two must be distinct material entities. Further, she argues that her point can be established by noting that Piece is scientifically valuable, but David isn't. Coincidence is both commonplace and cheap, if the multi-thinger is right!

The appeal to sortal-based difference that is exclusively non-modal is a recent development of the debate over material constitution, due to Kit Fine's 2003 paper. [2] In comparison to the appeal to temporal or modal differences, the argument from sortal-based difference has the advantage of steering clear of controversial modal or temporal intuitions. Since two objects can be said to fall under different sortals at the same time in the same world, and argument can't be handled by classic tools such as

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[1] The one-thinger vs multi-thinger idiom is due to Bennett (2004), which she claims to be picked up from Stephen Yablo. It has been challenged by Sosa (1987, 178-180) whether the multi-thinger can non-arbitrarily stop at two and ignore infinite many other entities that differ from the piece of marble in numerously possible ways, which could be picked out by a different language with more fine-grained sortals compared to ours. For a different argument for the correct answer being more than two which appeals to different ways of counting the material constituent of an object, see Thomson (1998, 172, ft. 14).

[2] The appeal to sortalish properties that are modal in character isn't new. See Wiggins (1968) and Baker (1997) for arguments for coincidence based on sortalish differences that are modal.

the counterpart analysis of Lewis, which is designed to target similar arguments based on modal considerations.

The argument for coincidence based on the non-modal, sortalish differences has received a semantic reply from Jeffrey King (2006).[3] King's reply targets particular predicates such as "is admired" and "is well-made", which Fine proposes in his argument against the one-thinger. King's main claim is that some of the predicates on Fine's list trigger a referential shift of the relevant terms, others express different properties within the argument. I shall examine King's reply and show how it fails to account for all the sortal-based properties that a multi-thinger has at her disposal.

My goal in this paper is two-fold: first, I offer an alternative semantic reply to the argument for coincidence on behalf of the one-thinger. Compared with King's solution, my solution avoids going into piecemeal quibble with the opponent over particular examples. I argue that the one-thinger can grant that David and Piece differ in various sortal-based properties but still holds that the argument for coincidence is invalid. The key is to see that names such as "Piece" and "David" can be used to highlight distinct sortal profile of the same entity. Second, I propose a metaphysical picture, on which there is single entity X that we label by "David" and "Piece". X is both a statue and a piece of marble. I will first explain how it works for one object to fall under distinct sortals. Then I will defend the view against objections and compare it with a similar metaphysical picture offered by Thomas Sattig in his defense of a

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[3] I am borrowing the label "sortalish properties" from Bennett (2004, 341). Bennett uses the label to refer indiscriminately to (i) the persistence conditions of things (ii) the kind properties (iii) properties instanced by objects due to their instantiation of properties in (i) or (ii). The non-modal sortalish properties that I am focusing on are kind properties and their non-modal derivatives.

compatibilist thesis about coincidence.

My view suggests that there is a close parallel between the one-thinger's reply to the modal and the non-modal version of the argument: just as in the modal case a one-thinger might consider the relevant modal predicates such as "is essentially a statue" and "isn't essentially a statue" as picking out distinct counterpart relations, in the non-modal case she can consider the sortal predicates such as "is a statue" and "isn't a statue" as picking out distinct sortalish guises of the same entity. On my view, kind-membership isn't eternal: just as how individual persons can cease to be member of this or that social group, individual material entities can cease to be a member of a particular kind by having stages that no longer bear the relevant similarities to the relevant objects.

Here's a game plan: first I will look at the exchange between Fine and King and show how King's reply fails to account for all the properties that the one-thinger can come up with by the Finean recipe. Then I will offer an alternative semantic story on behalf of the one-thinger which says that a referential shift can happen as a result of how names are used in particular contexts. After that I will present a metaphysical picture for how an object can stand under more than one kind or sortal and defend the picture against objections. Finally, I will flesh out my picture of ordinary objects in more detail by comparing it with another picture of offered by Sattig, whose view bears interesting similarity to mine.

1. The argument for coincidence

In this section I shall consider the multi-thinger's argument for coincidence. First, I will look at Fine's proposal for how to make the argument without appealing to any

modal or temporal property. Next, I will consider King's reply, which appeals to a shift of reference in some cases and a shift in predicate in others. I argue that the reply doesn't successfully handle all the properties that the multi-thinger has at her disposal.

As a preliminary, let us stipulate that constitution holds between individual material entities. No blob of stuff or quantity of matter can constitute anything. [4]Hence when I am speaking of Piece as what constitutes David, by "Piece" I mean a particular piece of marble that comes with a whole range of properties that make up its individual profile. Questions such as "Is Piece light-colored?" "What is the shape of Piece?" and "How much does Piece weigh?" can be answered definitively as how I am using the term in this paper. In contrast, none of these questions receives a definitive answer when we take David to be constituted by some blob of stuff or quantity of matter. The fact that categories such as stuff and quantity of matter lack clear conditions of individuation make it hard to ascribe to individuals falling under such categories any definitive quality.

This is inconvenient for our purpose, because to apply Leibniz's Law either in defending the distinction between David and Piece or arguing against it, we need to be ready to evaluate statements such as Piece is (or isn't) F for any F expressing a sortalish property. We can't always do so with blob of stuff or quantity of matter. Is the marble-stuff out of which David is made artistically valuable? Maybe, if we use "the marble-stuff" to refer to the particular piece of marble that constitutes David. No, if we use "the marble-stuff" to refer to the chunk of raw material that Michelangelo

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[4] In making constitution a relation between individual things, I follow Baker in distinguishing the individual piece of marble constituting David from the marble-stuff. See Baker (2000):33-4 for the relevant discussion.

receives for his artistic creation. It is better to avoid distractions of this sort up front, so that the debate over coincidence doesn't get entangled with a separate question over how to characterize the constituting matter.

The argument that the multi-thinger has for coincidence is of the following form:

1. x is F.

2. y isn't F.

Therefore,

x≠y

Assuming that the terms refer to distinct entities and that the predicate F gets a uniform interpretation in both premises, the argument is clearly valid. To resist the argument, one either has to show that x and y shift their referent across the argument, so that the same term gets one assignment in the premise, another in the conclusion. Or one has to show that the occurrences of F in 1 and 2 express distinct properties. That is, either one needs to show that there is a referential shift in terms, or one has to show that there is a predicational shift in the properties expressed by the predicate. [5]

In formulating the argument, the multi-thinger often favors temporal properties such as "coming to be before the existence of the statue" or modal properties such as "being essentially a statue" and "could be squashed". Each option has its defect. The alleged temporal difference faces challenge from classic examples such as Gibbard's Goliath, where the constituted object and the constituting material are stipulated to

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[5] Here I am ignoring extreme positions such as denying that F expresses any property, denying that identity is used in a standard way, or denying that negation is used in a standard way. Although for someone who defends the last option in the context of the debate on coincidence, see Almotahari (2014).

come to be and perish at the same time. [6] On the other hand, the main drawback of the appeal to modal differences is that it makes the argument contingent upon one's modal intuitions. [7]

Luckily, the multi-thinger has other options. Fine (2003, 206) suggests the following list of property as alternatives to the temporal or modal properties: defective, substandard, well-made or badly-made, valuable, ugly, Romanesque, exchanged, insured, and admired. Fine then argues that since each of these properties can be correctly said about David but not Piece, the argument for coincidence goes through without appealing to any tendentious modal or temporal intuition.

