

# Ontological Dependence: An Opinionated Survey

Kathrin Koslicki

## 1. Introduction

The purpose of this essay is to provide an opinionated survey of some recent developments in the literature on ontological dependence.<sup>1</sup> Ontological dependence is typically taken to be a relation whose relata are entities. The following cases are often cited in the literature as putative candidates of pairs of entities which exhibit a relation of ontological dependence of some sort:

- (i) Smiles ontologically depend on mouths that are smiling.
- (ii) Sets ontologically depend on their members.
- (iii) Events or states of affairs (e.g, lightning or heat) ontologically depend on their participants (e.g, electrons or molecules).
- (iv) Chemical substances (e.g, water) ontologically depend on their molecular/atomic constituents (e.g, H<sub>2</sub>O-molecules).
- (v) Tropes (e.g, the redness of a particular tomato) ontologically depend on their 'bearers' (e.g, the tomato).
- (vi) Aristotelian universals (e.g, redness) ontologically depend on their 'bearers' (e.g, objects that are red).
- (vii) Holes (e.g, the holes in a piece of Emmentaler cheese) ontologically depend on their 'hosts' (e.g, the piece of Emmentaler cheese).
- (viii) Boundaries (e.g, the boundary around a football field) ontologically depend on their 'hosts' (e.g, the football field).

---

<sup>1</sup> For other useful surveys, see also Correia 2008 and Lowe 2005.

In all of these cases, if in fact they do constitute examples of pairs of entities related by an ontological dependence relation of some sort, the dependence relation in question may plausibly be taken to be asymmetric.

One can define any number of relations which may or may not merit the title, 'ontological dependence'. As we will see in what follows, some of the most popular definitions are formulated in modal terms; others in non-modal (e.g. explanatory or essentialist) terms; some (viz., the existential construals of ontological dependence) emphasise requirements that must be met in order for an entity to exist; others (viz., the essentialist construals of ontological dependence) focus on requirements that must be met in order for an entity to be the very entity that it is at each time at which it exists; some are rigid, in the sense that they involve a relation between particular entities; others are generic, in the sense that they involve only a relation between an entity and some entities or other, which bear certain characteristics.

With this plethora of defined dependence concepts, one wonders how to evaluate the explanatory usefulness of one such technical notion as compared to another. One possible way to measure success in this area is by considering how well a particular notion does in classifying putative cases of ontological dependence, such as those mentioned above. But this explanatory goal of classifying particular cases correctly does not yield an uncontroversial measure of success. For different philosophers, depending on their particular views concerning specific cases, will disagree over which putative cases in fact constitute good examples of pairs of entities exhibiting a relation of ontological dependence of some sort and in which direction the dependence relation in question runs. For example, some trope theorists (who view particular objects as bundles of tropes) will disagree with other trope theorists (who do not view particular objects as bundles of tropes) over the status of (v): according to some trope theorists, the 'bearers' of tropes in fact depend ontologically on the tropes that compose the bundle in a manner analogous to (ii), viz., the way in which sets ontologically depend on their members, while other trope theorists may find that (v) correctly describes a genuine case of ontological dependence. Moreover, these philosophers may or may not find it necessary to be committed to Aristotelian universals in addition to their commitment to tropes, which will of course affect the question of whether (vi), in their view, presents us with a

genuine case of ontological dependence. Thus, (i)-(viii) cannot be taken to represent judgments that are written in stone: they are merely intended as illustrations of putative cases of ontological dependence which are popular in the literature; but all of these must be regarded as negotiable, depending on what other metaphysical commitments are carried by those who endorse or reject any of (i)-(viii) as genuine cases of ontological dependence.

It is quite common for those who define relations of ontological dependence to employ these notions as markers of ontological fundamentality; especially in the formulation of independence criteria of substancehood, i.e. criteria that mark those entities as substances on which entities belonging to other categories depend ontologically and which do not themselves ontologically depend on other entities, according to some preferred notion of ontological dependence. Those who find this connection between ontological independence and substancehood congenial can thereby avail themselves of a second possible measure of success by which to evaluate a particular proposed definition of ontological dependence, viz., how well the relation in question does in distinguishing between the substances and the non-substances. This second possible measure of success also does not yield an uncontroversial way of evaluating the explanatory usefulness of a particular definition of ontological dependence, since different philosophers will take different positions on the question of which taxonomic categories of entities (if any) should be classified as the substances and on the question of whether ontological fundamentality or substancehood is in fact properly viewed as connected with ontological independence in the way proposed by particular independence criteria for substancehood.<sup>2</sup>

A third potential measure of success which, in my own view, is quite attractive is how well the account in question accommodates the possibility that reasonable philosophers who agree on questions of existence might nevertheless carry on a substantive disagreement in ontology over questions of fundamentality. Thus, two philosophers might for example agree that both particulars and universals exist, but disagree over which category of entities should be classified as occupying the ontologically fundamental role of substances. One of these

<sup>2</sup> I discuss the connection between ontological independence and substancehood further in Koslicki forthcoming.

philosophers might hold the position that the substances are particulars, perhaps precisely because, in this philosopher's view, universals in some way ontologically depend on particulars; while the other philosopher might hold the position that particulars should be classified as ontologically more fundamental than universals, perhaps precisely because, according to this second philosopher, particulars in some way ontologically depend on universals. If it were simply a matter of definition that the substances are particulars for example, then the thesis that the substances are particulars would be classified as trivial and the opposing thesis, that the substances are universals, would be classified as contradictory. But, ideally, a particular account of ontological dependence should be sufficiently neutral to make room for the possibility that disagreements in ontology over questions of fundamentality, such as the dispute just outlined, might be substantive, i.e., neither trivially answerable nor based on a contradiction. Since it is a contested matter whether particular disputes in ontology are of the kind just described, this third potential measure of success once again does not yield an uncontroversial desideratum with respect to which a particular account of ontological dependence can be evaluated.

Finally, I want to express my scepticism concerning appeals to so-called 'intuitions' as potential data by which the explanatory usefulness of a particular account of ontological dependence may be evaluated. It is of course a contested question among philosophers what exactly might be meant by 'intuition', when some role is assigned to these epistemic states as potential data with respect to which a given theory may allegedly be evaluated. Often, so-called 'intuitions' are divided into those that are 'pre-theoretic' or 'pre-philosophical' and those that already carry with them some degree of theoretical commitment. Consider for example case (vii), the relation between holes and their 'host', e.g., the holes in a particular piece of Emmentaler cheese and the piece of Emmentaler cheese in which they reside. If by 'intuition' we have in mind the first kind (i.e., so-called 'pre-theoretic' or 'pre-philosophical intuitions'), then I am not sure that it is possible to have an 'intuition' of this kind to the effect that holes ontologically depend on their 'host'. For how could one be in a position to judge that holes are in fact ontologically dependent on their 'hosts', unless one is already in possession of some conception of what sorts of entities holes are and of what is meant by 'ontological

dependence' in this connection. But such a conception, if we have one at all, cannot very well be characterised as 'pre-philosophical' or 'pre-theoretic'. If, on the other hand, by 'intuition', we mean an epistemic state that is already informed by philosophical theorising, then it is quite likely that the 'intuition' in question is somehow wrapped up with the three explanatory goals I have identified in this section as potential measures of success against which a particular account of ontological dependence may be evaluated. Or, if in addition to the three explanatory goals I have identified there are additional ones that I have missed, then these should be made explicit as well. Once this has been done, their plausibility can be subjected to scrutiny; but, at that point, it seems that we have left appeals to 'intuition' behind and have entered into the business of explicit theorising.

## 2. Existential Dependence

### 2.1 *Ontological Dependence in Aristotle's Categories*<sup>3</sup>

Ontological dependence is often construed existentially. For example, when Aristotle famously says in the *Categories* that all the other entities depend in some way on the primary substances, he is standardly read as putting forward an existential claim. Thus, the following crucial passage from the *Categories* is commonly translated as involving an existential construal of ontological dependence:

Thus all the other things are either said of the primary substances as subjects or in them as subjects. So if the primary substances did not exist it would be impossible for any of the other things to exist (*Categories*, chapter 5, 2b3–6, my italics)<sup>4</sup>

But where the English translation has 'exist', the Greek simply has the verb *einai* ('to be'), which can sometimes be rendered in an existential sense, but need not be so rendered. Thus, using the more neutral terminology of 'being' rather than 'existence', we may read Aristotle as putting forward the following counterfactual dependence claim: 'If the primary substances were not [or: did not have being], it would be impossible for any of the other things to be [or: to have being].'<sup>5</sup>

<sup>3</sup> For more discussion on ontological dependence in Aristotle, see also Corkum 2013.

<sup>4</sup> Translation by J. L. Ackrill (cf. Barnes 1984).

