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Essence and Dependence

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Kit Fine's work on foundational metaphysical topics transcends, in both methodology and application, presently standard approaches to these topics.[1] Standardly, accounts of key metaphysical notions are situated in and aim to vindicate some particular framework, typically resting on controversial assumptions. For example, the work of philosophers such as Helen Beebee, Phillip Bricker, and David Lewis is primarily directed at vindicating a broadly Humean framework, characterized by the denial of irreducible modality, on which essence is flexible, dependence is mainly supervenience, and composition follows from classical mereology; and the work of philosophers such as Alexander Bird, E. J. Lowe, and Sydney Shoemaker is largely directed at vindicating a competing framework, on which facts about essence, dependence, and composition are grounded, one way or another, in modally irreducible powers or other posits more in the Aristotelian than the Humean vein.

Though Fine is perhaps best known for providing good reasons to think that essence is not appropriately reducible to merely correlational modal notions—a result that might seem to locate his efforts in the non-Humean vein—a closer look at Fine's work on essence and other topics of general metaphysical significance, including dependence, ground, and part, indicates that he is not engaging in the usual project of defending a specific metaphysical framework. Fine's work typically transcends such local disputes, aiming rather to provide resources suited to characterize and accommodate any intelligible application of the metaphysical notion at issue, through the identification of key distinctions and associated general principles reasonably seen as underlying the notion at issue. Indeed, one might without much hyperbole speak of a "Finean revolution," or at least a distinctively Finean methodology, in which the metaphysician's attention is directed away from local and sometimes parochial concerns to a more ecumenical, and potentially more profound, interest in identifying general metaphysical joints and associated structures of inference—the laws of metaphysics, if you will—which can and (if the account of general principles is correct) should be endorsed by any of a range of competing, more specific views on a given topic.

[1] Thanks to participants of the 2013 NYU Conference on the Philosophy of Kit Fine; Benj Hellie, Jon Litland, and most of all to Kit Fine, whose brilliant, deep, and groundbreaking work in metaphysics and metaphysical methodology has been a huge inspiration to me.

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Fine's schematic approach to metaphysical theorizing is groundbreaking not just in implementing a new methodology, but also in encouraging the development of new or existing accounts of a given metaphysical phenomenon. For attention to the general principles underlying the phenomenon may encourage metaphysicians to see or come to appreciate alternative ways of instantiating these principles; and these alternatives may be of interest either in their own right, or as enabling the testing and confirmation of other specific theories against an appropriately comprehensive range of competitors. In application, then, a schematic approach seems likely to combat the premature dogmaticism that (as discussed in Wilson 2011 and 2013) has too often distorted the metaphysical dialectical landscape.

What I aim to do in this paper is threefold. First, I'll substantiate my previous claims concerning Fine's approach to metaphysical theorizing, by attention to his accounts of essence and dependence. Second, I'll raise some specific concerns about the general principles Fine takes to schematically characterize these notions. In particular, I'll argue that Fine's essence-based account of ontological dependence is subject to certain counterexamples. The problem, roughly speaking, is that Fine supposes that an entity's essence makes reference just to what it ontologically depends on, but various cases suggest that an entity's essence can also make reference to what ontologically depends on it. As such, Fine's account of ontological dependence is subject to the same objection he raises against modal accounts of essence and dependence—that is, of being insufficiently general or ecumenical. Third, I'll close by observing that in cases where the target phenomenon admits of highly diverse applications, as is the case with ontological dependence (or the related notion of ground), there is no guarantee that the search for general principles that are both appropriately contentful and appropriately ecumenical will be successful. Even so, the search for such principles is clearly worthwhile; hence whatever the outcome in a given case, in raising to salience the schema-based approach, Fine has here made a lasting contribution.

1 Fine's Methodology in the Case of Essence: Overview

Metaphysics is concerned, in the first instance, with the providing of accounts of what it is for a given object (or other target phenomenon) to be what it is—that is, of a given object's "essence." The notion of an essential property plays a key role in this endeavor, for a property is essential to an object if the object must have the property to be what it is. But what exactly is meant by the latter specification?

In "Essence and Modality" (1994a), Fine famously argues that a modal answer to this question, according to which a property *P* is essential to an object *O* just in case it is necessary that *O* have *P*, is unsustainable, and that both this account and the associated conception of metaphysics as a branch of modal logic should be given up. Fine's concern is with the sufficiency of a modal account, as illustrated by the following case:

> Consider, then, Socrates and the set whose sole member is Socrates. It is then necessary, according to standard views within modal set theory, that Socrates belongs to singleton Socrates if he exists; for, necessarily, the singleton exists if Socrates exists and necessarily,

> Socrates belongs to singleton Socrates if both Socrates and the singleton exist. It therefore follows according to the modal criterion that Socrates essentially belongs to singleton Socrates. But, intuitively, this is not so. (4)

Not just in this case but in many others, Fine argues, a modal account of essence produces counterintuitive results, such that, for example, from the necessary distinctness of Socrates and the Eiffel Tower it follows that it is essential to Socrates that he be so distinct, or that from the necessity of essence claims it follows that it is essential to Socrates that every other object has the essential properties it has.[2]

What is the upshot of these seeming counterexamples? Insofar as Fine directs his remarks against a modal account, one might think he is engaged in standard "framework" debate, with the ultimate goal of offering an alternative account of essence capable of satisfying certain specific intuitions about what is essential to persons, sets, and other entities. But this would be a mistake—Fine has a different, and much more general, aim in mind. A first indication of this is that Fine emphasizes that acknowledgement of the concerns he is raising does not require sharing the intuitions appealed to in the motivating counterexamples:

> Nor is it critical to the example that the reader actually endorse the particular modal and essentialist claims to which I have made appeal. All that is necessary is that he should recognize the intelligibility of a position which makes such claims. (5)

This is interesting. For supposing that one does not share the intuitions at issue, why should one be swayed by the purported counterexamples, even granting their intelligibility? I believe that what Fine is correctly observing here is that this sort of "local" response would be inappropriate in a context where a general metaphysical resource is at issue. Hence the passage continues:

> For 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. (5)

Fine is concerned not to push any particular line as regards what is essential to what but rather to make room for any "intelligible" conception of these matters.