King disagrees. Defending a semantics for the one-thinger, King (2006) suggests that some of Fine's candidates trigger a referential shift, whereas others trigger a predicational shift. The reply proceeds by a strategy of divide and conquer:

First, King notes that "is admired" expresses a psychological attitude, and like other psychological predicates such as believing, knowing, and hoping, "is admired" introduces an opaque context by shifting the referent of the term to which the

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[6] Not all temporal differences can be shuffled aside by the Gibbard move, though. One classic example is from Thomson (1998, 149-153). Suppose I started to mold a statue from a lump of clay on my desk at 2pm today and finished my work some time shortly before 3pm. Then I decided to replace the left arm of the statue by throwing the corresponding bit of clay on the floor at 3pm. Call the statue that I started molding at 2pm Statue, and the lump of clay from which I did my work Lump. Thomson argues that coincidence can be establishing by the following claims: Statue was wholly on the desk at 3pm, and Lump isn't wholly on the desk at 3pm. Two replies are available to the one-thinger: she can either deny that parthood relation can be said to obtain in relation to another object at a particular time, whereby denying that the alleged temporal predicates pick out any real difference in the relevant parthood relations, or she can insist that although lumps of clay in general can't survive the removal of parts, Lump can. After all, Lump isn't just an ordinary lump of clay; it is a special lump of clay that I made out of nondescript lump to serve an artistic function. A parallel move is available for denying that Statue, as a particular piece of artwork that originates from Lump, can survive having any of its parts removed. Either way, it is unclear to me that Thomson gets a clear victory with her initial formulation of the example in view of such complications.

[7] See Gibbard (1975):188 for his presentation of the example.

predicate is attached. For such predicates, the one-thinger can offer a standard Fregean account for how the referential shift occurs. As the story goes, just as the occurrence of "Phosphorus" in "John believes that Phosphorus is bright, but he doesn't believe that Hesperus is bright" gets a non-standard referent (i.e. a Fregean sense rather than the planet Venus), the occurrence of "David" in "David is admired" and the occurrence of "Piece" in "Piece isn't admired" both has a non-standard referent.

Secondly, King introduces a class of predicates called "gradable adjectives", which are known for picking out distinct properties in different contexts. For a paradigm example, consider the predicate "is tall". The claim that "Barack Obama is tall" and the claim that "Barack Obama isn't tall" can both be true, when uttered in different contexts involving different standards of comparison: the former is true when uttered in a context, where the intended contrast class is the average American male; whereas the latter is true when uttered in a context where the intended contrast class is the average NBA player. King then argues that since "is defective", "is substandard" and "is well-made" on Fine's list are gradable adjectives, the argument for coincidence involving such predicates is invalid due to a predicational shift. So according to King, the argument

1. David is well-made.

2. Piece isn't well-made.

Therefore,

David ≠ Piece

is invalid, because the predicate "well-made" in premise 1 and 2 pick out distinct properties: 1 says that David is well-made for a statue; whereas 2 says that Piece isn't

well-made for a piece of marble. Since the standard by which a statue can be said as well-made is different from the standard by which a piece of marble can be said as well-made, the argument has the following invalid form:

1. David is well-made$_{statue}$.

2. Piece isn't well-made$_{marble.}$

Therefore,

David ≠Piece

King's analysis of the argument is uncompelling: the fact that a gradable predicate might pick out distinct standards of comparison under different contexts doesn't mean that it is natural to treat it as doing so in the current context. Assuming that 1 is true by invoking a standard of comparison for statues, it would be natural to hear 2 as invoking the same standard of comparison. After all, Piece might very well be said to be well-made by the marble-related standard. As one might say, it is a very special piece of marble with many distinctive properties (having a particular shape, color and so forth) which can't be ascribed to a nondescript piece of marble. Here since the principle of pragmatics advises against ascribing a false belief to one's interlocutor, the fact that the relevant predicate might pick out distinct properties *in some other contexts* is no good reason for going against the principle of charity *in the current context*. [8]

Further, the fact that a gradable adjective might pick out distinct properties is

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[8] Here's one context in which it would be natural to think that different standards of comparison have been invoked: suppose two groups of students are assigned with the task of evaluating the quality of the statue and the quality of its constituting matter respectively. One group point to David and declare that David is well-made, and another point to Piece and declare that Piece isn't well-made. In this context, it would be natural to hear the relevant claims as invoking distinct standards of comparison.

hardly a fatal objection to the multi-thinger. She can simply clarify which standard she intends to use and proceed with her initial argument as follows:

1. David is well-made$_{statue}$.

2. Piece isn't well-made$_{statue}$.

Therefore,

David ≠Piece

Now it is up to the one-thinger to deny premise 2. But in this case, it would not work to say that "is well-made" might pick out different properties in some other contexts.

Note that even if we grant King that all the predicates on Fine's list can be dealt with by the Fregean story of psychological predicates or the story of gradable adjectives, the reply can hardly cover all the predicates that the one-thinger has at her disposal. Consider the following: "is a statue", "is a piece of marble", "is an artifact", "is a metamorphic rock," and "is either a red marble or a green marble or a cream marble…". As the recipe goes, pick any predicate that reflects a non-modal sortalish difference between David and Piece, we get a new argument for coincidence running anew.

Take "is a statue" as our example. According to the one-thinger, David and Piece are distinct, because the former is a statue and the latter isn't. Neither of King's strategies seems immediately applicable to this particular argument: since it makes no sense to say that something is more or less a statue, the predicate can't be considered under the heading of gradable adjectives. Further, since no psychological attitude is involved in the sortal predication, the standard Fregean story about referential shift doesn't work, either.

To deal with the newcomers in the multi-thinger's extended list, the one-thinger has two options:

First, she can deny that the relevant sortal predicate expresses any real property. This move seems a non-starter. Why doesn't "is a statue" express a real property? Is it because it expresses a relation in disguise? So to say x is a statue, what we really mean is that x bears this or that relation to the artworld. That might very well be true. But then the argument can be raised again in terms of the relevant relations. After all, the application of Leibniz's Law makes no distinction between properties and relations. All that it requires is that the same property or relation gets expressed in a single argument.

Second, the one-thinger can deny the premise that says Piece isn't a statue by creating a context in which it sounds felicitous to say that Piece is a statue. For instance, she can invite us to consider a scenario, in which an art professor is lecturing on various materials which the Renaissance artists use to create their works, and the professor points to a slide of David and remark light-heartedly: "I am sure that you all recognize this piece of marble in the slide. It is probably more famous than any other piece of rock that we have seen earlier in this class." In this context, it is well-understood by the audience that "this piece of marble" is used by the professor to make reference to the statue rather than its constituting material. As the reply goes, although Piece is a piece of marble, it is not a *mere* piece of marble. Similarly, a one-thinger who favors this line of argument might stress that although David is not *just* a piece of marble; it is a piece of marble nonetheless. Sure, it will be an understatement to refer to a statue as a piece of marble. But understatement isn't falsity. After all, the

Great Wall is a wall, and Mount Fuji is a pile of rocks. [9]

It is hard to find fault with this reply. But it is hard to find it completely satisfying either. There are two worries that might hold us back from taking the reply as the last word from the one-thinger:

First, the key to this reply is to see one entity as standing under two sortals. So the statue is *both* a work of art and a piece of marble, and the piece of marble is *both* a rock and a statue. The metaphysical picture at work here needs some clarification, independently of the semantic analysis. As it stands, the relevant sortals make salient properties that are at odds with one another. For instance, a statue is an artifact, and a piece of marble isn't. But surely nothing can be both an artifact and not an artifact, right? How can we escape such a contradiction, if David is both a statue and a piece of marble? The one-thinger owes us an explanation here.