Notice that Aristotle in the passage quoted above speaks of two different ways in which entities may depend ontologically on the primary substances: (i) either by being said of the primary substances as subjects or (ii) by being in them as subjects. He understands the technical relation, 'being in a subject', in the following way: what is in something (a) not as a part and (b) cannot be separately from what it is in (*Categories*, chapter 2, 1a24–25). (Again, the occurrence of 'to be [separated] here is standardly translated as 'exist': ... and cannot exist/ separately from what it is in'; but the same point as above applies here as well.) I interpret Aristotle's two dependence relations, viz., being said of a subject and being in a subject, as corresponding to two different forms of predication: essential predication, as when we say of something (e.g. Socrates) that it is a member of a certain taxonomic category (i.e., a species (e.g. human being) or a genus (e.g. animal); and accidental predication, as when we say of something (e.g. Socrates) that it bears a certain accidental feature (e.g. paleness).

Neither the dependence relation which corresponds to the relation, being in a subject (viz., as indicated by accidental predication), nor the dependence relation which corresponds to the relation, being said of a subject (viz., as indicated by essential predication), should be read in an exclusively existential way.<sup>5</sup> If the particular instance of paleness that currently inheres in Socrates is construed as a non-repeatable entity, then it is certainly true that it would be impossible for this individual instance of paleness to exist unless Socrates existed as well. And, given an Aristotelian conception of universals, it would similarly be impossible for universals in any category to exist unless individuals in the category of substance existed as well. For in order for the universal, colour, to exist for example, individual instances of colour must exist; and in order for individual instances of colour to exist, individual substances in which these individual colour-instances can inhere must exist.

At the same time, as has often been observed, if we construe ontological dependence in Aristotle's *Categories* in a purely existential fashion,

then the entities he identifies there as primary substances (e.g., individual organisms, such as human beings or horses) would lack the distinctive *asymmetri*: ontological independence Aristotle seems to want to attribute to them. For, in order for a substantial individual, such as Socrates, to exist, some substantial and non-substantial individuals and universals must exist as well which can be predicated of Socrates either accidentally or essentially. Even though Socrates can exist without the particular colour-instances that are predicated of him accidentally at any particular time, some colour-instances or other must be present in him at any time at which he exists. And the existence of some colour-instances or other in turn necessitates the existence of some more general non-substantial universals as well, such as paleness and colour, to which these individual colour-instances essentially belong. Finally, if the more general substantial categories of which Socrates is essentially a member (e.g., the species, human being, or the genus, animal) did not exist, it would be impossible for Socrates to exist as well.

Therefore, if the notion of ontological dependence at work in Aristotle's *Categories* were interpreted in a purely existential manner, then individual substances, such as Socrates, would come out as roughly on a par with respect to their degree of ontological independence with non-substantial universals, such as colour. But Aristotle clearly thinks that individuals in the category of substance are ontologically independent in a way in which other types of entities are not and that entities of other types are ontologically dependent on the primary substances in a way in which they are not also ontologically dependent on other types of entities. We should thus conclude that an exclusively existential construal of Aristotle's dependence thesis in the *Categories* does not provide the most charitable reading of what Aristotle has in mind there when he claims that all the other entities in some way ontologically depend on the primary substances.<sup>6</sup>

<sup>5</sup> Aristotle's dependence claim in the *Categories*, when read in an exclusively existential way, gives rise to the following definition: 'x existentially depends on y  $\leftrightarrow$  x exists, then it would be impossible for x to exist'. A non-existential reading of ontological dependence in Aristotle is also defended in Cortum 2008, 2013 and Peramatzis 2008.

<sup>6</sup> Cortum 2008, 2013 for example interprets Aristotle's conception of ontological dependence in the following way: other entities are ontologically dependent on the primary substances because they inherit their ontological status from the primary substances to which they are either accidentally or essentially related, while the primary substances do not in turn inherit their ontological status from other entities. How plausible this proposal is of course depends on how we are to understand the key notion of inheriting one's ontological status from something: as it stands, this notion is not elab-

## 2.2 *Modal/Existential Dependence*

### 2.2.1 Rigid Existential Necessary Dependence

A straightforward modal/existential notion of ontological dependence is for example that defined by E. J. Lowe under the headings, Rigid Existential Necessary Dependence:<sup>8</sup>

#### RIGID EXISTENTIAL NECESSARY DEPENDENCE (ND1)

$x$  is rigidly existentially necessarily dependent on  $y \leftrightarrow_{df}$   $\text{NECESSARILY, } x \text{ exists only if } y \text{ exists.}$

In Section 1, the following explanatory goals were identified against which a particular definition of ontological dependence may be eval-

uated in Corkum 2008 to a sufficient degree to get a good handle on it. For further discussion, see Corkum 2013. Peramatzis 2008 interprets Aristotle's conception of ontological priority (the flip-side of ontological dependence) as the ontological correlate of definitional priority. The notion on which Peramatzis focuses is thus perhaps more tailored to the views Aristotle espouses in his later work (e.g., the *Metaphysics*), where form seems to take on the status of primary substance, than to those we find in the *Categories*, where certain kinds of particular objects (e.g., organisms and artifacts) occupy the role of primary substances: for particulars, for Aristotle, cannot be defined, but only perceived.

<sup>7</sup> In contrast, Husserl, in the *Logical Investigations*, really does seem to have in mind existential dependence when he speaks for example of a colour-moment that is part of a particular more inclusive whole as being founded upon an extension-moment that is part of the same whole, and vice versa. A moment, he says, is a non-independent object in the sense that it requires something in addition to itself to exist (a more inclusive whole of which the moment is a part) in order for it to exist. And a moment is founded upon another moment, if the first moment cannot exist unless it is part of a more comprehensive unity which connects it with the second moment. Both Husserl's conception of non-independent object and his conception of foundation thus seem to appeal to a notion of existential dependence. For discussion, see for example Correira 2004 and the references found therein.

<sup>8</sup> See also Simons' notion of 'Weak Dependence' (cf. Simons 1998, 236). For Lowe's most up-to-date views concerning ontological dependence, see Lowe 2006, 2005 (last revised in 2009), 2008, 2012, 2013. For discussions of ontological dependence in his earlier work, see Lowe 1994, 1998. Also relevant are his views concerning criteria of identity; see for example Lowe 1989, 1997, 2009.

uated. (i) Does it achieve a particular desired classification of paradigmatic cases of ontological dependence? (ii) Is it useful from the point of view of formulating an independence criterion of substancehood? And (iii) does it allow for substantive non-existential disagreements in ontology over questions of fundamentality? When evaluated against these explanatory goals, a straightforwardly modal/existential construal of ontological dependence along the lines of (ND1) turns out not to be satisfactory. Such a construal of ontological dependence, among other things, gives rise to the following well-known difficulties, in particular with respect to desiderata (i) and (ii).

Suppose that Aristotle's claim in the *Categories* is correct and everything in some way ontologically depends on the primary substances, while the primary substances do not in the same way ontologically depend on the other entities. As pointed out for example in Lowe 1994, among the apparent trouble cases which arise for (ND1) are the following. Suppose that a substance can exist only if certain of its constituents exist; then, by (ND1), such a substance will turn out to depend ontologically on these constituents.<sup>9,10</sup> The same will be true

<sup>9</sup> Simons' notion of 'Strong Dependence' or 'Strong Rigid Dependence' simply rules out this particular group of apparent counterexamples by adding a clause which requires  $y$  not to be a proper part of  $x$  (cf. Simons 1987, 303; Simons 1998, 236). This exclusion of proper parts from a definition of ontological dependence raises difficult issues, especially when the notion of ontological dependence in question is used in the formulation of an independence criterion of substancehood; I will not address these issues here, but see for example Toner 2010 and Koslicki forthcoming for discussion.

<sup>10</sup> It is difficult to find uncontroversial examples which would illustrate why it might be plausible to think that an alleged substance candidate can exist only if certain of its constituents exist. I, for one, would argue that organisms for example provide us with a case in point. For, according to the metalegical version of hylomorphism I defend in Koslicki 2008, a particular organism, such as Socrates, is analysed as a compound of matter and form; moreover, Socrates' form and matter, on this view, are regarded as being literally and strictly speaking proper parts of Socrates. Given the strong correlation between form and essence, such a view quite naturally gives rise to the consequence that Socrates can exist only if his form exists. But of course nearly all the assumptions used in generating this example are highly controversial and can be (and are) rejected by other philosophers who do not subscribe to this particular version of hylomorphism. Perhaps, it is sufficient for our purposes to keep in mind that even a philosopher like St-

if in some cases, a substance can exist only if it originated from a certain entity. For example, a human being might be thought to be related in this way to the particular sperm and egg or to the particular zygote from which he or she developed. Moreover, suppose there are objects which exist necessarily (e.g., the number 8); then again, by (ND1), everything will ontologically depend on them. Finally, suppose there are particularised properties which are necessarily had by their bearers' (e.g., Socrates' humanity) or four-dimensional entities which are necessarily coexistent with the substances with which they are affiliated (e.g., Socrates' life); then again, by (ND1), substances will turn out to be ontologically dependent on these entities. Cases such as these suggest that modal/existential dependence is too coarse-grained to yield an adequate notion of ontological dependence.