But how to proceed in pursuing such a general goal? One of Fine's most fruitful contributions has been his development, by way of leading example, of a plausible methodology aimed at constructing and applying appropriately general accounts for such key metaphysical notions.

I find it useful to see Fine's methodology as involving three distinct steps. First is the identification and refinement of plausible and important distinctions pertaining to the metaphysical notion (and any crucially related notions) at issue; these typically represent different "choice points" for theorizing involving the notion at issue. Second is the use of these distinctions to formulate general principles involving the notion, including principles connecting the notion to other notions. These general

[2] As Fine so wonderfully put it: "Oh happy metaphysician! For in discovering the nature of one thing, he thereby discovers the nature of all things" (6).

principles collectively serve as the broadly schematic account of the key notion at issue; they constitute the desired resources for theorizing with or about the notion. Third is the application of the general principles to the formulation of specific metaphysical, semantic, and logical accounts of the notion (again, perhaps along with importantly related notions).

Fine's work on essence provides a particularly clear case of this distinctive methodology. Having established, in "Essence and Modality," that a more ecumenical account of essence is needed, and gestured in the direction of such an account, Fine goes on, in "Senses of Essence" (1994b), to identify several important distinctions relevant to the notion of essence (step 1) and to formulate certain general principles concerning these distinctions (step 2); in "Ontological Dependence" (1995b) he refines these distinctions and offers a schematic essence-based account of dependence (step 2); and in "The Logic of Essence" (1995a) he applies these general principles to construct a specific logic of essence (step 3). Indeed, Fine effectively lays out these steps in the introduction to "Senses of Essence":

> What I shall do is to distinguish some of the closely related ways in which the notion may be understood. This will be important for getting clear both on which claims can be made with its help and on which concepts can be defined with its help. In particular, we shall see that several different senses of ontological dependence correspond to the different senses of essence. The task is also important for the purpose of developing a logic of essentialist reasoning; for most of the different senses of essence that we distinguish will make a difference to the resulting logic. (53)

2 Fine's Methodology in the Case of Essence: Details

Let's see in more detail how Fine's methodology plays out in the relevant papers.

2.1 "Essence and Modality"

In "Essence and Modality" (1994a), Fine sketches the outline of a more ecumenical approach to essence. He starts by diagnosing the failure of a modal account of essence, as located in the failure of necessary truths to encode crucial information about the source of the necessity:

> What is it about the concept of necessity which makes it so inappropriate for understanding the concept of essence? Certainly, there is a connection between the two concepts. For any essentialist attribution will give rise to a necessary truth; if certain objects are essentially related then it is necessarily true that the objects are so related (or necessarily true given that the objects exist). However, the resulting necessary truth is not necessary simpliciter. For it is true in virtue of the identity of the objects in question; the necessity has its source in those objects which are the subject of the underlying essentialist claim. (8–9)

Fine sees a deep analogy here with the case of analyticities: just as analyticities associated with the definition of a term may be true in virtue of certain terms rather than others (such that, e.g., "Bachelors are unmarried" is true in virtue of the meaning of "bachelor" rather than "unmarried"), so may necessities associated with the essence, or "real definition," of an object be true in virtue of the identity

of some objects rather than others.[3] The same is true, and more basically, of essentialist attributions themselves:

> Thus different essentially induced truths may have their source in the identities of different objects—Socrates being a man having its source in the identity of Socrates, 2 being a number having its source in the identity of 2. In particular, an induced truth which concerns various objects may have its source in the nature of some of these objects but not of others. This is how it is with our standard example of Socrates being a member of singleton Socrates; for this is true in virtue of the identity of singleton Socrates, but not of the identity of Socrates. (9)

Very schematically, then: an appropriately fine-grained and ecumenical understanding of the notion of the essence of an object must be one sensitive to, and capable of registering, the source of the "essentially induced truth" in essentialist attributions concerning the objects.

2.2 *"Senses of Essence"*

How should such a notion of essence be understood? In "Senses of Essence" (1994b), Fine registers his view that the notion is likely primitive, or basic: "I doubt whether there exists any explanation of the notion in fundamentally different terms" (53). But, he goes on, "this is not to deny the possibility of further clarification."

One preliminary question needing clarification concerns the grammar, so to speak, of essentialist claims. Most saliently, such claims may be expressed using either a predicate modifier[4] or a sentential operator,[5] reflecting conceptions of the essence of an object (or of some objects) as the collection either of the essential properties of the object(s), or of the propositions true in virtue of the nature or identity of the object(s). For example, suppose that A is the sentence "Socrates belongs to singleton Socrates." Then in sentential operator terms: the claim that A is true in virtue of the identity of singleton Socrates can be expressed as $L_{\{Socrates\}}A$, the claim that A is true in virtue of the identity of Socrates can be expressed as $L_{Socrates}A$, and following the discussion in "Essence and Modality," the former essentialist attribution will be true, while the latter will be false. As we'll see, in "The Logic of Essence" Fine opts for a sentential operator approach, but in his presentations moves smoothly between talk of essence in terms of properties or propositions, and I will follow him in this.