Secondly, the reply engages with the argument for coincidence on a purely semantic level by letting concrete contexts do the trick needed. As the dialectic goes, for any specific predicate that the multi-thinger pulls out her pocket, the one-thinger creates a special context in which the predicate can be stuck to Piece in forming a felicitous sentence. However, as Fine (2003, 210) correctly points out, the sematic reply is presumably itself driven by one's favored metaphysical picture of ordinary material entity. This picture needs to be clarified and defended in its own right. In the current case, the questions at stake for either side of the debate are: What is it for a thing to fall under a kind or sortal? How does an object inherit sortalish properties such as being well-made and so on from being a member of the relevant kind? I shall

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[9] See Frances (2006): 1010-1012 for a reply to Fine based on this point.

take up both questions later in this paper.

2. Referential shift caused by an evocative use of names

In the last section I considered King's reply to the argument for coincidence. The reply has two defects: first, the reply is limited in its scope of application: it doesn't apply to a direct appeal to sortal difference (e.g. David is a statue, and Piece isn't). Nor does it apply to various appeals to sortal-based difference (e.g. David is an artifact, and Piece isn't an artifact). Second, since the strategy is to target specific properties on Fine's list, it proceeds with a piecemeal manner without revealing what went wrong with the Finean recipe for introducing various sortalish differences between a statue and its constituting material.

In this section I want to suggest a different account of why the argument for coincidence fails. On my reply, the one-thinger can grant that David and Piece have various sortalish differences but deny that coincidence follows from any of such difference. The key is to see that labels such as "David" and "Piece" can be used in two different ways: they can either be used to make reference to an individual entity, or they can be used to highlight distinct sortal profiles of their referent. In the latter case, the names should be seen as having distinct relations borne by the object at a time rather than the object itself as their referents. On my proposal, just as how incompatible predicates such as "can fly" and "can't fly" can be consistently ascribed to the same fictional character via us labelling distinct stages of the character by different names ("Superman" vs. "Clark Kent"), incompatible predicates such as "is a statue" and "isn't a statue" can be consistently ascribed to the same material entity via us labelling distinct sets of relations borne by the object under different names

("David" vs. "Piece").

For those of us who are familiar with Lewis's counterpart analysis of de re representation, it is a familiar point that names can be introduced to highlight distinct counterpart relations. A classic example discussed by Lewis involves the Great Western Railway (GWR). As the example goes, the actual railway that goes by the name "GWR" doesn't include a line that goes from Bristol to Birmingham. But it could easily include the missing line had things gone otherwise. Suppose we introduce the name "GWR-"and the name "GWR+" to stand for the railway minus the possible line and the railway with the missing line added respectively. We can then reformulate the earlier thought as: although GWR is identical to GWR- at how matter stands now, they don't have to be so, for GWR could have been identical to GWR+.

Now imagine someone challenging the coherence of the counterfactual scenario that I just described by the following argument:

1. GWR =GWR. (Assumption for *reductio*)

2. Possibly, GWR =GWR+. (Assumption)

3. GWR = GWR-. (Assumption)

4. GWR+≠ GWR-. (Assumption)

5. Possibly, GWR = GWR-. (From 3)

6. Possibly, GWR =GWR+ and possibly GWR≠ GWR+. (From 2-5)

Therefore,

GWR≠ GWR.

Since 1-5 are either self-evidently true or taken to be true by our assumptions, we have to deny 6. But what is wrong with 6? Be careful with what the predicates say, says

Lewis. When we say that GWR is possibly identical to one thing, and possibly identical to another, the predicates in use don't pick out the same relation in both cases: "is possibly identical to GWR+" picks out a counterpart relation between GWR and GWR+; whereas "is possibly identical to GWR-" picks out a *distinct* counterpart relation between GWR and GWR-. Since counterpart relations are relations of similarity, we get rid of the contradiction by noting that one predicate picks out one set of similarities between GWR and GWR+ (e.g. their sharing the same historical plan of construction), and another predicate picks out a different set of similarities between GWR and GWR- (e.g. their having the same geographic layout). The contradiction is resolved given that there is nothing unusual for x to be similar to y in one way but not similar to y in another way.

What we get from Lewis is a case where predicational shift happens as a result of an evocative use of names, that is, the use of names to highlight distinct similarity relations across different possible worlds. But the linguistic phenomenon that Lewis notices, that is, the phenomenon that different ways of labelling an entity can trigger a failure in substituting otherwise co-referring terms is not restricted to modal statements. [10] Consider the following examples:

1. Superman is more popular with women than Clark Kent.

1*. Clark Kent is more popular with women than Clark Kent. [11]

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[10] To be clear, I don't mean that the example given by Lewis involves a shift of reference in "GWR". That is false. What is true is that when being attached to "GWR", the predicate "is possibly identical to GWR+" and "is possibly not identical to GWR+" shift the counterpart relations that they ascribe to the actual railway. What we have here might be seen as a quasi-referential shift, in the sense that the incompatible properties (being possible identical to x and being possibly non-identical to x) can be consistently attributed to a single entity via its distinct counterparts. Strictly speaking, it is not the actual railway but its distinct counterparts to which we ascribe the incompatible properties.

[11] This example is from Saul (1997). See her paper for other interesting examples.

2. Littlefinger is a better politician than Lord Baelish.

2*. Lord Baelish is a better politician than Lord Baelish.

3. The author of the *Monadology* is more philosophically-minded than the German inventor of calculus.

3*. The German inventor of calculus is more philosophically-minded than the German inventor of calculus.

In each of these cases, the first statement seems true, yet the second statement sounds clearly false. But the pairs can't be thus different in their truth value if all the names get their standard referents, since in each case we have two ways of referring to the same individual.

One reaction that one could have about the linguistic data is to deny that in each pair there is a difference in the truth value of the proposition expressed by the sentences. In going this route, one would then have to come up an explanation for why there is an intuitive difference in our initial reaction to each pair. [12] Another reaction that one could have is to take the linguistic data at face value and try to make sense of it by assigning the names in use a non-standard referent. [13]

For my purpose, I would like to set aside the first response and pursue the

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[12] In Saul (1997), she considers a proposal by Salmon (1986), according to which the intuitive difference in sentences involving psychological predicates is to be explained by pragmatics. Saul then considers the prospect of extending the proposal to the case of simple sentences. For a different proposal that attempts to explain the intuitive difference within a Quinean framework, see Forbes (1997).

[13] Saul (1997) entertains the non-standard referent solution and rejects it on the account that it can't be applied to cases involving simple identity predication. See Moore (1999) for a defense of the solution in explaining the intuitive difference in our reaction to the relevant sentences.

second response a bit further. My choice has not to do with the comparative strength

of the corresponding semantic analyses themselves, but rather my interest in a

particular metaphysical picture, which the one-thinger could exploit in her reply to the

argument for coincidence. Such a picture comes out most naturally when we pursue

the second response to the linguistic data at issue. [14]

What might serve as the non-standard referent(s) of the names? On one

answer, when a referential shift occurs, we can let the relevant name refer to a Fregean

sense. But this makes no sense in our current case. As Saul (1997, 104) points out, a

Fregean sense can't be popular with women. Nor can a sense be a good politician or

philosophically-minded. A better option is to let the names in use refer to distinct

temporal stages of the individual. For instance, for the first pair above, we can let

"Superman" and "Clark Kent" refer to distinct stages of the same fictional character,

one starts with his decision to step in a costume and use a fake identity to fight crime,

another starts with his adoption by his human foster parents and continues when he

decides to take up the journalist job at the *Daily Planet* and keeps a low profile in his

routine life.