### 2.2.2 Generic Existential Necessary Dependence

Not all cases of existential dependence are cases in which an entity can be said to be rigidly existentially dependent on another entity. In some cases, an entity may only require for its existence that *some* entities *or other*, which bear certain characteristics, exist as well. To capture these sorts of cases, Lowe defines the notion of 'Generic Existential Necessary Dependence':<sup>11</sup>

#### GENERIC EXISTENTIAL NECESSARY DEPENDENCE (ND2)

$x$  is generically existentially necessarily dependent on  $Fs \leftrightarrow_{df}$  Necessarily,  $x$  exists only if some  $Fs$  exist.

To illustrate: those who subscribe to an Aristotelian (as opposed to a Platonist) conception of universals will presumably take (ND2), but not (ND1), to be appropriate for a characterisation of the relation between universals and the particulars that instantiate them. For it is part of the Aristotelian conception that universals can only exist if particulars instantiating them exist as well. But the existential dependence in question would have to be generic and not rigid, since the

mons, who is sympathetic to a modal/existential construal of ontological dependence, feels the need to add an exclusion clause for proper parts in his formulation of 'Strong Dependence', since he allows for the possibility that alleged substance candidates can ontologically depend on their own proper parts in the sense of (nd1).

<sup>11</sup> See also Simons' notion of 'Generic Dependence' (cf. Simons 1987, 297).

Aristotelian conception certainly does not commit one to thinking that a universal, e.g., redness, can exist only if some specific red object, e.g., a particular tomato, exists as well, only that the existence of some red objects or other is required for the existence of the universal, redness.

(ND2), however, is overly coarse-grained for much the same reasons as (ND1) is: existentially generalised versions of all of the same counterexamples that were seen to arise for (ND1) can be generated for (ND2) as well. Suppose for instance that a putative substance candidate such as Socrates turns out to be rigidly existentially necessarily dependent, in the sense of (ND1), on certain of his constituents, his origins, the number 8, certain necessary properties, or necessarily co-existent four-dimensional entities. Then, by (ND2), Socrates will also turn out to be generically existentially necessarily dependent on *some* constituents or other, *some* entities from which he originated or other, *some* necessary existents (e.g., numbers) or other, *some* necessary properties or other, as well as *some* necessarily coextensive four-dimensional entities or other. And even if we leave aside explanatory goal (ii) (viz., the formulation of a plausible criterion of substancehood), (ND2) also leads to undesirable consequences with respect to (i) (viz., the adequate classification of paradigmatic cases of ontological dependence). For, according to (ND2), a universal (e.g., redness) for example turns out to be generically existentially necessarily dependent not only on its instances (viz., the particular red objects), but also on numbers, triangles, sets and everything else that can plausibly be taken to exist necessarily. Thus, while the notion of dependence defined in (ND2) may achieve some explanatory goals (e.g., it may be of help in characterising the relationship between an Aristotelian universal and the particulars that instantiate it), it certainly cannot single-handedly satisfy all that we expect from a notion of ontological dependence.

### 2.3 Other Forms of Existential Dependence

#### 2.3.1 Necessary vs. Essential Existential Dependence

A persistent problem which besets all modal/existential construals of ontological dependence, as noted above, is that they appear to be too coarse-grained to yield the correct results in cases involving necessarily existing entities. For example, as it stands, all of the mod-

al/existential construals of ontological dependence considered so far seem to mis-classify the relationship between a putative substance candidate, such as Socrates, and the number 8 or numbers in general. For example, according to (ND1), Socrates would be classified as rigidly existentially necessarily dependent on the number 8, since necessarily Socrates exists only if the number 8 exists, given our assumption that the number 8 exists necessarily. Similarly, (ND2) classifies Socrates as generically existentially necessarily dependent on numbers in general, since necessarily Socrates exists only if some number or other exists, given our assumption that numbers in general exist necessarily. Moreover, we also noted that, independently of the question of whether a particular criterion succeeds in classifying the substances correctly, (ND2) also yields the unattractive result that the universal, redness, for example turns out to be dependent on necessarily existing entities, such as numbers, triangles and sets.<sup>12</sup>

One possible solution to these problems (endorsed by both E. J. Lowe and Kit Fine) is to adopt a *non*-modal conception of essence, which contrasts with the more mainstream *modal* conception of essence in the following way.<sup>13</sup> An essential truth, according to a modal conception of essence, is just a modal truth of a certain kind (viz.,

<sup>12</sup> Whether Aristotle's counterfactual dependence claim in the *Categorica*, when interpreted existentially ('If the primary substances did not exist, it would be impossible for the other entities to exist as well'), also mis-classifies these cases depends on how one deals with counterfactuals with impossible antecedents, such as 'If the number 8 did not exist, it would be impossible for Socrates to exist as well' or 'If numbers in general did not exist, it would be impossible for Socrates to exist as well'. Certainly, if counterfactuals with impossible antecedents are treated as trivially true, then this counterfactual/existential construal of ontological dependence will yield the same counterintuitive results as (ND1) and (ND2) with respect to cases involving necessarily existing entities.

<sup>13</sup> A non-modal conception of essence was held by Aristotle (cf. *Posterior Analytics*) and also constitutes a central component of the neo-Aristotelian approach to metaphysics defended over the last two decades by Kit Fine (see for example Fine 1994, 1995a, 1995b, 1995c). (The similarities and differences between Aristotle's and Fine's non-modal conception of essence are discussed in more detail in Koslicki 2012a.) The contrasting modal conception of essence is so widespread among contemporary metaphysicians that it is almost unnecessary to give references; but for some representative examples, see Plantinga 1974, Forbes 1985, Mackie 2006.

one that is both necessary and *de re*, i.e., about a certain object); and an essential property is just a feature an object has necessarily, if it is to exist. The essential truths, according to this approach, are thus just a subset of the necessary truths; and the essential properties of objects are just a special kind of necessary property. Quine for example has such a modal conception of essence in mind when he argues that the view he calls 'Aristotelian essentialism' is incoherent, because it requires quantification into intensional contexts (cf. Quine 1953).

But the view Quine calls 'Aristotelian essentialism' is for a variety of reasons not one Aristotle himself would have found congenial, since he does not subscribe to a modal conception of essence. For Aristotle, the essential truths are not even included among the *de re* necessary truths; and the essential features of an object are similarly not included among its *de re* necessary features. Rather, Aristotle conceives of the *de re* necessary truths as being distinct and derivative from the essential truths; and he conceives of the *de re* necessary features of objects, traditionally known as the 'propria' or 'necessary accidents', as being distinct and derivative from, the essential features of objects. For example, for Aristotle, while it is part of the essence of planets that they are heavenly bodies that are near, it is merely a *de re* necessary (but non-essential) feature of planets that they do not twinkle; the latter follows from, but is not strictly speaking part of the essence of planets. Thus, the definition, whose job it is to state the essence or what it is to be a planet, would have to include that planets are heavenly bodies that are near; but the definition should not also include that planets do not twinkle, since this would wrongly represent a derivative feature of planets (namely their not twinkling) as a basic or non-derivative feature of them (namely their nearness to the earth).<sup>14,15</sup>

<sup>14</sup> See for example Aristotle, *Posterior Analytics*, A.13 and B.16. Aristotle thought of the planets and other heavenly bodies as being arranged and moving in accordance with a series of fixed heavenly spheres, with the earth lying at the center. This arrangement, which in Aristotle's view is eternal and perfect, does not allow for change with respect to the movement of the heavenly bodies or their position relative to the earth.

<sup>15</sup> I realize that this talk of something's being part of an essence or something's being included in a definition (a statement of the essence) of something is obscure and stands in need of elucidation. A proper attempt at elucidating what might be meant by these phrases would take us too far afield



Those who are attracted to such a non-modal conception of essence now have the option of formulating stronger essentialist versions of (ND1) and (ND2), as illustrated by Lowe's (ED1) and (1:(D2):

**RIGID EXISTENTIAL ESSENTIAL DEPENDENCE (ED1)**

$x$  is rigidly existentially essentially dependent on  $y \leftrightarrow \forall x \forall y$

It is part of the essence of  $x$  that  $x$  exists only if  $y$  exists.

**GENERIC EXISTENTIAL ESSENTIAL DEPENDENCE (ED2)**

$x$  is generically existentially essentially dependent on  $F$ 's  $\leftrightarrow \forall x \forall F$

It is part of the essence of  $x$  that  $x$  exists only if some  $F$ 's exist.