So far, so good, but what more can be said, by way of providing an illuminating but appropriately general account of essence, as befits this key metaphysical notion? Quite a lot, it turns out. Among the distinctions Fine identifies in "Senses of Essence" are those between:

[3] Indeed, Fine suggests that nominal definitions are a special case of real definitions of words, richly interpreted as having their meanings essentially.

[4] "[G]iven a predicate P (say 'thinks'), we may regard the expression L of essence as a device for forming the corresponding essentialist predicate [LP] ('essentially thinks'); so to say that Socrates essentially thinks, we would apply this complex essentialist predicate to a term for Socrates" (54).

[5] "Thus to express the claim that Socrates essentially thinks, we would first form the sentence 'Socrates thinks' . . . We would then prefix the operator 'It is true in virtue of the identity of Socrates that' to obtain the sentence 'It is true in virtue of the identity of Socrates that Socrates thinks.' The symbol L for essence, on this account, has something like the syntactic status of 'believes'; it applies to a term t and a sentence Φ and results in a sentence, which we may write in the form $L_t\Phi$" (54).

- *Constitutive vs. consequential essence.* Fine says:

  An essential property of an object is a constitutive part of the essence of that object if it is not had in virtue of being a consequence of some more basic essential properties of the object; and otherwise it is a consequential part of the essence. (57)

  For example, it is constitutively essential to Socrates that he is a thinking thing, but it is consequentially essential to Socrates that he is either a thinking thing or a mountain. There is, Fine observes, some advantage to working with a notion of consequential essence, since then we can sidestep difficulties in drawing the line between constitutive and consequentialist essence. If we go the more expansive route, however, we should put a restriction on which logical consequences count as part of an object's consequentialist essence, since not all of these will be plausible even in the extended sense—for example, that it is part of Socrates' essence that $2 = 2$. By way of restriction, Fine requires that the consequentialist essence of an object O not involve objects which are extraneous to the nature of O, and he suggests that it is characteristic of an extraneous object that it can be generalized away. So, insofar as the term "2" in "$2 = 2$" can be replaced by any term whatsoever, it turns out not to be part of the essence of Socrates, consequentialist or otherwise, that $2 = 2$.

  Fine here draws an initial connection between essence and ontological dependence, informally characterizing extraneous objects as those that do not "pertain" to the nature of O:

  We may overcome this difficulty by restricting the objects that figure in the consequentialist essence of something to those that pertain to its nature . . . We seem to have an intuitive understanding of the relevant notion of pertinence in these cases. But when it comes to essence, the relevant notion of pertinence (or dependence) can be defined . . . [W]e may say that y is pertinent to x, or x depends on y, if it is true in virtue of the identity of x that $y = y$. (59)

- *Mediate vs. immediate essence.* Fine illustrates: "It is of the immediate nature or identity of singleton Socrates to contain Socrates and of the immediate nature of Socrates to be a man. But it is only of the mediate nature of singleton Socrates that it should contain something which is a man" (61). Here again, Fine sees a connection to the notion of dependence:

  In general, the mediate nature of an object will incorporate the nature of all of the objects upon which it depends; the nature will in this sense be hereditary. But the immediate nature will only include that which has a direct bearing on the nature of the object and will exclude whatever belongs in virtue of the nature of the objects upon which the given object depends . . . The two notions of essence give rise to two notions of dependence. One object will immediately depend upon another if it pertains to the immediate nature of the other, while one object will mediately depend upon another if it pertains to its mediate nature. (61)

- *Reflexive vs. non-reflexive essence.* Can the essence of an object involve the object itself? One might go either way. As part of his discussion, Fine considers whether a reflexive essence will involve a self-related property (e.g., being caused by God) or rather a general reflexive property (being self-caused), and he suggests that

concerns about circular definitions of essence can to some extent be sidestepped by replacing any self-related properties with reflexive properties in an object's essence.

- *Reciprocal vs. non-reciprocal essence.* Can different objects irreducibly have each other as part of their essence, along lines of a simultaneous definition of multiple terms? Again, one might go either way; and again, Fine considers whether and how concerns about circularity may be avoided.

Fine identifies other distinctions as well, but since these won't play a role in what follows I'll leave these aside.

2.3 *"Ontological Dependence"*

Having identified various salient distinctions and associated choice points as regards theorizing about essence, Fine goes on, in "Ontological Dependence" (1995b), to expand upon the connection between these distinctions and the notion of ontological dependence.

As in the case of essence, there have been attempts to understand ontological dependence in modal and existential terms, according to which, most basically, x depends on y just in case it is necessary that if x exists then y exists. But, Fine observes, a modal existential account fails to accommodate certain basic intuitions about dependence: "Necessarily, if Socrates exists so does the set. But we do not want to say, on that account, that Socrates depends upon the set, that what Socrates is depends upon what the set is" (271).