Note that just as Lewis's counterpart analysis of the de re representation is both

a linguistic doctrine of modality and a metaphysical theory about individuals and their

relations to other worldly entities, the stage-analysis isn't just a linguistic device that

allows us to explain the relevant linguistic data. It is also a metaphysical doctrine

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[14] It is natural to think that the correct metaphysical picture corresponds to the correct semantic account of the truth condition of the relevant sentences. But the metaphysical view can be separated from the semantic analysis. Moore (1999) for instance, defends a stage ("aspect" as he prefers to call it) analysis of the metaphysics in combination with a pragmatics account of the relevant sentences.

about how one and the same individual can come to acquire otherwise incompatible properties. Once we have accepted temporal stages as the non-standard referents of the relevant names, it seems reasonable to think that some properties are had by one temporal stage of the individual but not by another. For instance, it seems reasonable to think that the temporal stage to which "Superman" refers has some characteristic properties such as being popular with women and flighting constantly against his enemies; whereas the stage to which "Clark Kent" refers has different characteristic properties such as being not so popular with women and living as an undercover superhero. These properties seem to be stage-sensitive, that is, they can't be correctly ascribed to a different stage of the character. Given such differences in the properties which distinguish one stage of the character from another, one might consistently claim that although Superman is popular with women, Clark Kent isn't popular with women, or that although Superman doesn't live as an undercover superhero, Clark Kent does. In both cases, the consistency of the predication is ensured by the fact that the names in use don't get the same referent: it refers to one stage of the character in one case, a different stage of the same character in another.

Let us say that a term is used evocatively when it acquires a non-standard referent as a result of being used to highlight specific information of its standard referent. Definite descriptions are frequently used to highlight specific information of their referents, although not all of such uses are evocative as I am speaking of it here, for not all of them involve a referential shift. For instance, when I refer to Plato as the teacher of Aristotle and claim that: "Aristotle is a great philosopher but not so great as a writer, yet the teacher of Aristotle is both a great philosopher and a great writer", it is

understood by my audience that in referring to Plato by this particular definite description (rather than, say, the husband of Xanthippe), I am intending to stress the philosophical succession relation between Plato and Aristotle. However, "the teacher of Aristotle" is not used evocatively in this context: it is Plato rather than any particular stage of him to which I refer. In contrast, suppose after studying Plato's biography, I declare that: "The teacher of Aristotle is a worthier man than the advisor of Dionysius". Further, suppose my remark can be heard as expressing a true proposition about Plato. One way to explain how the claim can come out true is to let the relevant definite descriptions refer to distinct stages of Plato's career. In this way, we can interpret the sentence as stating a fact about the comparative value of two stages of life which Plato has lived, one centers on his academic life in Athens, another centers on his political career in Syracuse. In this case, the definite description is used evocatively to highlight distinct information about the standard referent.

In my exposition above, I offered one example which involves different profiles of an individual at different times, but this is just a particularity due to my choice of example. It is easy to come up with examples which involve seemingly incompatible properties of an individual at the same time. Suppose Plato is both the headmaster of the Academy and the major instructor of the institution for the same period of his life. Suppose further that the Academy is set up in such a way that the headmaster and the instructors have non-overlapping duties, such that the former serves as an administrator of the school, and the latter don't. Now suppose I say: "The founder of the Academy is an administrator of the Academy, but the teacher of Aristotle isn't." In this context, I am using the definite descriptions evocatively:

instead of using "the founder of the Academy" and "the teacher of Aristotle" to refer to Plato, I use them in this context as labels for distinct academic positions that Plato has occupied at the same time.

I claim that "David" and "Piece" are used evocatively to highlight different sortal profiles of a single material entity in the context of the debate over coincidence. My claim is supported by the fact that their use outside the context of the argument for coincidence seems to trigger in us linguistic reactions similar to what we have about the previous examples. Consider the following pairs of sentences:

1. David is more artistically valuable than Piece.

1*. Piece is more artistically valuable than Piece.

2. Piece is more scientifically valuable than David.

2*. David is more scientifically valuable than David.

3. Piece is less aesthetically appealing than David.

3*. David is less aesthetically appealing than David.

In each pair above, although the first sentence sounds true (at least by the lights of the multi-thinger), the second sentence is clearly false. In line with our analysis of the earlier examples, we can explain their apparent difference in truth value by assuming that in the first statement of each pair, the names are used evocatively to highlight distinct sortal information of the same entity: by calling something "David", one refers to the statue profile of an entity; whereas by calling the same entity "Piece", one refers to the marble profile of the entity. The similarity relations under stress are different:

"David" highlights similarities between the entity and other statues/artworks/artifacts, and "Piece" highlights similarities between the entity and other marble pieces/rocks/statue-making stuff.

Note that just as in the previous cases with Superman, the semantic response that I favor (on which the terms in use have non-standard referents) isn't itself driven by any specific metaphysical doctrine, in this case my claim that "Piece" and "David" have non-standard referents in the first sentences of the pairs above is based on the intuitive linguistic differences of the statements. It is up to the multi-thinger to either deny the linguistic data as reflecting the truth value of the propositions expressed, or she can take the linguistic data seriously but prefer a different account for it, which doesn't involve assigning different referents to the names in use. But one thing she can't do is to accuse me of smuggling in my favored metaphysical view in my semantic account of the data. That is a false charge: the assumption that "David" and "Piece" are used to name distinct entities (stages of a thing or otherwise) in the first sentence of each pair above isn't itself motivated by any specific metaphysical picture. (It will be a metaphysical question when we proceed to ask: What are the entities in distinction? Are they distinct aspects/profiles/stages of the same object? Or Are they distinct material objects? No answer to this question is presupposed for the semantic analysis itself.) Rather, it is a reasonable assumption that one holds when rendering sentences involving distinct labels. [15]

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[15] Suppose without clarifying your assignment of variables, you tell me that x is larger than y, but y isn't large than y. It is reasonable for me to assume that you are using "x" and "y" to stand for distinct numbers. But of course, I could be wrong in assuming so. Suppose as our conversation continues, you tell me that by "x" you mean the sum of 2 and 5 and by "y" you mean the sum of 1 and 6. I can then

Now I am in the position to offer a reply to the multi-thinger. The reply says that the argument

1. David is a statue.

2. Piece isn't a statue.

Therefore,

David ≠ Piece

is invalid, because although "David" and "Piece" are used as names for a single material entity in the conclusion, the names in the premises are used evocatively to highlight distinct sortal profiles of the same entity. Compare:

1. Superman is a superhero.

2. Clark Kent isn't a superhero.

Therefore,

Superman ≠ Clark Kent

Assuming that the premises express true propositions about distinct temporal stages of the character, the argument is invalid. As my story goes, "Superman" and "Clark Kent" aren't used in the same way in the premises and in the conclusion: they are used as tags for distinct stages of the character in the premises, and they are used as names of the individual in the conclusion. Similarly, I claim that the multi-thinger's argument for coincidence fails, because how the names get used across the argument: "David"

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correct you by pointing out that x and y are equal as how you intend to use them. However, in doing so I am not invalidating my earlier assumption: that assumption was perfect reasonable under the earlier context, for there I would have to ascribe to you a false belief in assuming that you are using the variables as distinct labels of the same number. But as a cooperative interlocutor, I would avoid doing so without having any prior evidence that you are potentially confused about the topic under discussion.

and "Piece" are used as tags for different sortal profiles of an object in the premises, and they are used as names of the object itself in the conclusion.