Presumably, given an appropriately constrained conception of essence, (ED1) and (ED2) are not open to the same range of apparent counterexamples as (ND1) and (ND2). To illustrate, even though it is a *de re* necessary truth about Socrates that he exists only if the number 8 or numbers in general exist, it is not similarly plausible to think that what it is to be Socrates has anything to do with numbers. Hence, with a suitably narrow conception of essence in hand, we can resist classifying the proposition that Socrates exists only if the number 8 exists or the proposition that Socrates exists only if numbers in general exist as an essential truth about Socrates. In what follows, when I speak of 'essence', 'essential features', 'essential truths', etc., I have in mind such a suitably constrained non-modal conception of essence.

Unfortunately, even if we move from modal to non-modal formulations of existential dependence, there are still reasons to be dissatisfied with purely existential construals of ontological dependence from the point of view of meeting the explanatory goals set out in Section 1. Potential trouble-cases for non-modal existential construals of ontological dependence include the following: Socrates' humanity (which may be taken to be, depending on one's outlook, for example a trope that essentially belongs to Socrates or a universal that is essen-

tially instantiated by Socrates); Socrates' form (according to a neo-Aristotelian conception of unified wholes as hylomorphic compounds); Socrates' essential proper parts (if he has any); or Socrates' origin (assuming Kripke's Essentiality of Origins thesis). If in at least some of these cases it is plausible to think that it is part of the essence of Socrates for example that he exists only if the entity in question exists, then putative substance candidates, such as Socrates, will again be classified as existentially dependent entities even according to (1:(D1) and (1:(D2)).

There is of course a lot that could be said by the defender of a non-modal existential conception of ontological dependence about each of the items on this list of apparent trouble cases. For example, one could deny that putative substance candidates are hylomorphic compounds; or that they are numerically distinct from their forms; or that they have essential proper parts; or that their origins are essential to them; and so on. One rather popular strategy which, as I argue in Koslicki forthcoming, is to be avoided is simply to exclude by stipulation some group of apparent counterexamples (e.g. universals) from one's favourite definition of ontological dependence or from one's preferred independence criterion of substancehood. Those who endorse this strategy violate the third of our three desiderata identified in Section 1 (viz., to allow for meaningful non-existential disagreements in ontology over questions of fundamentality), since questions that should be considered to be extremely substantive (e.g. whether the substances are universals or particulars) are then classified as either trivially answerable (because their answers follow straightforwardly from a definition) or as based on a contradiction (if it is assumed for example that the substances are by definition particulars).

### 2.3.2 Rigid and Permanent Existential Dependence

Fabrice Correia and Benjamin Schnieder have also put forward an existential construal of ontological dependence which is not purely modal, since it makes use of the connective, 'because', on the right-hand side of the definition. This connective, due to its explanatory nature, is not assumed to be open to an analysis in exclusively modal

---

(but see Koslicki 2012a and 2012b, for some relevant discussion). For Fine, since he conceives of essences as propositions (or collections of propositions) and takes these propositions to have constituents, one can understand the idea of something's being part of the essence (or its being included in the definition) of something in terms of the notion of being a constituent of a proposition. But, if one does not subscribe to this conception, then the question of what it would mean for something to be part of the essence (or to be included in the definition) of something still remains to be answered.



terms. The following definition of 'Rigid Permanent Existential Dependence' (RPEID) comes from Schneider 2006:<sup>16</sup>

**RIGID AND PERMANENT EXISTENTIAL DEPENDENCE (RPEID)**

$x$  rigidly and permanently existentially depends upon  $y \leftrightarrow \forall t$ .  
There is an  $F$ , such that necessarily for any time,  $t$ , at which  $x$  exists,  $x$  exists at  $t$  because  $y$  is  $F$  at  $t$ .

Schneider considers the following to be a paradigmatic case of (RPEID): a particular redness trope, in his view, is rigidly and permanently existentially dependent on a particular tomato, say, in which it inheres, since there is an  $F$ , viz., redness, such that necessarily for any time,  $t$ , at which the tomato's redness trope exists, it exists at that time because the tomato is red at that time.

(RPEID) strikes me as problematic for several reasons. To avoid the apparent counterexamples considered above to which modal/existential construals of ontological dependence fall prey, we have to assume that the explanatory connective, 'because', sets some constraints on how  $F$  may be picked relative to the objects,  $x$  and  $y$ , under consideration. Consider for example the following blatantly unhelpful attempt at instantiating (RPEID): Socrates rigidly and permanently existentially depends on the number 8 just in case there is an  $F$ , e.g., actually numbering the planets, such that necessarily for any time,  $t$ , at which Socrates exists, Socrates exists at  $t$  because the number 8 actually numbers the planets at that time. Clearly, it should turn out not to be the case that Socrates depends on the number 8 in this way. And it does of course sound extremely odd to say that Socrates exists at any time,  $t$ , because the number 8 actually numbers the planets at that time: for the fact that the number 8 actually numbers the planets at any particular time strikes us as explanatorily completely irrelevant to the question of why Socrates exists at that time. But unless more is said about how to construe explanatory relevance and irrelevance in this context, the oddness of 'Socrates exists at  $t$  because the number 8

actually numbers the planets at  $t$  does not strike me as in any way illuminating of the oddness we already recognise in 'Socrates' existence at  $t$  depends on the number 8 actually numbering the planets at  $t$ . If anything, it seems that the direction of illumination would have to go the other way around: the fact that the number 8 actually numbers the planets at a time  $t$  is explanatorily irrelevant to Socrates' existence at  $t$  because Socrates' existence at  $t$  does not depend on the number 8 actually numbering the planets at  $t$ ; and not the other way around. In other words, it is not that two entities, facts, states of affairs, or what have you, stand in a dependence relation because an explanatory link obtains between them; rather, a good explanation should reflect an underlying dependence relation between the relata in question, as for example the job of a good causal explanation is to capture an underlying causal dependence relation.<sup>17</sup>

Suppose, on the other hand, that implicit guidelines are in place for how  $F$  in (RPEID) is to be chosen relative to the entities,  $x$  and  $y$ . When the entities in question are for example the tomato's redness trope and the tomato in which it inheres, then we may assume that it is somehow determined that the explanatorily relevant  $F$  in question that must be exhibited by the tomato at each time at which the tomato's redness trope exists is redness (rather than, say, colour), in which

<sup>16</sup> Schneider 2006, 412. (My statement of (RPEID) is slightly different from Schneider's ('Dep-7'), but only in stylistic ways.) Schneider states that he prefers an 'innocuous' interpretation of the quantifier in 'There is an  $F$ ...', which apparently ranges over properties, along the lines of Rayo and Yablo 2001 (Schneider 2006, 416 n. 26). Correia's notion of 'basing' (Correia 2005, 66ff) and his definition of 'simple dependence' in terms of 'basing' is similar to Schneider's ('Dep-7'); see also Correia 2008.

<sup>17</sup> Schneider does provide some further elucidation concerning the kind of explanatory connection that he takes to be relevant to (rped). In his view, the explanatory 'because' in statements of ontological dependence is to be construed in an objective conceptual way: 'In general, statements involving complex or elaborated concepts are explained with recourse to more primitive concepts (which may or may not enter into an analysis of the complex concepts)' (Schneider 2006, 405). For example, for Schneider, the concept denoted by the phrase, 'the tomato's redness', is a complex or elaborated concept which is to be explained with recourse to more primitive concepts, e.g., those at play in the statement 'The tomato is red'. But it does not seem plausible to think that facts about ontological dependence in general can be explained by what is or is not classified as primitive or complex relative to a particular conceptual system. In some cases, nothing important may hang on whether one notion or another is taken as primitive by a particular conceptual system (e.g., point versus line in some systems of geometry). In other cases, one concept can be more complex than another, even though what the first stands for is ontologically more fundamental than what the second stands for (e.g., arguably, the concepts, water and H<sub>2</sub>O-molecule, illustrate this possibility).

case the right-hand side of (RPIID) reads as follows: there is an  $F_t$  redness, such that necessarily for any time,  $t_1$  at which the tomato's redness trope exists, it exists at  $t$  because the tomato is red at that time. But now we ought to wonder whether (RPIID) has really characterised the direction exhibited by the alleged explanatory connection in question correctly for the following reasons.

Only certain kinds of trope theorists would find this particular instance of (RPIID) congenial. For, as noted in Section 1, some trope theorists (who take the 'bearers' of tropes to be mere bundles of tropes) would presumably think that the ontological dependence between tropes and their 'bearers' runs in the opposite direction, i.e., that the 'bearers' of tropes are ontologically dependent on the tropes that make up the particular bundle in question, analogously to the way in which non-empty sets are ontologically dependent on their members. So we should ask ourselves whether (RPIID) in fact correctly represents the commitments of those trope theorists who are sympathetic to the idea that tropes ontologically depend on their 'bearers', and not the other way around.