Again, Fine flags that this and other counterexamples show that a modal account of dependence is problematic, not just from the perspective of a specific set of first-order commitments, but as failing to provide resources for accommodating certain intelligible views about what depends on what:

> It is important to bear in mind, in regard to these somewhat exotic examples, that their force does not rest upon accepting the modal views upon which they depend. . . . [T]he legitimacy of an account of dependence should not be made to rest upon the adoption of one modal view as opposed to any other, no matter how reasonable it might be. (274)

Following upon the initial connections observed in "Senses of Essence," Fine's aim is then to offer an alternative account of ontological dependence, in terms of essence:

> [W]e may take x to depend upon y if y is a constituent of a proposition that is true in virtue of the identity of x or alternatively, if y is a constituent of an essential property of x. (275)

Importantly, the account here is intended as a schematic account of the connection between essence and dependence. Corresponding to distinctive senses of essence there are, Fine believes, corresponding distinctive senses of dependence. So, for example, we might instantiate the schema with a constitutive account of essence in order to accommodate the intuition that singleton Socrates depends on Socrates, but not vice versa, since while there are some propositions containing Socrates in the constitutive essence of singleton Socrates (e.g., "Socrates belongs to singleton Socrates"), there are (we may assume) no propositions containing singleton Socrates in the constitutive essence of Socrates.

In Fine's essence-based account of ontological dependence, then, we have an explicit case of the identification of a schematic general principle, instantiable by various understandings of essence and dependence.

2.4 *"The Logic of Essence"*

Let's turn now to Fine's application of his account(s) of essence and associated distinctions and principles in "The Logic of Essence" (1995a).

Adverting back to the distinctions identified in "Senses of Essence," Fine here aims to formulate a logic of consequentialist essence allowing for reciprocal essences; as we'll see, the logic also contains the principle of "chaining" which is associated with the notion of mediate essence. As in "Senses of Essence," the closure condition associated with a consequentialist account of essence is subject to an objectual constraint, aimed at excluding propositions involving "extraneous" objects from the consequential essence: "we do not allow the logical consequences in question to involve objects which do not pertain to the nature of the given objects" (242).

The notion of "pertaining" entering into the objectual constraint on consequentialist essence enters into Fine's logic of essence as a second primitive notion: "The other important primitive is that of one object pertaining to the nature of another or, as we shall also put it, of the second depending upon the first" (243). (Recall that we saw this characterization previously, in "Senses of Essence.") Fine says that, strictly speaking, taking the notion of pertaining/dependence to be primitive isn't required; as a variation on the "Senses of Essence" characterization, "we may say that x depends upon y just in case, for some property Φ not involving y, it is true in virtue of the nature of x that y Φs and yet not true in virtue of the nature of x that every object Φs; the dependees [here, y] are the objects which cannot be 'generalized out'" (243). Effectively, the essence-based characterization of dependence here is that provided in "Ontological Dependence," with the objectual constraint built in. As such, Fine suggests, the notion of dependence is not an idea that is genuinely new; he treats it as a second primitive in his logic, however, in order to make explicit its governing assumptions.

Since down the line I will be focusing on Fine's essence-based account of dependence, here I'll just present the features of Fine's logic most relevant to this account, as follows:

- Relevant bits of language:
  - A primitive essentialist operator, $\Box_F$
    Explication: the role of the predicate F is to pick out the subjects of the essentialist claim, and $\Box_F A$ is to be read as saying that A is true in virtue of the nature of the object(s) that are F[6]
  - A 2-place dependence predicate $\leq$
    Explication: $x \leq y$ means y depends on x

[6] "To illustrate the intended meaning of $\Box_F$, let us suppose that A is the sentence 'Socrates belongs to Singleton Socrates.' Then if F is true of Socrates alone, $\Box_F A$ will convey that Socrates essentially belongs to singleton Socrates; while if F is true of the singleton alone, $\Box_F A$ will convey that the singleton essentially has Socrates as a member" (242).

- Abbreviations:
  - $x \leq F$: some F depends on x
  - cF: closure of the objects upon which the Fs depend
  - $x\eta A$: x occurs (as an object) in the proposition expressed by A
    Explication: What it is for x to occur "as an object" in A is for x either to occur as one of the free variables in A or to satisfy one of the rigid predicates in A, where a rigid predicate is one expressing a rigid property, by which is meant "a property of being identical to x_1 or x_2 or..., for certain specific objects x_1, $x_2, \ldots$" (244)
- Modal Axioms and Rules:
  - Those of S5 plus
  - (v) $F \subseteq G \rightarrow \Box_F A \rightarrow \Box_G A$

And most crucially for our purposes:

- (IV) Dependency Axioms:
  - (i) $\Box_{cF} A \rightarrow \Box_F A$ ("chaining")
    Explication: Chaining reflects a conception of essence as including the mediate essence: "If the objects $y_1, y_2, \ldots$ are 'linked' by dependence to the objects $x_1, x_2, \ldots$, then any proposition true in virtue of the linking objects $y_1, y_2, \ldots$ is also true in virtue of the linked objects $x_1, x_2 \ldots$" (249)
  - (ii) $\Box_F A \wedge x\eta A \rightarrow x \leq F$ ("localization")
    Explication: If A is true in virtue of the nature of the Fs and x occurs (as an object) in the proposition expressed by A, then some F depends on x. See the explication of $x\eta A$ for discussion of what it is for x to occur "as an object" in A.

Fine goes on to prove a variety of interesting results for the logic, so specified.

3 Essence and Dependence: The Counterexamples

I now want to raise some concerns for Fine's essence-based account of ontological dependence, as it is developed in the papers we have discussed. To prefigure: I will present certain counterexamples to the schematic account in "Ontological Dependence," show that the underlying difficulty is encoded in one of the dependency axioms in "The Logic of Essence," locate the immediate source of the difficulty in a problematic reading, in "Senses of Essence," of what it is for one object to "pertain" to another, and trace the ultimate source of the difficulty to Fine's understanding of essence as a form of real definition, in "Essence and Modality."