I anticipate two objections:

First, one might agree with me that in both arguments above the names in the premises get their non-standard referents but deny that the names in the conclusion get their standard referents. That is, one might argue that the terms flanking the identity sign should be taken to refer to distinct profiles of the material entity in the case of the statue argument, and distinct stages of the character in the case of Superman, along with my suggested rendering of the premises. Both arguments come out valid on this rendering of the names.

Like Saul (1997, 104), I don't find it plausible to deny that Superman is Clark Kent, and for the same reason, that David is Piece. My reason has to do with my taking simple identity statements, that is, identity statements which don't involve any modal or psychological predicate as paradigmatically non-opaque. It is difficult to see how the predicate "is identical to" can trigger an opaque context. Further, even if we grant that the predication of identity introduces an opaque context in the particular cases under consideration, can the resulting argument really be counted as evidence in favor of the multi-thinger's view? Recall that her goal is to show that two material entities coincide. Showing that there are distinct profiles (of the same thing? different things?) can hardly be considered as a victory for her party.

Second, a multi-thinger might argue that since "David" is used to denote a particular piece of art, and "Piece" a particular piece of marble, the names must refer to distinct material entities. Note that in order for the reply to work, the multi-thinger

can't simply say that "David" and "Piece" are used to refer to distinct material entities and leave it there. To avoid building her favored metaphysical view into the premises by her use of the terms, she needs to explain where the parallel between the statue example and the Superman example breaks. In other words, she must engage with my argument on a semantic level and tell a story about how our use of names such as "David" and "Piece" differ from other examples that I have considered for an evocative use of terms.

The semantics aside, the metaphysical question worth looking into here is: Why must x and y be distinct entities, if x and y stand under different sortals? The answer can't be that nothing can fall under more than one sortal. That is clearly false! Plurality of kind-membership is both commonplace and often unproblematic: number 3 is both a prime number and a natural number, Socrates is both a philosopher and a Greek citizen, and a Swiss knife is both a knife and a bottle-opener… A more promising answer says that since different sortals are associated with different persistence conditions, no one and the same thing can have different persistence conditions. I shall examine this argument in the next section and show why we don't need to worry about it.

3. Arguments against the plurality of kind-membership

In this section I shall first present a metaphysical picture on behalf of the one-thinger, according to which one material entity can possess seemingly incompatible properties via being members of different kinds. Then I will consider two objections to my proposal.

In the last section, I have proposed a one-thinger's reply to the argument for

coincidence, which says that the relevant names aren't used in the same way in the premises and the conclusion. On my view, although "David" and "Piece" refer to a single material entity in the conclusion, their respective occurrence in the premises doesn't. Call the entity to which the names co-refer in the conclusion X. My view says that we can correctly say that David is a statue and that Piece isn't statue without running into a contradiction, because "David" and "Piece" are used in this context as tags for two distinct sortal profiles of X. On my view, X is a four-dimensional entity, a spacetime worm consists of both spatial and temporal parts. (Shall say more about what motivates me to taking up this view in the last section.) Strictly speaking, the distinct sortal profiles are not had by X, but rather a stage of X at some particular time. A stage of X might be picked out via distinct sortal guises that highlight distinct similarity relations. Take a time t at which X exists both as a statue and a piece of marble. On my view, "David" is used to highlight a stage of X under the guise of statue at t, which relates X at t to other statues or artworks by statue-relevant similarities. "Piece", on the other hand, is used to highlight the same stage of X at t under a marble guise, which relates X to marbles and other rocks by marble-relevant similarities.

My particular way of assigning referents to the names isn't supposed to be a stand-alone semantic doctrine. Rather, it is driven by my metaphysical picture of material constitution, on which there is a single four-dimensional entity that can be both a statue and a piece of marble at a particular time. My view suggests that there is a close parallel between the modal and the non-modal attribution of properties: just as in the modal case we can invent names such as "GWR+" and "GWR-" to highlight

different similarity relations borne by the same entity to objects in different possible worlds, in the non-modal case we can invent names such as "David" and "Piece" to highlight different similarities borne by the same entity to other entities *in the same world*. Further, just as in the modal case, different ways of labelling the counterparts of a thing make salient different properties of the object under comparison (e.g. the actual geographic layout of the railway vs. the historical plan for its construction), in the non-modal case, different ways of labelling an object make salient different properties possessed by a particular stage of an entity *under distinct guises*. For instance, in calling a particular material entity by "David", I make salient properties such as being an artifact, being artistically valuable and being admired by fans of Michelangelo and so on; whereas by the same entity "Piece", I make salient properties such as being a natural kind, being scientifically valuable, being loved by rock lovers and so on.

Ignoring the complicating details about stages for the moment, the picture that I am proposing, in nutshell, in this: there is a single entity that we get to represent twice under different labels. Label it one way you get some statements coming out true about it; label it another way you get some other statements coming out true about it. The view is simple enough, and it is quite nice given that it allows us to say what we want to say about how David differs from Piece in various sortal-related ways without compelling us into accepting coincidence.

Why is such a simple and nice view lacking supporters? Presumably because it says that one thing can stand under different sortals or kinds (I am using the two interchangeably). As we saw earlier, the claim that x can stand under different sortals

needs not worry us: there is no puzzle over how Socrates can both a human and a mammal, or how my iPhone can both be a phone and a portable media player. What makes our current case puzzling is that the relevant sortals seem to make salient properties which are in conflict with one another. For instance, the sortal "statue" makes salient the property of being an artifact; whereas the sortal "piece of marble" makes salient the property of being a natural kind or a non-artifact. However, if X is both a statue and a piece of marble, it would then seem to follow that X is both an artifact and not an artifact. But nothing can be both F and not F! So it looks as though we get ourselves into a contradiction by allowing X to be both a statue and a piece of marble.

The argument of the objector, more carefully formulated, runs as follows:

1. X is both a statue and a piece of marble. (Assumption for *reductio*)

2. X is a statue.

3. All statues are artifacts.

Therefore,

4. X is an artifact.

5. X is a piece of marble.

6. No piece of marble is an artifact.

Therefore,

7. X isn't an artifact.

Therefore,

8. X is an artifact and X is not an artifact.

Therefore,

Not 1.

The sub-argument running from 1-4 and the sub-argument running from 5-7 has the same structure. It suffices to offer a single rely to both. I claim that both sub-arguments are invalid due to an equivocation over terms. Take the first sub-argument to illustrate my point: 4 doesn't follow from 3. What follows from 3 is 4*: The statue X is an artifact. But be careful! 4 and 4* are not saying the same thing: 4 says that X, which is both a piece of marble and a statue, is so and so; whereas 4* says that some particular piece of marble is so and so. "The Statue X" and "X" aren't substitutable in this context, since they don't refer to the same entity: The Statue X is merely a statue, but X isn't. X is both a statue and a piece of marble. Consequently, although it is true that The Statue X is an artifact, it is false that X is an artifact.

The last claim needs some explanation. Why isn't X an artifact, if The Statue X is an artifact? It would be *ad hoc* for me to say that "X" and "The Statue X" must have different referents for otherwise we get ourselves into contradiction. But I think a perfectly reasonable explanation is available. Consider an analogy. Suppose it is true that Superman is popular with women, and Clark Kent isn't. Further, suppose the variation in the character's popularity with the other sex obtains because being popular with women requires possessing particular properties such as having a high profile, being masculine and so on, which are available to the character only when he steps into his superhero costume. Let us say that a property is stage sensitive when it can be ascribed to some but not other stages of the same individual. The property of being popular with women is stage-sensitive, in the sense that it is correctly attributed to the character in his superhero stage, but not to the character in his human stage. Call the

individual who is both Superman and Clark Kent M.