And it seems to me that (RPIID) again fails to capture the explanatory link in question correctly. For one thing, it is questionable whether for the kind of trope-theorist we have in mind the existence of the tomato's redness trope at  $t$  is really a distinct fact or state of affairs from the tomato's being red at  $t$ . But if we are dealing here with just a single fact, then the irreflexivity of the explanatory 'because' has been violated by this putative instance of (RPIID), since now a single fact or state of affairs is said to be explained in a circular fashion in terms of itself.<sup>18</sup> On the other hand, if the existence of the tomato's redness trope at  $t$  does, for the trope-theorist at issue, constitute a distinct fact from the tomato's being red at  $t$ , then it seems that such a philosopher would want to explain the tomato's being red at  $t$  in terms of the existence of a redness trope that inheres in the tomato at  $t$ , and not the other way around. Otherwise, one wonders what work the trope theorist's commitment to the existence of tropes is really doing in the first place and whether we could not get by just as well without

them. Either way, (RPIID), it seems, does not correctly capture the relevant trope-theorist's conception of the relation between the tomato's redness trope and the tomato in which it inheres.

#### 2.4 *Being vs. Existence*

In addition to the more detailed objections to various specific existential construals of ontological dependence we have considered in the foregoing sections, there are also more general reasons for wanting to divorce ontological dependence from existential dependence (whether modally analysed or not). Even though the putative cases of ontological dependence listed in Section 1 all seem to involve existential dependence, I agree with Fine (1995a) that existential construals of ontological dependence do not quite get us to the heart of this relation. Fine comments on existential accounts of ontological dependence as follows:

The present examples [viz., impossible objects and identity properties] highlight a problem that besets any existential account of dependence, whether it be modal or essentialist in form. For, it does not seem right to identify the 'being' of an object, its being what it is, with its existence. In one respect, existence is too weak; for there is more to what an object is than its mere existence. In another respect, existence is too strong; for what an object is, its *nature*, need not include existence as a part. (Fine 1995a, 274, my italics)<sup>19</sup>

<sup>18</sup> The two examples Fine has in mind here (impossible objects and identity properties) are as follows. Consider round squares: if it makes sense to say that round squares have natures, i.e., that there is such a thing as what it is to be a round square, then the use of the verb, 'to be', here cannot be construed in a primarily existential way, since it is impossible for round squares to exist. Secondly, consider the property of being identical to Socrates. Suppose (as Fine does for the purposes of this example) that this property exists necessarily and suppose further that the property of being identical to Socrates ontologically depends on Socrates (i.e., it is that very property because it is the identity-property associated with Socrates). It would again be wrong to construe the relationship in question as existential dependence, since (by hypothesis) the identity-property exists necessarily while Socrates exists only contingently. Thus, there are worlds in which the identity-property exists while Socrates does not in order for the identity-property in question to exist, it therefore cannot be required that Socrates exists as well.

<sup>19</sup> But see Schmieder 2010 for a response to this kind of worry. Schmieder argues there that 'because' is sensitive not only to the identity of the facts introduced by its clauses, but also to the way in which these facts are presented.

It is tempting to think that the relationship between smiles and mouths for example is not exhausted by noting that the existence of smiles requires the existence of mouths (pace the Cheshire cat). Rather, as we will explore in the next section, what gets us closer to the core of this relation is the idea central to essentialist approaches to ontological dependence that in saying what it is to be a smile we must appeal to mouths and what these mouths can do; but in saying what it is to be a mouth, we need not in turn appeal to smiles and what smiles can do. We would not have exhausted the full force of the relation of ontological dependence if we were to construe the use of the verb, 'to be', in the context of this 'what it is to be' construction, in an exclusively existential way. Nevertheless, it does seem plausible to think (in a wide range of cases at least) that ontological dependence entails modal/existential dependence, i.e., that when an entity,  $x$ , ontologically depends on an entity,  $y$ , it is also true that necessarily  $x$  exists only if  $y$  exists (see also Lowe 1998).<sup>20</sup> The converse, on the other hand, does not always hold, as the trouble cases for the modal/existential approach rehearsed above illustrate: it is not true across the board that if necessarily  $x$  exists only if  $y$  exists, then  $x$  ontologically depends on  $y$ . I will now turn to the difficult question of what sort of alternative reading we should substitute in place of an existential construal of ontological dependence. The main goal of the current section was simply to indicate that an exclusively existential construal of ontological dependence, whether modal or non-modal, does not adequately reflect all that is encompassed by this notion.

but the identity-property may nevertheless depend on Socrates with respect to its being what it is, its nature. I am not endorsing the details of either of Fine's two examples, which are of course quite controversial; my purpose here is only to explain what he has in mind in the passage cited above, with whose general point I wholeheartedly agree.

<sup>20</sup> In order to preserve this entailment from ontological dependence to modal/existential dependence, Fine's example invoking the property of being identical to Socrates would have to be addressed in some fashion. For the entailment from ontological dependence to modal/existential dependence seems to fail in this case.

### 3. Essential Dependence

#### 3.1 *Essential Identity Dependence*

Lowe agrees that, among his defined notions, even (I:1D1) and (I:1D2) do not yet suffice to establish a genuine contrast between those concrete particular objects which, in his view, deserve the status of substances and all the other types of entities. To this end, he introduces a further species of essential dependence, viz., 'Essential Identity Dependence':

#### ESSENTIAL IDENTITY DEPENDENCE (ED3)

$x$  is essentially identity dependent on  $y \leftrightarrow \text{ar}$ : There is some function  $\varphi$  such that it is part of the essence of  $x$  that  $x = \varphi(y)$ .<sup>21</sup>

As a paradigmatic instance of (I:1D3) Lowe cites for example the relation between a married couple and the individual members of the married couple, or the relation between a set and its members;<sup>22</sup> in the first of these cases, according to Lowe, there is some function,  $\varphi$ , viz., the 'marriage function', such that it is part of the essence of the particular married couple in question that it is the result of applying the 'marriage function' to the two individual members of the married couple; and, in the second, there is some function,  $\psi$ , viz., the 'set-formation' function, such that it is part of the essence of Socrates' singleton set that it is the result of applying the 'set-formation function' to Socrates. Thus, married couples and sets, according to Lowe, are essentially identity dependent on their individual members. Since (I:1D3) entails (I:1D1) and (I:1D2), sets and married couples are also rigidly existentially essentially dependent on their members and, a fortiori,

<sup>21</sup> (I:1D3) of course also has a modal counterpart, (ND3), according to which  $x$  is necessarily identity dependent on  $y$  iff there is some function  $\varphi$  such that necessarily  $x = \varphi(y)$ . But since (ND3) is still susceptible to the same sorts of apparent counterexamples to modal formulations of ontological dependence as the relations considered above, I will in what follows leave (ND3) aside and focus instead on the essentialist version of identity dependence, (I:1D3).

<sup>22</sup> Strictly speaking, in order for (I:1D3) to apply to these two examples, the definition of essential identity dependence would have to be modified in something like the following way: ' $x$  is essentially identity dependent on a plurality of entities,  $y_1 \dots y_n \leftrightarrow \text{ar}$ : There is a function  $\varphi$  such that it is part of the essence of  $x$  that  $x = \varphi(y_1 \dots y_n)$ '. In what follows, I will simply assume that this modified definition is substituted for (I:1D3), wherever appropriate.

generically existentially essentially dependent on having some members or other.

The first thing to note about (ED3) is that it does in fact take us beyond a purely existential construal of ontological dependence. (I:ID3) does not set a condition involving an entity,  $y$ , which must be met in order for an entity,  $x$ , to exist; rather, (I:ID3) sets a condition involving an entity,  $y$ , that is required for  $x$ 's identity, which presumably is not to be conflated with  $x$ 's existence. The substantive content of (ED3) concerns whether or not it is part of the essence of an entity that it is the result of applying a certain function (whose existence we can presumably uncontroversially presuppose) to another entity or entities. With (ED3), we have therefore moved beyond a purely existential construal of ontological dependence and thus squarely into the realm of essential dependence.