3.1 "Ontological Dependence," revisited

Recall the schematic essence-based account of dependence in "Ontological Dependence" (1995b):

> x depends upon y if y is a constituent of a proposition in the essence of x or alternatively, if y is a constituent of an essential property of x.[7] (275)

[7] As Correia (2000) puts it, "One of Fine's crucial claims about essence is this: if P is true in virtue of the nature of an object x, then x depends on each constituent of the proposition expressed by P" (297). Note

(The account here generalizes to characterize the ontological dependence of an object x upon several objects y_i.) Fine's account of ontological dependence does not succeed, for it is subject to various counterexamples in which the right-hand side is true but the left-hand side is false. I'll first lay out two such cases, then consider what resources Fine has for responding to the cases.

3.1.1 THE CASES

Case 1. Suppose that a form of atomist physicalism is true, such that atoms and their atomic properties serve as a fundamental basis for the rest of natural reality; and suppose, as an atomist might believe, that it is in the nature of a given atom—say, an atom a of type A—that if a were to exist in certain circumstances C (involving sufficient proximity to other atoms of type A, say), a would enter into composing a molecule of type M:

> If atom a were to exist in circumstances C, a would enter into composing a molecule of type M.

Finally, suppose, as an atomist might also believe, that a form of nominalism about property types is true, according to which predicate terms express not irreducible properties, but rather disjunctions of concrete individuals. Perhaps the individuals are only actual; perhaps—as Lewis (1986) and Rodriguez-Pereyra (2002) advise, by way of a response to Quine's complaint that nominalism conflates intuitively different but coextensional properties—individuals are also drawn from a space of concrete possible worlds. Either way, the atomist nominalist might reasonably maintain that the predicate M designates a disjunction of specific molecules m_1 or m_2 or . . . . In that case, M satisfies Fine's criterion for being a rigid predicate (that is, one expressing a rigid property, where "By a rigid property is meant a property of being identical to x_1, x_2 or . . . , for certain specific objects x_1, x_2, . . . "; "Logic of Essence," 244). And since, by assumption, one or more specific molecules satisfies M, either actually or counterfactually, it moreover follows from Fine's criteria for being a constituent ("as an object") of a proposition that one or more composed molecules is such a constituent of a proposition true in virtue of the identity of a (alternatively: is such a constituent of an essential property of a). Applying Fine's criterion of dependence, it follows that a ontologically depends on one or more composed molecules. But given atomism, the atom a does not ontologically depend on any molecule that it enters into composing; rather, these composed molecules ontologically depend on atom a.[8]

Case 1 thus constitutes a counterexample to Fine's account of ontological dependence, showing that, given certain coherent metaphysical views about natural reality,

that Correia's characterization does not require that the constituents appear "as an object"; in what follows I will follow Fine in considering the "crucial claim" as restricted to object-constituents; but it is worth observing that the sort of concerns I will raise for the claim attach to any other ontological categories (e.g., properties) that might be considered constituents of essentialist propositions or properties.

[8] Moreover, if we suppose that a never actually finds itself in circumstances C, Fine's treatment (assuming the nominalism at issue helps itself to concrete possibilia) requires that we say that (actual) a ontologically depends on a non-actual molecule.

the account results in an incorrect judgement about what ontologically depends on what.[9]

Case 2. Suppose that a form of physicalism is true according to which quarks, along with some other lower-level physical entities (e.g., leptons), serve as a fundamental basis for the rest of natural reality; suppose also, as appears to actually be the case, that quarks only come in pairs or triples, which form non-fundamental composite mesons and nucleons (protons, neutrons), respectively. One might well maintain, compatible with these suppositions or associated views, that when three quarks come into joint existence, it is essential to each of these quarks that they compose the very nucleon that they do. Suppose, then, that specific quarks q_1, q_2, and q_3 do in fact come to jointly exist, composing proton p. In this case the following proposition would be true in virtue of the nature of the quarks:

Quarks q_1, q_2, and q_3 compose proton p.

Here p is a name, which rigidly designates a specific proton. As such, the specific proton satisfies Fine's conditions on being a constituent of the proposition "as an object." Applying Fine's criterion of ontological dependence, it follows that the quarks ontologically depend on the proton they jointly compose. But given the physicalist view at issue (more weakly, given the usual scientific understanding of quarks as fundamental or more fundamental components of non-fundamental protons), the quarks do not ontologically depend, either individually or jointly, on the proton; rather, the proton ontologically depends on the quarks.

Case 2 thus constitutes a second counterexample to Fine's account of ontological dependence, showing that, given certain coherent metaphysical (indeed, actual scientific) views about natural reality, the account results in an incorrect judgement about what ontologically depends on what.[10]

3.1.2 DISTINCTIONS IN ESSENCE TO THE RESCUE?

Might the difficulties here reflect that we have not specified which sense of essence is at issue, such that (as in the case of Socrates and singleton Socrates) identification of the right sense of essence will accommodate the intuitive results? It seems not.