Question: Is M popular with women or not? The question thus stated is ill-formed: M would be popular with women if M were identical with his superman stage, and M would not be popular with women if M were identical with his human stage. M would end up with conflicting relations with women if he were identical to both! But M is not identical to any of his stage. After all, he is the guy who has both stages. The only way to force an answer to the question is by ignoring one of the conflicting stages: M is popular with women when we ignore his Clark Kent stage and stress his similarity to his Superman stage; M isn't popular with women when we stress his similarity to his Clark Kent stage and ignore his superhero stage. But we can't do both at the same time with respect to the same stage-sensitive property.

A parallel explanation is available in the statue case. X is a four-dimensional entity, a spacetime worm consists of continuant stages stapled together by various similarity relations. X is a statue at t via having a stage at t that bears statue-relevant similarities to other statues at t, and X is a piece of marble at t via having a stage at t that bears marble-relevant similarities to other marbles at t, and X is both a statue and a marble at t by having a stage at t that bears both sets of similarities to other objects. Just as we can refer to distinct stages of a person by calling him under different nicknames, we can refer to the same stage of a material object by distinct sortal guides, which highlight distinct similarity relations. The predicate "is an artifact" is correctly attributed to X only under the statue guise, but not under the marble guise, due to the fact that the predicate picks out distinct similarity relations. Given that the relevant similarity relations are had by distinct sets of objects (statues vs. marbles),

and that the property of being an artifact can be attribute to one set but not the other, it would be misleading to ask whether an individual that is a member of both sets is a statue or not. The question is ill-formed: the individual is a statue if we consider it as a member of the set of statues, and it is not a statue if we consider t as a member of the set of marbles. But we can't do both at the same time.

Next, I want to consider a different argument against the plurality of kind membership based on considerations about persistence condition. One assumption often held by the multi-thingers says that each sortal assigns a unique persistence condition or criterion of identity to every individual member of its extension.[16] The problem with one thing falling under more than one sortal is that it would be assigned different criteria of identity or persistence conditions, which is intuitively bad. What is bad exactly for one thing to have different criteria of identity or persistence conditions? Here's an answer offered by E. J. Lowe (1983, 54):

> "The point quite simply is that, if C_Φ and C_Ψ are the respective criteria of identity and they are different, then if x were to belong to both Φ and Ψ we could not in general rule out a priori the possibility that there should arise circumstances in which according to C_Φ (say), x would cease to exist, whereas according to C_Ψ it would not; so that anyone asserting that x instantiates both Φ and Ψ would lay himself open to the intolerable impossibility that circumstances should arise in which he would have to say that x both does and does not cease to exist."

The fact that Lowe chooses to formulate the argument in terms of a priori

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[16] See Wiggins (1980):65 for a statement of the assumption. See Burke (1997):242-246 for a critical discussion of the assumption.

conceivability about possible scenario is distracting: many real-time puzzles (e.g. quantum entanglement) are presumably not a priori conceivable. Conceivability is a poor guide for actual possibility. On the other hand, as Gibbard (1975) has shown, the point about how two identical entities in one world might not be identical in another world can be made separately from the implication of diverging persistence conditions. So let us set the modal entanglement aside and re-formulate Lowe's objection as follows:

Suppose it is a necessary condition for a statue to exist that it must retain its shape; whereas it is not necessary for the constituting material that it retains any particular shape. By a single explosion of dynamites, Taliban blows two ancient statues of Buddha in Afghanistan into pieces. Call one of the statues Buddha and the piece of sandstone constituting it Stone. Question: which entity is destroyed by the dynamites? Buddha or Stone? It is clear what the proponent of a single kind-membership would say: Buddha is gone and Stone lives on. But given that on my view, there is a single entity X which is both a statue and a piece of stone, Lowe's worry is that I would have to say that something both perishes and lives on at the same time. But surely this is nonsense. So my view can't be reasonably maintained, says Lowe.

I agree that it is absurd for anything to exist and perish at the same time. But I don't think I am committed to such absurdity. Further assumptions are needed to make such a claim come out true as a result of my view, and I make none of these assumptions.

One assumption that we need (and Lowe seems to make) is that to answer the

question whether something exists at t, one must first say under what sortal the thing falls. According to this assumption, both existence at a time and persistence over time are sortal-relative, in the sense that nothing can simply exist at a time or persist over time independently of any sortal.[17] I reject this assumption. On my view, it is objects that can be said to exist at a time and persist over time, not objects standing under this or that sortal.

What sense can we make of the claim that ordinary material entities can only be said to exist at a time or persist over time under this or that sortal? Let me be clear that the question as I am considering here is a metaphysical one: Can entities such as David, Socrates and Fido exist independently of their respective kinds? Or does the existence of individuals depend in some way on the existence of their kinds? So the question is not: "How can we know or judge something as the same entity over time?" Nor is the question: "What concepts do we need in order to correctly analyze the ordinary notion of persistence?"[18] Since I consider kind-membership as a non-primitive fact grounded in similarity relations, my answer to the metaphysical question is yes, for the simple reason that like any other relation, the presence of a relation depends on the existence of its relata, not the other way around. More needs to be said about this topic, but I will let the task pass for now.

Another assumption that we need for Lowe's argument is that if x is an F, then

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[17] There is a criterion of individuation that Lowe (1983, 48) attributes to Peter Geach, which says that individuation requires a sortal concept. According to this criterion, we can judge that x ≠y only if there is a sortal F, such that either x and y are both Fs, or either x or y isn't an F, or neither x nor y is an F. It follows that x≠y at t only if there is a sortal F, such that either x and y are both Fs at t, or either x or y isn't an F at t, or neither x nor y is an F at t. Despite his subtle disagreement with Geach over how instantiation differs from individuation, Lowe seems to take on board Geach's criterion of individuation in his formulation of the argument that I cited earlier.
[18] See Hirsch (1982) for a conceptual approach to the question.

x is an F forever. On this assumption, if X both a statue and a piece of stone, then X remains a member of both kinds throughout its career. I see no reason to accept this assumption. On my view, kind memberships are parasitic on the relevant similarity relations. Given that the underlying similarity relations can cease to obtain due to various changes in the relata, kind-membership isn't eternal. As we might say, objects have to "pay" their service in order to stand under this or that sortal. They don't do so as given, by the magic power of nature or people. Just as how people can lose their gym membership by forgetting to pay for it, X can quit being a statue by ceasing to bear the relevant similarities to other statues or artworks.

Now I will show how the puzzle raised by Lowe can be diffused. First, given that I reject the assumption that things can only be said to exist at a time under this or that sortal, I need to re-state the question at issue. Instead of asking whether it is Buddha or Stone that survives the explosion by Taliban, let us ask whether there is a single entity that exists before and after the explosion. The question thus stated doesn't get an answer, not because we haven't made clear the sortal under which the entity falls, but because we haven't made clear whether the explosion has caused any change in the object under consideration. To overcome this minor difficulty, let us suppose that the object undergoes a change in shape as a result of being exploded into pieces: it has shape S before the explosion and shape S* afterwards. The question now becomes: Is there a single entity that undergoes the change from shape S to S*? Now Lowe's puzzle has been successfully diffused. Instead of running into a contradiction over existence, we have a genuine question about conflicting intrinsic properties and how objects persist in time. People with different views about persistence can debate with

one another over the correct answer to this further question. It is by no means a disadvantage of my view (or any view) that it leaves room for a genuine question to be raised.