To have a good grasp of what it takes for the condition set by (I:ID3) to be met or to fail to be met by a given entity would of course require that we know what Lowe means by 'function' in this context and under what circumstances it is or is not part of the essence of an entity to be the result of applying a certain function to another entity or entities. Although Lowe is less explicit on these issues than we might like him to be, he appears to be construing (ED3) with the notion of a *criterion of identity* in mind.<sup>23</sup> In Lowe 1989, we are offered the following general schema for a criterion of identity, where ' $\Phi$ ' stands for a sortal term of some kind (e.g., 'set') and ' $R$ ' stands for a relation in terms of which the criterion of identity in question is formulated (e.g., the relation of having the same members):

$$\text{CI} \quad (\forall x) (\forall y) ((\Phi x \wedge \Phi y) \rightarrow (x = y \leftrightarrow Rxy)).$$

Lowe takes an instance of (CI) to be given for example by the Axiom

<sup>23</sup> The model advanced in Lowe 1989 and 1997 for how to think of criteria of identity takes its inspiration from Frege's remarks concerning lines and directions in the *Foundations of Arithmetic*: "The judgement 'line  $a$  is parallel to line  $b$ ' ... can be taken as an identity. If we do this, we obtain the concept of a direction, and say: 'the direction of line  $a$  is identical with the direction of line  $b$ '" (Frege 1953, §64). Frege here seems to be offering the following criterion of identity for the directions of lines: if  $x$  is a line and  $y$  is a line, then the direction of  $x$  = the direction of  $y$  just in case line  $x$  and line  $y$  are parallel.

of Extensionality for sets: if  $x$  and  $y$  are sets, then  $x$  and  $y$  are the same set just in case  $x$  and  $y$  have the same members; or, as Lowe would put it, *which* set a certain set is is fixed by *which* members the set in question has. For entities that exist in time, we are to construe (CI) for present purposes as yielding a *synchronic* criterion of identity or what may also be called a 'principle of individuation', i.e., a criterion that specifies what it takes for an entity to be the very entity that it is *at* a time, rather than a *diachronic* criterion of identity, i.e., a criterion that specifies what it takes for an entity to persist *over* time.

With this in mind, we may now approach (I:ID3) as follows: an entity,  $x$ , is essentially identity dependent on an entity,  $y$ , when *which* entity  $x$  is is fixed by  $x$ 's relationship to  $y$ .<sup>24</sup> If a substance candidate, such as Socrates, is to count as an ontologically independent entity in the sense of (I:ID3), then it must be the case that *which* entity Socrates is is not fixed by his relationship to any other entities. For Lowe, this means that no synchronic criterion of identity or principle of individuation that appeals to numerically distinct entities can be given at all for substance candidates such as Socrates: that they are the very entities they are at each time at which they exist is simply to be taken as a non-derivative fact about these entities. Thus, if Socrates is in fact to qualify as a substance, then it must be the case that he does not owe his individuation or synchronic identity, i.e., his being the very entity that he is at each time at which he exists, to his relationship to any other entity numerically distinct from himself.<sup>25</sup>

<sup>24</sup> One complication in applying (CI) to (ed3) is that (CI) is formulated in terms of sortal concepts, whereas (ed3) concerns individual entities. I will assume, however, that we can apply (CI) to (ed3) in the following way: since for example the identity of sets in general is fixed by appeal to their members, the identity of every individual set is therefore fixed by appeal to its particular members. For more discussion of Lowe's views concerning the relation between criteria of identity and principles of individuation, see Lowe 2012.

<sup>25</sup> In Lowe's view, the unavailability of a criterion of individuation or synchronic identity for substances is compatible with the availability of a diachronic criterion of identity for such entities. Thus, for Lowe, composite substances persist over time just in case a certain equivalence relation holds that is defined over their actual or possible components (cf. Lowe 1989, 168). But why the asymmetry between identity at a time and identity over time? Why is Socrates' status as a substance not threatened by the fact that

Lowe's conception of the ontological independence of substances is presumably incompatible with the essentiality of origins, which he finds in any case implausible. For if it were part of Socrates' essence for example to have originated from a particular zygote, then it might seem that a criterion of individuation or synchronic identity could be found for a substance-candidate such as Socrates, viz., one which appeals to Socrates' origins.<sup>26</sup> Moreover, Lowe's conception of the ontological independence of substances also conflicts with a certain natural interpretation of the neo-Aristotelian position according to which unified wholes are compounds of matter and form. For if it were part of the essence of a substance candidate, such as Socrates, to be a compound of some particular matter and some particular form, then it might appear again that Socrates could be individuated by appeal to his form or matter. Since Lowe is sympathetic to the neo-Aristotelian hylomorphic conception of unified wholes as compounds of matter and form, he cannot avoid the conflict just raised by denying the premises that generate it. Instead, he adopts a different escape route, which itself carries with it considerable costs: in Lowe 1999, he argues that hylomorphic compounds should be *identified* with their form and therefore are not *compounds* of matter and form at all. Finally, if a substance candidate, such as Socrates, can have essential tropes (e.g., Socrates' particular instance of humanity), then it will have to turn out that even though it is part of the essence of the tropes in question that they are the result of applying some

---

he persists over time due to a certain relationship that his proper parts at one time bear to his proper parts at another, while his status as a substance apparently would be jeopardised if something similar were true of his identity at a time? Presumably, the answer to this question, for Lowe, is that diachronic identity presupposes synchronic identity. For suppose that it is possible for Socrates (say) to have existed for only one instant: in that case, his existence at this instant would nevertheless have required that he is the very entity that he is at that instant; but his synchronic identity at that instant does not require that he persists over time. If, on the other hand, Socrates persists over time, his diachronic identity does require that, at each time at which he exists, he is at that time (i.e., synchronically) identical to himself.

<sup>26</sup> Though it should be said that it is a controversial question even among those who subscribe to a modal conception of essence whether concrete particular objects can in fact be individuated across worlds by means of their origins. See for example Forbes 1985, 1986, 1997, 2002; Mackie 2002, 2006; and the references to be found therein.

function to their 'bearer' (e.g., the 'abstraction' function), it is not similarly part of the essence of the substance which is the 'bearer' of these essential tropes that it is the result of applying some function (e.g., the 'construction' function) to its essential tropes, perhaps because substances are not taken to be bundles of tropes, on Lowe's conception.<sup>27</sup> We will have the opportunity to consider a further potential trouble-case for essentialist construals of ontological dependence below, immediately after the introduction of the account favoured by Kit Fine in the next section.

### 3.2 *Constitutive Essential Dependence*

Fine 1995a defines the following essentialist notion of ontological dependence, which I will call 'Constitutive Essential Dependence':

#### CONSTITUTIVE ESSENTIAL DEPENDENCE (ED4)

*x* is constitutively essentially dependent on *y* ↔ *x* is a constituent of *x*'s essence (narrowly construed).

Smiles for example, on this account, ontologically depend on mouths in the sense that mouths are constituents of the essences of smiles; but the reverse is not the case, i.e., smiles are not also constituents of the essences of mouths.<sup>28</sup>

---

<sup>27</sup> In Section 2.3.1, I brought up the following apparent counterexamples to (ED1) and (ED2): Socrates' humanity, conceived of either as (a) an essential trope or as (b) a universal that is essentially instantiated by Socrates; (c) Socrates' form (according to a neo-Aristotelian conception of unified wholes as hylomorphic compounds); (d) Socrates' essential proper parts (if he has any); or (e) Socrates' origin (assuming the essentiality of origins). As noted here, Lowe has responses to (a), (c), (d) and (e); (b) is not a problem for (ED3), since the identity of a particular cannot be parasitic on its being an instance of a universal, even where the universal in question is essential to it, since other particulars may instantiate the same universal. With respect to (d), Lowe would presumably similarly deny that a potential substance candidate such as Socrates has any essential proper parts which determine his synchronic identity, since in his view *no* numerically distinct entity (including proper parts) determines that a substance is the very thing that it is at any time at which it exists.

<sup>28</sup> Fine's account assumes that we may think of essences as propositions or collections of propositions and that these propositions have constituents.

Fine's approach to ontological dependence crucially relies on a distinction between essence, narrowly construed ('constitutive essence'), and essence, more widely construed ('consequential essence'). Unless some such 'narrow/wide' distinction for essences can be drawn, Fine's account of ontological dependence threatens to become vacuous, in the sense that everything will turn out to depend ontologically on everything else. This result follows because, however exactly we draw the constitutive/consequential distinction, the consequential essence of any entity, on Fine's conception, is closed under logical consequence and all the logical truths therefore end up in the consequential essence of everything whatsoever. Since for example the proposition that the number 2 is self-identical is a logical truth, the number 2 will turn up as a constituent in the consequential essence of every object whatsoever. And because the number 2 here was picked arbitrarily and every object is self-identical, every object by the same reasoning turns up as a constituent in the consequential essence of every other object. Thus, if an entity were to count as being ontologically dependent on all those objects which figure as constituents in propositions that belong to its consequential essence, then the notion of ontological dependence would have been trivialised and every object would turn out to be ontologically dependent on every other object. It is thus important, at least for the purposes of defining the notion of ontological dependence in terms of essence, that the notion of essence, as it figures in (ED4), is understood in the appropriately narrow sense of 'constitutive essence'.<sup>29</sup>

Fine assumes that, for the purposes at hand, essences can be identified with collections of propositions that are true in virtue of the identity of the particular object or objects whose essences they are. Such collections of propositions that are true in virtue of the identity of an object or objects, in Fine's view, can also simultaneously be thought of as real definitions for the object or objects in question. There is not, then, on this approach, much of a distinction between essences and real definitions.