[9] A causal variation on the theme of Case 1 involves combining dispositional essentialism, according to which, e.g., it is essential to a given atom *a* that in circumstances *C*, it enter into causing a schmatom of type *S*, with the supposition of a nominalist treatment of predicate *S*. Again, given these views, *a* counts by Fine's lights as ontologically depending on one or more (actual or counterfactual) schmatoms, notwithstanding that one may reasonably maintain that causes do not ontologically depend on effects, both because effects are temporally and metaphysically posterior to causes, and because (assuming that the nominalism at issue in Case 1 is one helping itself to concrete possibilia) such conditional effects need not even actually exist.

[10] A causal variation on the theme of Case 2 is one where it is true in virtue of the identities of a sperm *s* and egg *e* that, if the one fertilizes the other and the resulting embryo comes to term, the sperm and egg will cause to come into being a unique organism *o*. Again, given these views, *s* and *e* count by Fine's lights as ontologically depending on *o*, notwithstanding that one may reasonably maintain that causes do not ontologically depend on effects, both because effects are temporally and metaphysically posterior to causes, and because (assuming the nominalism at issue helps itself to concrete possibilia) such effects need not even actually exist.

To start, the distinction between consequentialist and constitutional essence will not help, for the essentialist claims and essential properties at issue are not logical consequences of claims or properties in the constitutive essence of the atom (in Case 1) or the quarks (in Case 2). Relatedly, reference to the molecule of type M (in Case 1) or the proton p (in Case 2) cannot be generalized out of the essentialist claims at issue. Nor will the distinction between immediate and mediate essence help, for the essentialist claims and essential properties at issue are in the immediate, not mediate, essences of the atom (in Case 1) and the quarks (in Case 2).

What about the distinction between reciprocal and non-reciprocal essences? In particular, could it be made out that the cases, or associated views, entail that the natures of atoms and the types of molecules they compose, or the natures of quarks and the specific protons they compose, are intertwined in such a way that it turns out that the entities at issue are mutually ontologically dependent, thereby showing that atom a does depend on molecules of type M, and quarks q_1, q_2, and q_3 do depend on proton p, after all? No: for to start, the views at issue do not entail that the essences are reciprocal. Re Case 1: it is compatible with nominalist atomism that, while atoms are essentially such as to compose molecules of type M, molecules of type M are not essentially such as to be composed by atoms, or indeed to be composed at all (perhaps in some worlds molecules are extended simples). On this understanding, the essences of a and molecules of type M will not be reciprocal. Compare the common assumption that physicalism is a contingent thesis, such that while mental states are actually realized by physical states, mental states can exist in Cartesian worlds without any realizers at all. Re Case 2: it is compatible with a physicalist view that, while it is essential to some specific quarks q_1, q_2, and q_3 that they compose a specific proton p, it is not essential to p that it be composed by q_1, q_2, and q_3, and that this flexibility in p's nature is registered not (as the Case 1 nominalist would have it) via reference to an exhaustive disjunction of the actual and possible entities that could compose p (including as one disjunct the q_1, q_2, and q_3), but rather by p's being of an irreducibly determinable type (as per Wilson 2012). On this understanding, the essences of quarks q_i and proton p will not be reciprocal.

Summing up: distinctions in essence are of no help here.

3.1.3 ACCEPTANCE OF THE CASES?

Might Fine accept the cases but deny that they are counterexamples, maintaining that in Case 1, atom a does ontologically depend on one or more specific molecules of type M, and that in Case 2, specific quarks q_1, q_2, and q_3 do ontologically depend on the specific proton p?[11] No, for the notion of ontological dependence, both traditionally and in Fine's discussion, is intended to track priority relations, and more generally the structure of reality. The strategy thus runs afoul of the guiding methodology of Fine's approach, according to which our accounts of key metaphysical notions should not rule out of court intelligible applications of these notions.

Consider Case 1. On atomism, the intended conception of the structure of reality is one where atomic goings-on are fundamental, and where all other broadly scientific

[11] Similarly for the causal variations on these cases discussed in notes 9 and 10.

goings on, including molecular goings-on, ontologically depend on atomic goings-on. This conception, refinements of which are operative in physicalism, naturalism, and other such theses, highlights that the notions of ontological dependence and ontological priority are tightly linked—most basically, in that the non-fundamental ontologically depends on the fundamental, and not vice versa. Hence it is, for example, that physicalists standardly speak of lower-level "dependence bases" for higher-level goings-on in order to flag the intended direction of priority. As such, Fine cannot accept that, in Case 1, atom *a* ontologically depends on one or more specific molecules of type *M*, without undermining the atomist's intended direction of priority, and associated understanding of the structure of natural reality. Similarly for Case 2. Here again, the physicalist's (or scientist's) intended conception of structure is one according to which protons are non-fundamental configurations of more fundamental quarks. As such, Fine cannot accept that, in Case 2, quarks q_1, q_2, q_3 ontologically depend on a specific proton *p*, without undermining the physicalist's (or scientist's) intended direction of priority, and associated understanding of the structure of natural reality.

Two points are worth clarifying as regards the concern I am raising here.