4. Plurality of kind-membership: the metaphysical picture

In this section, I want to lay out the metaphysical picture that I am proposing in more detail by taking up two questions: (1) What exactly is the thing that I call "X"? Is it a mere thing? An Aristotelian compound with different forms? Something else? (2) What exactly is it for X to stand under any particular sortal on my view?

Let us start with (1). My basis picture is this: X is a four-dimensional entity to which we can refer under distinct sortal guises. X is not a mere thing, if by that we mean a formless quantity of matter. Nor is X an Aristotelian compound: take any temporal slice of X, we have a material entity made up entirely from microscopic bits of matter. No temporal slice of X has any formal or non-material part that isn't made up from some portion of matter.

To get a better view of the picture that I am proposing, it would be helpful to compare it with an Aristotelian picture of ordinary entities proposed by Sattig.

According to Sattig (2010), ordinary entities such as chair, cats and persons are hylomorphic compounds made up from some quantity of matter and a conjunction of sortal-dependent states such as being well-made, having a particular shape and so on, which he calls "K-paths". This picture of ordinary objects has a distinctive Aristotelian flavor: two objects are identical iff they are made up from the same quantity of matter and have the same form (that is, the same K-path).

Sattig is a compatibilist about coincidence, who believes that both the one-

thinger and the multi-thinger can be seen as right about how many entities there are. The two views don't come into conflict by his lights, because there are two perspectives from which we can use to look at a hylomorphic compound: the one-thinger is right to deny coincidence because she looks at the object from a sortal-abstract perspective, which allows her to strip the entity of its sortal cover and treat it merely as a quantity of matter. From this perspective, it is correct to insist that no two objects made up from the same quantity of matter should never *materially coincide with* one another. The multi-thinger is also right to claim that David and Piece coincide, because she looks at the same entity from a sortal-relative perspective, distinguishing the statue-path of an entity from its marble-path. From this perspective, although David and Piece don't materially coincide, they *formally coincide with one another* by instancing different sortal-dependent properties.

The metaphysical picture that Sattig proposes shares some important common ground with the view which I propose in this paper:

First, although Sattig doesn't talk in terms of one entity standing under more than one sortal, he does allow one thing to have more than one K-path: something can have both a statue-path and a marble-path, making it possible for different sortal-dependent properties to be had by the same hylomorphic compound.

Secondly, both of us believe that one can consistently claim that David is well-made, and Piece isn't well-made, without doubling up the actual entity there is (that is, the number of hylomorphic compounds for Sattig; though as I shall argue later, it is not always clear how the compounds are counted on his view). For Sattig, we get consistency by ruling out one of the predications as meaningful. Since the compound

allows more than one perspective of viewing it: predicates such as "is defective" and "is well-made" come out as meaningfully said about the entity only when we look at the entity from a formal or sortal-relative perspective. By contrast, I make room for the consistency of the relevant claims by assigning different referents to "David" and "Piece", that is, by letting them refer to distinct stages of the same entity.

Why don't I follow Sattig and say that X is a hylomorphic compound given the striking similarities between our views? For a couple of reasons:

First, it is unclear to me what conclusion we should draw about the argument for coincidence on Sattig's view. Take the argument "David is well-made; Piece isn't well-made; therefore, David isn't identical to Piece". Is the argument sound? It seems as though different perspectives yield different verdicts. The argument is valid (and sound?) when we read it from the formal perspective, letting "David" and "Piece" refer to distinct K-paths of the same entity. It is unsound when we read it from the material perspective, letting the names refer to the same quantity of matter. (Since the second premise is meaningless in this case, as Sattig would say.) Finally, the argument is invalid, if we take the perspective of the metaphysician and let the names refer to the same hylomorphic compound. In this case the premises are true but the conclusion false. Which perspective gets us the right picture of the world? Obviously, the answer can't be: all of them.

It is tempting to think that the answer is the last one, given the metaphysician's perspective is the position that Sattig (2010, 288-9) relies on to deflate the quarrel between the one-thinger and the multi-thinger. But if this is right, then the multi-thinger is wrong, and the one-thinger wins. It won't help to say that the two parties are

concerned with distinct notions of coincidence, such that the multi-thinger understands coincidence as requiring coincidence in both form and matter, and the one-thinger understands coincidence as mere material coincidence. For the question under contention can be re-stated without appealing to any notion of coincidence. We can ask instead: How many entities are there in the region of space occupied by David (or Piece)? Again, the one-thinger and multi-thinger disagree over the correct answer to this question, and obviously they can't both be right.

Secondly, the fact that it might seem uncertain which of the three perspectives gets the final counting right reveals a deeper problem with how hylomorphic compounds are counted. Let X be a compound made up from some quantity of matter and two K-paths (say, a statue-path and a marble-path). How many compounds do we have in the region of space occupied by the quantity of matter? One? Two? One is the right answer when we count by the quantities of matter involved, and two is right when we count by K-path. But which way is the right way to count? It can't be both, given that the question "How many hylomorphic compounds are there?" isn't by any account ambiguous.

The problem gets worse when we have cases which involve compounds with different numbers of K-paths: let Y be a compound made from the same quantity of matter as X, except that Y has only one of X's K-paths (say, the marble-path). Is Y the same compound as X? The question is doubly unclear: in addition to the puzzle over whether we should count by quantity of matter or by K-path, here we get a new puzzle over how to count compounds with different numbers of K-paths. The puzzle is not helped by the identity condition which Sattig (2010, 285-6) offers for a hylomorphic

compound, because the condition is tailored for entities with a unique K-path: it says

that two compounds are identical iff they have the same quantity of matter and the

same K-path. The identity condition leaves us in dark with cases involving compounds

with more than one K-path. [19]

Finally, Sattig is a deflationist about the dispute over coincidence: he wants to

show that despite their alleged disagreement over coincidence, the one-thinger and the

multi-thinger don't really disagree over the metaphysics of ordinary material objects.

For any serious contender of either position, it is very hard to believe that the dispute

over coincidence isn't driven by some further disagreements over the correct picture

of how ordinary objects are made up. Can a one-thinger seriously entertain a position

which requires her to swallow some version of Aristotelian hylomorphism, on which

entities have a formal part (or a number of K-paths), in addition to their material parts?

On the other hand, presumably the question about counting that we saw earlier can

only be settled when we have decided upon the right metaphysical picture of ordinary

material entities: Are they aggregates made up entirely from material bits? Or is the

whole distinct from the fusion of its parts? But to answer these questions is to pick

side between two competing metaphysical views of ordinary material entities, and it is

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[19] The problem here partly stems from the fact that Sattig is unclear about whether a K-path counts as a
proper part of a hylomorphic compound or not. Some things that he says seems to suggest yes. For
instance, on page 281, he says: "ordinary objects are compounds of material objects and K-paths"; on
285, he says: "an ordinary object of kind K, is a compound, an ordered pair, of a material object and a
K-path". Other things that he says seems to suggest that K-path can't be a proper part of a compound.
For instance, on page 281, he subscribes to an atomic view of material entities, on which material
entities are either atoms or made up from atoms. Is the same principle meant to be applicable for the
hylomorphic compound as well? If so, no K-path would be a proper part of any compound. If not, we
would need some clarification on the mereology of hylomorphic compound. For this point, it is worth
comparing Sattig's view with Kathrin Koslicki's picture of material objects, on which objects have
formal parts in addition to material parts. See Koslicki (2008): 179-182.

reasonable to think that it is only because of their disagreement over the right answer to such further questions the one-thinger and the multi-thinger draw different conclusions about the possibility of coincidence.