But we may wish to proceed somewhat differently and leave room for a less propositional conception of essences, such as that endorsed by Aristotle for example. For Aristotle, the essence of a kind of thing includes at least its form. (Whether the essence of a kind of thing also includes additional components besides the form, e.g. the matter, is a controversial question which I will not address here.) For example, the essence of a living being, in Aristotle's view, encompasses at least its soul, i.e. the form of the living being. But, given Aristotle's association of the soul with certain kinds of powers or capacities (*dynamiai*), e.g. the capacity for growth and nourishment, locomotion, perception and thought, it would be strange to think of the soul of a living being as a collection of propositions. It is perhaps more natural to take real definitions, which Aristotle regards as linguistic entities [*logoi*] of some sort, viz., formulae or statements of the essence, as collections of propositions or perhaps as only a single proposition, if there is only a single canonical way of stating the essence of a kind of thing. The basic idea underlying Fine's essentialist approach to ontological dependence can then be reformulated in terms of real definitions as follows:

**DEFINITIONAL ESSENTIAL DEPENDENCE (ED5)**

$x$  is definitionally essentially dependent on  $y \leftrightarrow \text{Def}$   
 $y$  is a constituent of a real definition of  $x$ .<sup>30</sup>

<sup>29</sup> Given Fine's non-modal conception of essence, the narrow notion of constitutive essence may be taken as primitive and the wider notion of consequential essence defined in terms of it through logical closure: the consequential essence of an entity is that collection of propositions which contains all the logical consequences of those propositions that are included in the entity's constitutive essence. Ontological dependence can then be defined in terms of the narrow notion of constitutive essence. As I argue in Koslicki 2012b, the other direction (taking the wider notion of consequential essence as primitive and deriving the narrower notion of consequential essence from it through the so-called 'generalising out' procedure) is unsuccessful. For a more detailed discussion of Fine's constitutive/consequential distinction for essences, see Gorman 2005, 2006a, 2006b; Koslicki 2012a, 2012b.

<sup>30</sup> The formulation of (ED5) in the text contains 'a real definition', rather than 'the real definition', since I want to leave open for the time being whether an entity can have more than one real definition. This possibility would obtain if two different propositions (or collections of propositions) could be equally explanatory of the essential nature of the entity in question. For further discussion of the notion of real definition, see Koslicki 2012b.

### 3.3 *Discussion*

I will end by mentioning a potential trouble case for the essentialist accounts of ontological dependence proposed by Lowe and Fine.<sup>31</sup> (ED3), (ED4) and (ED5) have the following odd consequence. Assuming that it is in fact the case, following the Axiom of Extensionality, that sets are essentially dependent on their members, in the sense of (ED3)–(ED5), then no non-empty set would be classified as an ontologically independent entity or substance, which is perhaps a welcome result.<sup>32</sup> But what about the empty set? Its identity cannot in any meaningful sense be regarded as fixed by the identity of its members, since it has none; nor, for the same reason, can its members appear as constituents in its constitutive essence or real definition. Rather, it seems that the identity of the empty set must simply be taken for granted and that its essence must be regarded as simple and non-relational, in the sense that no entities numerically distinct from itself figure as constituents in its constitutive essence or real definition. In

<sup>31</sup> Whether Fine's account runs into trouble with the essentiality of origins and the status of hylomorphic compounds as putative substance candidates depends crucially on whether we find the stipulative exclusion of proper parts in the formulation of an independence criterion of substancehood to be admissible. (This strategy would of course also take care of case (d) from note 27, viz., essential proper parts, in general.) If the substances are just those entities which are ontologically independent in the sense of (ED4) or (ED5) from all other numerically distinct entities *except for their proper parts*, then an entity would be able to qualify as a substance even if its proper parts figure as constituents in its constitutive essence or real definition, so long as no other numerically distinct entities besides its proper parts figure in its constitutive essence or real definition. If for example the zygote from which a human being originated at one point was a proper part of it and if the form and matter of which a hylomorphic compound consists are proper parts of it (as Fine holds), then (given the exclusion of proper parts) concrete particular objects could nevertheless qualify as substances even if it is part of their essence to have originated from whatever entity they actually originated from and even if it is part of their essence to be a compound of some particular matter and form. I investigate these questions further in Koslicki forthcoming. As far as case (b), essential tropes, are concerned, Fine can avail himself of the same strategy that is open to Lowe as well.

<sup>32</sup> On the relation between the Axiom of Extensionality and the claim that sets have their members essentially, see for example van Cleve 1985 and Forbes 1985.

that case, however, it seems that, by (ED3)–(ED5), the empty set qualifies as an ontologically independent entity or substance, even though no other set does. I take it that this would be an unfortunate consequence for an essentialist account of ontological dependence, when construed as yielding an independence criterion of substancehood, since, given a certain taxonomic category of entities, presumably either all or none of the entities belonging to the category in question should count as substances. It strikes me as strange to think that the empty set alone deserves substance-status, while none of the other sets do.<sup>33</sup>

A similar difficulty arises when we consider the relation between the number 0 and all the other natural numbers. If we think of the natural numbers as in some sense constructed from the number 0, together with the successor relation, then it seems that *which* number the number 1 is fixed by its relation to the number 0, viz., by its being the immediate successor of the number 0. The number 1, on this conception, is therefore naturally taken as having the number 0 as a constituent in its constitutive essence or real definition. But we cannot similarly conceive of the number 0 as being constructed from other natural numbers, together with the successor relation, since the number 0 is not the successor of any other natural number. Rather, in analogy with the set-theoretic case, the identity of the number 0 must be taken as fixed independently of its relationship to the other natural numbers and its constitutive essence again appears to be similarly simple and non-relational, in the sense that what it is to be that very number is not defined in terms of its relation to any other natural number. But it would be similarly puzzling if a criterion of sub-

<sup>33</sup> Perhaps the culprit here is the innocuous sounding serial uniformity principle to which I have just appealed, according to which substance status is to be granted to entities not individually, but by sort. If we substitute 'fundamental' for 'substance', then the result just generated is perhaps less bewildering: (ED3)–(ED5), when construed as yielding a criterion for fundamentality, classify the empty set as fundamental (or as more fundamental than the other sets), while they classify the remaining sets as non-fundamental (or less fundamental than the empty set). Still, metaphysical realists at least will want to leave some room for a distinction between what is taken as primitive by a particular theory or conceptual system and what is ontologically fundamental as a matter of fact. See also my earlier remark in response to Schneider's account in footnote 17 above.



stancehood classified the number 0 alone, and no other natural number, as a substance. An essentialist account of ontological dependence, along the lines of (i)(D3)–(i)(D5), ideally should have something to say in response to these considerations.<sup>34</sup>

#### 4. Conclusion

In this essay, I have considered various prominent construals of ontological dependence in the literature: modal vs. non-modal; existential vs. non-existential; as well as rigid vs. generic construals. And while there is of course nothing wrong in principle with defining whatever technical concept one wishes, the question arises, in the face of this plethora of relations that go under the name of ‘ontological dependence’, what explanatory tasks these notions are designed to accomplish and how well they in fact meet the desiderata that are set for them. I have identified three potential measures of success by means of which particular accounts of ontological dependence may be evaluated: (i) how well they do in classifying certain paradigmatic cases of ontological dependence in a particular desired way; (ii) whether they allow for the formulation of a plausible independence criterion of substancehood; and (iii) whether they make room for the possibility of substantive non-existential disagreements in ontology over questions of fundamentality.<sup>35</sup> Relative to these three goals, we have seen that modal and existential construals of ontological dependence are open to persuasive counterexamples, while essentialist accounts seem to perform more promisingly. Still, various questions remain to be addressed by essentialist accounts as well: in particular, (i) how to handle the essentiality of origins (if it is in fact part of the essence of certain sorts of entities to have originated from whatever they in fact originated from); (ii) whether and how hylomorphic compounds can be assigned substance status; and (iii) how a distinction may be drawn between what is taken as primitive by a particular theory or conceptual system (e.g. the number 0 or the empty set) and

<sup>34</sup> These and similar cases are discussed in Lowe 2012; see also Schwartzkopf 2011.

<sup>35</sup> The first two criteria have played a more prominent role in this discussion than the third, with the exception of my remarks at the end of Section 2.3.1. However, the importance of the third criterion should not be underestimated; I make heavy use of it for example in evaluating competing independence criteria of substancehood in Koslicki forthcoming.

what is genuinely ontologically fundamental. Thus, as is to be expected, more work still lies ahead for those who are sympathetic to essentialist accounts of ontological dependence.