First, I am not supposing that the notions of dependence and priority are the same; rather, I am supposing that in the views under discussion, and indeed much more generally, the notions are intended to go hand in hand, and the comparatively few ways in which they come apart do not undermine the underlying connection. One way in which the notions might come apart is if there can be mutually dependent but equally fundamental entities, as in the case, perhaps, of Leibnizian monads; but here the connection to priority is not so much lost as it is symmetrically cancelled out, if I may speak metaphorically. Another way in which they can come apart is in the case of robust or "strong" emergence, for notwithstanding that strongly emergent phenomena are standardly supposed to be fundamental (as discussed, e.g., in McLaughlin 1992 and Wilson 1999 and 2015), such phenomena are also standardly supposed to partially ontologically depend, in a broadly constitutive way, on lower-level physical phenomena. The "partially" is crucial, however: the strong emergentist would deny that strongly emergent phenomena *entirely* ontologically depend on lower-level phenomena. Rather, the dependence here tracks the partial priority of lower-level physical goings-on in the form of a metaphysical necessary precondition for the emergence, at a higher level, of a fundamental state of affairs (power, property, interaction, law), and so even in this case ontological dependence and priority go hand-in-hand. Finally, as Bennett (2011) observes, the notions can come apart in cases where, for example, an atom in Paris might be said to be prior to a molecule in Toronto; but the priority claim at issue here is presumably tracking general facts to the effect that molecules depend on atoms (and in particular, that every molecule depends on some or other atoms), so once again the deeper connection is intact.

Second, Fine clearly *intends* his notion of ontological dependence to serve, as it traditionally does, as a means of tracking structure (priority, relative fundamentality). The examples of dependence he gives at the start of "Ontological Dependence" are: "a set depends upon its members," "a particularized feature, such as a smile . . . will depend upon the particular that instantiates it," "substance [may be] taken to be

anything that does not depend upon anything else or, at least, upon anything other than its parts," and "holism [is] the doctrine that the parts of a whole can depend upon the whole itself." These are either cases where the dependees are uncontroversially prior to the dependent entities (sets and their members, smiles and faces), or, most importantly, cases involving doctrines where the intended direction of priority (substance as fundamental; the Whole as fundamental) is, Fine suggests, captured by specification of what depends on what. Another indication is that, while Fine rejects a modal account of ontological dependence, he nonetheless endorses the existential implication that an entity cannot exist without the entities it depends on existing, saying, "For central to the question of the nature of any item is the determination of what it depends upon; and if something is taken to exist, then so must anything upon which it depends" (269). Such an existential criterion makes sense against a backdrop whereby ontological dependence is capable of tracking relative fundamentality, and does not make clear sense otherwise. Compare: effects ontologically depend in some sense on their causes, but either may exist without the other, and modulo certain outside views, causal dependence does not track priority or relative fundamentality.

Notwithstanding Fine's clear intentions, what Cases 1 and 2 show is that his characterization of dependence in terms of the (objectual) constituents of essential propositions or properties does not in fact track priority or relative fundamentality. Hence it is that he cannot accept the consequences of Cases 1 and 2 without rejecting, in unecumenical fashion, the intended conceptions of priority or structure at issue in the cases.

3.1.4 REJECTION OF THE CASES?

Can Fine respond by rejecting the cases, on grounds that they represent views that are unintelligible, or that he doesn't believe? No, for the cases and associated views are clearly intelligible; but given that they are intelligible, he is not in position to reject them, even supposing he is not inclined to believe them. We can here repeat or paraphrase his own remarks on the seeming counterexamples to a modal account of essence:

> Nor is it critical to the example that the reader actually endorse the particular . . . essentialist claims to which I have made appeal. All that is necessary is that [they] recognize the intelligibility of a position which makes such claims.

> For any reasonable account of ontological dependence 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.

Fine cannot reject Cases 1 and 2 without rejecting the ecumenical methodology supporting his results in "Essence and Modality" (1994a) and elsewhere. As such, rejecting Cases 1 and 2 on grounds that he isn't inclined to accept the views at issue simply isn't an option.

Summing up: Fine's essence-based account of ontological dependence is subject to counterexamples indicating that the irreducible appearance of an object y in the essence of an object x is insufficient for x to depend on y; and Fine can neither accept

nor reject the cases without ruling out of court certain intelligible accounts of the natural phenomena at issue.

3.2 *"The Logic of Essence," revisited*

The previous difficulties affect the discussion in "The Logic of Essence" (1995a), even though, as above, Fine there takes the notion of dependence as a "second primitive," additional though related to the notion of essence.

Consider, in particular, the second dependency axiom:

- (IV)(ii) $\Box_F A \wedge x\eta A \rightarrow x \leq F$ ("localization")
  Explication: If A is true in virtue of the nature of the Fs and x occurs (as an object) in the proposition expressed by A, then some F depends on x.

Here again Cases 1 and 2 constitute counterexamples, which cannot be either accepted or rejected without undermining Fine's own ecumenical methodology and associated arguments for his preferred views.

Fine's alternative definition of dependence in "The Logic of Essence" is subject to a related counterexample. Recall the suggestion:

> x depends on y just in case, for some property Φ not involving y, it is true in virtue of the nature of x that y Φs and yet not true in virtue of the nature of x that every object Φs; the dependees are the objects which cannot be "generalized out." (243)

Again consider Case 2, where some quarks q_1, q_2, and q_3 compose a proton p; and let us additionally suppose that protons are triangular.[12] Let Φ be "is triangular"; then Φ does not involve any of the q_1, q_2, and q_3, as required. It is true in virtue of the natures of q_1, q_2, and q_3 that p is triangular, and it is not true in virtue of the natures of q_1, q_2, and q_3 that every object is triangular. But on the physicalist (scientific) view in question, q_1, q_2, and q_3 don't ontologically depend on proton p; rather, p ontologically depends on q_1, q_2, and q_3.

3.3 *"Senses of Essence," revisited*

The proximal source of the difficulty here may be initially traced to "Senses of Essence" (1994b).

Recall that, in discussing the distinction between constitutional and consequentialist essence, Fine considers how to exclude extraneous objects from the consequentialist essence of an object o; and he suggests that it is characteristic of an extraneous object that it can be generalized away.