Since the picture that I am defending is a one-thinger one, my exposition of X shall remain true to spirit of someone who takes constitution to be a relation of identity. On my view, X is a material entity made up entirely from microscopic bits of matter. X has no K-path. Moreover, X is by no means a mere quantity of matter. Rather, X is an individual with a full array of properties that would allow us to separate it easily from other things in the background: it has a particular shape, height, color and weight, and it is located in a gallery in Florence, moved to its current place from a public square outside the Palazzo Vecchio in 1873, and visited by thousands of tourists on a regular basis. In short, it has all the intrinsic and extrinsic properties that we would like to attribute to David and Piece.

Here we seem to run into the old puzzle over sortal-based properties again. As one might wonder: What about extrinsic properties such as being created by Michelangelo, being admired by the artworld and so on? Can these properties be ascribed to X as well? The worry is that it seems as though it is both right to say that X has the property and that X doesn't have it, due to the dual kind-membership of X. Note that it won't help to point out that the extrinsic properties are not really properties but relations, for the question can be raised again as: is there a single relation that we pick out by the predicate "is created by Michelangelo", such that X both has that relation with Michelangelo and doesn't have it?

Since it is impossible for X and Michelangelo to be in a relation R and not be

in R, two options suggest themselves: I either have to deny that the predicate picks out a single relation, or I have to admit that Piece is created by Michelangelo after all. The first option seems a non-starter. It is hard to see how the predicate "is created by" is used in this context to pick out distinct relations in this particular context. The second option seems a more natural move for the one-thinger to take, but again it forces upon her the odd claim that Piece is created by Michelangelo.

I suggest that there is a third option. We can let the claim "David is created by Michelangelo; Piece isn't created by Michelangelo" to be true about a particular stage of X under distinct guises. It is true of the same entity that it is both created by Michelangelo and that it isn't. The contradiction is removed by noting that the former is true of X when we refer to X under the statue guise, and the latter is true of X when we refer to X under the marble guise.

On the solution that I favor, X is a four-dimensional object. In a way the four-dimensional treatment of X is attractive for my purpose, for it is natural to allow X to bear distinct sortal-related similarity relations to other entities in its world not just synchronically, but also diachronically. We should be allowed to compare X and other entities for sortal-related similarity both at a time and at different times. Further, in contrast to the other two solutions, the stage solution has the merit of being metaphysically illuminating without the demerit of being ad hoc or piecemeal.

But there is a cost that I pay: instead of taking kind-membership as a binary relation between an individual and a sortal property, I have to take kind-membership to be a triple consisting of a stage of an object at a time, some relevant relations of similarity, and stages of other entities (in the same world) at the same time. Put more

formally, suppose a kind K has x and y as its only two members. (Generalization is straightforward for kinds with more than two members.) My view is:

x is a member of K at t iff x has a stage s at t, y has a stage s' at t, and s is similar K-wise to s'.

Caveats: first, the relevant notion of similarity is the comparative similarity as Lewis calls it, rather than similarity with respect to a single property. [20] Second, there are more than one way for an object x to cease to be a member of a kind K: x can fail to be a K at t, either by not having a stage at t, or by missing contrasting stages from other objects at t, or by both. Third, overlapping kind-membership at any time is rendered as overlapping stages: x is both a member of K and K* at t by having a stage at t that bears both sets of similarities to distinct sets of objects.

Now I am in the position to answer question (2). First, we need to reformulate the question by temporalizing the kind-membership at issue. Instead of asking "What is it for X to be a statue?", we have to restate the question as: "What is it for X to be a statue at t?". My answer is: by having a stage at t which bears the statue-relevant similarity to other statue-stages at t. Similarly, we restate the question about plurality of kind-membership as: "What is it for X to be a statue and a piece of marble at t?". The answer is: by having a stage at t that bears both statue-relevant similarities to other statues and marble-relevant similarities to other marbles.

For those of us who take kind-membership to be a-temporal, my view is

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[20] In contrast to simple similarity relation, comparative similarity is centered around one object under comparison. It is global in the sense that we look at two objects for their overall similarity by weighing various differences and similarities between the objects and balancing them against one another. Moreover, comparative similarity doesn't always match up to a scalar measurement, and it allows ties. See Lewis (1973):48-52; 91-95.

unappealing. It implies that instead of asking under which sortal x falls, we need to relativize the question to a particular time and ask what sortal x falls at that time. It will require another paper to evaluate my view of kind-membership side by side with the rival theory for their comparative merits. Here I only want to note that the paradigm examples which people rely on in the literature on material constitution often involve artifacts, which are known for cross-cutting between different (artificial) kinds due to the plurality of functions that they are made to serve. It is a customary practice for the multi-thingers to set their eyes on artifacts when constructing examples for constitution and use them as their spring board for constructing a theory of constitution which is intended to apply to a wider range of material entities. The historical inspiration here can be traced to the craft analogy that Aristotle relies on to argue for a hylomorphic view of natural kinds. [21]

However, the use of artifacts as an analogue is a double-sword. Artifacts are notorious for changing their kind affiliation in reaction to the way in which they are used in a given context: a pillow can become a weapon when being used by someone with murderous intent, and an umbrella wire can become a key at the hands of a skillful locksmith. Moreover, artifacts can both lose their kind membership and acquire new ones in reaction to vicissitudes in their environment: David is presumably no longer a piece of art when it is taken away by some barbaric aliens and displayed in their museum as a trophy from their trip to the Earth, and it will become a national icon in addition to being a work of art if the Italians decide to use the image of the

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[21] The argument from the craft analogy is most clearly stated in *Physics* ii chapter 199b33-200a14; 200a31-200b10, where Aristotle relies on the analogy of building (a wall of a house) in arguing for the existence of ends in natural objects.

statue on their national flag someday. The continuity between natural and artificial

kinds will be strained if the former is supposed to have their kind-memberships

unchanging across different contexts. [22]

Since my view doesn't presuppose that kind-membership is eternal either in

the case of artificial or natural kind, it has the advantage of accounting for how

something could change the particular kind under which it falls over time: it does so

by having one set of overall similarity relations to some objects at one time, and a

different set of overall similarity relations to some other objects at another time.

Moreover, my view explains easily how something can acquire a new kind-

membership on the top of its old one: it does so by acquiring the relevant k-stage on

the top of its current sortal stage.

CONCLUSION

In this paper I offered a semantic reply to the argument for coincidence based on

sortal-related differences between David and Piece. I suggested that the argument fails

due to a change in the use of names: "David" and "Piece" are used evocatively to

highlight different sortal profiles of an entity, whereby generating a shift of reference

in the names under use across the argument. I then proposed a metaphysical picture on

behalf of the one-thinger, on which there is single entity X that is both a statue and a

piece of marble. I argued that it is compatible to say that X is both an artifact and not

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[22] Examples given by the multi-thinger which involve natural kinds are often drawn from special sciences such as psychology and biology. E.g. trees (Wiggins's example) and persons (Baker's example). It is difficult to extend the craft analogy to cover basic natural kind such as electrons, if the latter has its kind-membership grounded exclusively in the intrinsic dispositions of the individual members. In this case, one can no longer appeal to difference in extrinsic properties as basis for grounding the sortal difference between the constituter and the constituted. See Baker (2000, 169-171) for a reply to the grounding challenge which makes crucial use of extrinsic properties.

an artifact, or that X is both well-made and not well-made, because the seemingly incompatible properties are attributed to X via distinct guises: X is well-made when we refer to X under the guise of statue, and X is not well-made when we refer to X under the guise of marble.

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