#### References

- Barnes, J. (ed.) 1984: *The Complete Works of Aristotle: The Revised Oxford Translation*. Volume One and Two. Bollingen Series LXXI.2. Princeton: Princeton University Press.
- Bottani, A., M. Carrara and P. Giaretta (eds.) 2002: *Individuals, Essence and Identity*. Dordrecht: Kluwer Academic Publishers.
- Corkum, P. 2008: Aristotle on Ontological Dependence. *Phronesis* 53, pp. 65–92.
- 2013: Substance and Independence in Aristotle? In this volume.
- Correa, F. 2004: ‘Husserl on Foundation? *Dialectica* 58, pp. 349–67.
- 2005: *Existential Dependence and Cognitive Notions*. Munich: Philosophia Verlag.
- 2008: ‘Ontological Dependence’. *Philosophy Compass* 3, pp. 1–20.
- Correa, F. and B. Schneider (eds.) 2012: *Metaphysical Grounding: Understanding the Structure of Reality*. Cambridge: Cambridge University Press.
- Feser, E. (ed.) forthcoming: *Aristotle on Method and Metaphysics*. Basingstoke: Palgrave Macmillan.
- Fine, K. 1991: ‘The Study of Ontology’. *Notus* 25, pp. 263–94.
- 1994: ‘Essence and Modality’. *Philosophical Perspectives* 8 (Logic and Language), pp. 1–16.
- 1995a: ‘Ontological Dependence? *Proceedings of the Aristotelian Society* 95, pp. 269–90.
- 1995b: ‘Senses of Essence’. In Sinnott-Armstrong, Raffman and Asher 1995, pp. 53–73.
- 1995c: ‘The Logic of Essence’. *Journal of Philosophical Logic* 24, pp. 241–73.
- 2001: ‘The Question of Realism’. *Philosophers’ Imprint* 1. URL: <http://quodlibet.unich.edu/p/phimp/3521354.0001.002/1/-question-of-realism?page=root&size=200&view=image>.

- 2012: 'Guide to Ground'. In Correia and Schneider 2012, pp. 37–80.
- Forbes, G. 1985: *The Metaphysics of Modality*. Clarendon Library of Logic and Philosophy Series. Oxford: Oxford University Press.
- 1986: 'In Defense of Absolute Essentialism'. In French, Uehling, and Wettstein 1986, pp. 3–31.
- 1997: 'Essentialism'. In Hale and Wright 1997, pp. 515–33.
- 2002: 'Origins and Identities'. In Bottani, Carrara and Giaretta 2002, pp. 319–40.
- Frege, G. 1953: *The Foundations of Arithmetic: A Logical Mathematical Enquiry into the Concept of Number*, translated by Austin, J. L., 2<sup>nd</sup> Edition, Oxford: Blackwell.
- French, P. A., T. E. Uehling and H. K. Wettstein (eds.) 1986: *Midwest Studies in Philosophy 11 (Studies in Essentialism)*. Minneapolis: University of Minnesota Press.
- Gorman, M. 2005: 'The Essential and the Accidental'. *Ratio (New Series)* 18, pp. 276–89.
- 2006a: 'Substance and Identity-Dependence?'. *Philosophical Papers* 35, pp. 103–18.
- 2006b: 'Independence and Substance?'. *International Philosophical Quarterly* 46, pp. 147–59.
- Hale, B. and C. Wright 1997: *Companion to the Philosophy of Language*. Malden: Blackwell.
- Husserl, E. 1900–01: *Logische Untersuchungen*, 1<sup>st</sup> Edition. Halle: M. Niemeyer.
- Kosliski, K. 2008: *The Structure of Objects*. Oxford: Oxford University Press.
- 2012a: 'Essence, Necessity and Explanation?'. In Tahko 2012, pp. 187–206.
- 2012b: 'Varieties of Ontological Dependence?'. In Correia and Schneider 2012, pp. 186–213.
- forthcoming: 'Substance, Independence and Unity'. To appear in Feser forthcoming.

- Le Poidevin, R. (ed.) 2008: *Being: Developments in Contemporary Metaphysics*. Cambridge: Cambridge University Press.
- Lowe, E. J. 1989: 'What Is a Criterion of Identity?'. *The Philosophical Quarterly* 39, pp. 1–21.
- 1994: 'Ontological Dependence?'. *Philosophical Papers* 23, pp. 31–48.
- 1997: 'Objects and Criteria of Identity?'. In Hale and Wright 1997, pp. 613–33.
- 1998: *The Possibility of Metaphysics: Substance, Identity, and Time*. Oxford: Oxford University Press.
- 1999: 'Form Without Matter?'. In Oderberg 1999, pp. 1–21.
- 2005: 'Ontological Dependence?'. In Zalta, E. N. (ed.): *Stanford Encyclopedia of Philosophy*. URL: <http://plato.stanford.edu/entries/dependence-ontological/>.
- 2006: *The Four-Category Ontology: A Metaphysical Foundation for Natural Science*. Oxford: Clarendon Press.
- 2008: 'Two Notions of Being: Entity and Essence?'. In Le Poidevin 2008, pp. 23–48.
- 2009: *More Kinds of Being: A Further Study of Individuation, Identity, and the Logic of Social Terms*. Malden and Oxford: Wiley-Blackwell.
- 2012: 'Asymmetrical Dependence in Individuation?'. In Correia and Schneider 2012, pp. 214–33.
- 2013: 'Some Varieties of Metaphysical Dependence?'. In this volume.
- Mackie, P. 2002: 'Forbes on Origins and Identities?'. In Bottani, Carrara and Giaretta 2002, pp. 341–52.
- 2006: *How Things Might Have Been: Individuals, Kinds and Essential Properties*. New York: Clarendon Press.
- Oderberg, D. (ed.) 1999: *Form and Matter: Themes in Contemporary Metaphysics*. Oxford: Blackwell.
- Peramatzis, M. 2008: 'Aristotle's Notion of Priority in Nature and Substance?'. *Oxford Studies in Ancient Philosophy* 35, pp. 187–247.
- Plantinga, A. 1974: *The Nature of Necessity*. Oxford: Clarendon Press.
- Quine, W. V. O. 1953: 'Three Grades of Modal Involvement'. *Actes du XI<sup>eme</sup> Congrès International de Philosophie* 14. Volume complémen-

- taire et communications du Colloque de Logique. Amsterdam: North-Holland Publishing Company, and Louvain: Éditions E. Nauwelaerts, pp. 65–81.
- Rayo, A. and Yablo, S. 2001: 'Nominalism through Denominalization'. *Notus* 35, pp. 74–92.
- Schneider, B. 2006: 'A Certain Kind of Trinity: Dependence, Substance, Explanation'. *Philosophical Studies* 129, pp. 393–419.
- 2010: 'A Puzzle About "Because"'. *Logique et Analyse* 53, pp. 317–43.
- Schwartzkopff, R. 2011: 'Numbers as Ontologically Dependent Objects: Hume's Principle Revisited'. *Günzler Philosophische Studien* 82, pp. 353–73.
- Simons, P. 1987: *Parts: A Study in Ontology*. Oxford: Clarendon Press.
- 1998: 'Farewell to Substance: A Differentiated Leave-Taking'. *Ratio (New Series)* 11, pp. 235–52.
- Simont-Armstrong, W., D. Raffman and N. Asher (eds.) 1995: *Multitude: Morality, and Belief: Essays in Honor of Ruth Barcan Marcus*. New York: Cambridge University Press.
- Tahko, T. (ed.) 2012: *Contemporary Aristotelian Metaphysics*. Cambridge: Cambridge University Press
- Toner, P. 2010: 'Independence Accounts of Substance and Substantial Parts', *Philosophical Studies*, published online May 13, 2010.
- Van Cleve, J. 1985: 'Why a Set Contains Its Members Essentially?'. *Notus* 19, pp. 585–602.

## Substance and Independence in Aristotle

Phil Corkum

Individual substances are the ground of Aristotle's ontology. Taking a liberal approach to existence, Aristotle accepts among existents entities in such categories other than substance as quality, quantity and relation; and, within each category, individuals and universals. As I will argue, individual substances are ontologically independent from all these other entities, while all other entities are ontologically dependent on individual substances. The association of substance with independence has a long history and several contemporary metaphysicians have pursued the connection.<sup>1</sup> In this chapter, I will discuss the intersection of these notions of substance and ontological dependence in Aristotle.

Ontological dependence plays a central role in Aristotle's metaphysics of properties, as well as in his philosophy of mathematics, philosophy of mind and elsewhere. As I will note, he typically uses separation and priority terminology to refer to a notion of ontological dependence: one thing is ontologically independent from a second just in case the first is both separate from, and prior to, the second. To give just a few examples of Aristotle's use of such terminology: in addition to the claim that individual substances are ontologically independent from universals and entities in categories other than substance, Aristotle also holds that individual properties are inseparable from that in which they are present;<sup>2</sup> he asserts that the active intellect is separate from the body;<sup>3</sup> he describes mathematicians as sepa-

<sup>1</sup> See, for example, Hoffman and Rosenkranz 1991, Lowe 2005, Gorman

2006 and Schneider 2006. For discussion, see Kosiicki forthcoming.

<sup>2</sup> For discussion, see Corkum 2009.

<sup>3</sup> For discussion, see Corkum 2010.