So far, there is no mention of dependence. And so far, so good.

But Fine aims to say more—in particular, he aims to connect the notion of being "non-extraneous" to an object's nature to the notion of ontological dependence. He does this, first, by characterizing such non-extraneous objects as those that "pertain"

[12] As previously, the characterization of dependence is intended to generalize to cases where an object x depends on many objects.

to the nature of *o*, and second, by endorsing the claim that for *y* to pertain to *x* is for *x* to depend on *y*. Recall:

> We may overcome this difficulty by restricting the objects that figure in the consequentialist essence of something to those that pertain to its nature... We seem to have an intuitive understanding of the relevant notion of pertinence in these cases. But when it comes to essence, the relevant notion of pertinence (or dependence) can be defined... [W]e may say that *y* is pertinent to *x*, or *x* depends on *y*, if it is true in virtue of the identity of *x* that $y = y$. (59)

Here, in my view, things have gone awry. Fine is absolutely right that extraneous objects must be excluded from an object's essence. But he goes wrong in assuming that if an object *y* is not extraneous to the nature of an object *x*—if *y* pertains to *x*, in the intuitive sense of being "non-extraneous"—then this is because *x* depends on *y*. For as the cases show, it can be that *y* is not extraneous to the nature of *x*—that *y* pertains to *x*—because *y* depends on *x*. Stated in general terms, the difficulty here traces to Fine's presupposition that the essence of an object *o* will advert only to objects upon which *o* depends, whereas on some metaphysical views, the essence of an object *o* may also advert to what depends on *o*.

Indeed, it seems clear that in many cases the essence of an object *o* will advert *only* to objects that depend on *o*, rather than vice versa. In particular, the essences of fundamental entities will typically not contain reference to objects that the fundamental entities depend on, since (modulo reflexive and reciprocal essences) there aren't any such objects. Rather, the essences of such entities will, at least on some intelligible views, involve reference to less fundamental entities. Atomism and physicalism, as per Cases 1 and 2, provide some cases-in-point. Monism provides another; for why couldn't the One have as part of its essence that it contains certain non-fundamenta as Parts?

It seems, then, that one cannot infer from an object's appearance in another's essence that the latter depends on the former. Given the range of cases, at best we can say that "we may take *x* to depend upon *y* or *y* to depend upon *x* if *y* is a constituent of a proposition that is true in virtue of the identity of *x* or, alternatively, if *y* is a constituent of an essential property of *x*." But then an essence-based account of ontological dependence will (still) fail to track priority or relative fundamentality, which, Fine is clear, is key to the notion of dependence at issue.

3.4 "Essence and Modality," revisited

This result bears not just on Fine's essence-based account of dependence, but also on his preferred understanding of essence as a form of real definition associated with "the idea of definitional priority, the priority of the defining terms to those defined." It is this understanding, set out in "Essence and Modality" (1994a), that is, I speculate, the deeper source of Fine's assumption that the essence of an object adverts only to that upon which it depends—to that which is metaphysically prior to it, and which enters into "constructing" it. Holism about meaning aside, it may make good sense to think of the meaning or definition of an expression as either basic, or as built up from more basic expressions and associated meanings in constructive or

compositional fashion. But, or so I have argued, not all essences are appropriately characterized in such broadly constructive or compositional terms. As such, the analogy between real and nominal definitions turns out to break down, at the most crucial juncture.

4 Concluding Remarks

I have offered certain counterexamples to Fine's essence-based account of dependence, which more generally pose a difficulty for some of the principles (e.g., Localization) that he takes to characterize the connection between essence and dependence. Still, it will not have been lost on anyone that *my criticisms here accept and aim to implement exactly the methodology that Fine took to show that modal accounts of essence and ontological dependence are incorrect, and for the same reason*—namely, that it is of the first importance to characterize the key metaphysical notions in such a way that they do not inappropriately exclude any intelligible applications of those notions.

What are the prospects for identifying general principles for essence and dependence that can appropriately accommodate the full range of applications of these notions? Above, I considered and rejected one sort of "fix" to Fine's account of dependence. To be sure, that leaves open whether there might be some different general principles that could provide a basis for a more ecumenical account. But—and here we must acknowledge the potential limits of a schema-based approach—it might also be that at the end of the day, we find that there are no such general principles undergirding these notions, at least none that can do any substantive metaphysical work. This is the case, I argue in Wilson 2014, for the notion of Grounding, understood as a primitive notion or relation operative in contexts where the idioms of dependence are at issue. In particular, attention to the full range of specific metaphysical relations appealed to in these contexts suggests that there is really very little that is formally, metaphysically, or terminologically in common among the specific relations, which might serve as the basis for an appropriately ecumenical account. For similar—perhaps even the same—reasons, the search for general principles of ontological dependence may be ultimately fruitless. Supposing so, we can do no better than to keep an open mind and eye out for the full range of specific ways for some entities to ontologically depend on some others. Whatever the outcome of Fine's or other's investigations into general principles underlying key metaphysical notions, it remains that Fine's ecumenical purview on metaphysical theorizing could not be more welcome, especially in a philosophical landscape whose first-order investigations are often characterized by dogmatic adherence to one or other set of first-order views. Given how far we are from the end of metaphysical inquiry, it is too early for dogmatism. We need at present to be figuring out our metaphysical options—but how to proceed in systematic fashion? Fine's schema-based methodology provides a better answer than any other philosopher has yet provided.

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