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THE ESSENTIALIST INFERENCE

Jesse M. Mulder

It is often claimed that principles of individuation imply essential properties of the things individuated. For example, sets are individuated by their members, hence sets have their members essentially. But how does this inference work? First I discuss the form of such inferences, and conclude that the essentialist inference is not a purely formal matter: although there is a form which all principles of individuation have in common, it is not true that any statement of that form is a principle of individuation, and hence there is no valid inference based purely on that form. However, I argue that there is a viable version of the essentialist inference nonetheless. The resources for a proper reconstruction of this type of inference can be gathered from reflections upon the role principles of individuation play in the project of the ontologist: such principles turn out to carry a modal weight similar to that of definitions or conceptual truths. It follows that, no matter how austere the ontology, some portion of essentialist modality is inevitable.

Keywords: individuation, essentialism, modality, identity, ontology, fundamentality.

1. The Claim

The principle of individuation for sets states that sets are individuated by their members:¹ same members, same set; different members, different set. Hence, sets have their members *essentially*.

I call this kind of inference *the essentialist inference*. It is peculiar in that it draws a modal (essentialist) conclusion from a statement that does not involve modality at all, as I will explain shortly. Yet such inferences play an important role, not just for sets, but much more widely, amongst defenders of one or another variety of essentialism.

My claim is that there is indeed a valid inference from principles of individuation to essentialist conclusions, albeit of a rather unusual kind, and, moreover, that we cannot escape the need for such principles of individuation in general. This implies that *some* form of essentialism is inevitable.

Applications of the essentialist inference abound. Saul Kripke, for instance, has famously argued for the essentiality of origin for material objects on the grounds that such objects are individuated (partly) by their origins.² And the neo-Aristotelian line taken by, for example, David Wiggins and E. J. Lowe,³ who take objects to be individuated by the (substantial,

¹In the literature, what I call ‘principles of individuation’ are also often referred to as *criteria of identity*. Notice, though, that there are diverging conceptions of both available. See Lowe [2003] for discussion.

²Cf. Kripke [1980: 112–15]: ‘[A]nything coming from a different origin would not be this object’ [113]; he understands origination properties to be ‘essential properties’ [115].

³Cf. Wiggins [2001]; Lowe [2006, 2009], but also, for a conventionalist defence of basically the same idea, Sidelle [1989, 2010]; Thomasson [2007].

ultimate) sortal under which they fall, illustrates a somewhat more complicated implementation of the essentialist inference—the sortal, in their view, provides a principle of individuation which determines synchronic as well as diachronic identity. Of course, it has turned out to be notoriously difficult to articulate such principles of individuation for concrete objects. Sets (and other abstract objects) are much easier in that respect, and, for this reason, I focus for some part of my discussion on the example of sets, although my conclusions apply generally.

After briefly clarifying some preliminary issues (§2), I first inquire into the formal aspects of the essentialist inference (§3), resulting in a rejection of a purely formal approach (§4). These first, exploratory sections provide the basis for assessing our central question: is the essentialist inference valid, and if so, why? What undergirds the essentialist inference, I argue, is the specific role principles of individuation are supposed to play within the larger project of the ontologist, which I characterize on a highly abstract level (§5), sketching the implications of my conception of it by reference to some concrete ontologies (§6). A brief summary concludes this essay (§7).

2. Preliminaries

Before delving into the precise workings of the essentialist inference, a few things need to be clarified. The first concerns the distinction between epistemic and metaphysical principles of individuation, the second is the difference between essentiality and necessity, the third is the specific understanding of essence at issue, and the last concerns the thorny issue of realism versus conventionalism about essences.

In this essay, I am concerned with ontological principles of individuation, not with epistemological such principles. The distinction can be put as follows: while epistemological principles of individuation capture how *we* individuate things, ontological principles of individuation purport to capture how things *themselves* are individuated (either metaphysically or by conventional fiat; see below). One quite important difference between the two notions is that there can be very many different ways *for us* to individuate things, while ontologically speaking this becomes rather problematic. More content will be given to the idea of such ontological individuation in due course (especially in §5); for now it is enough to flag the distinction.

As Fine [1994] has argued, necessity and essentiality are not the same. It is necessarily true that Socrates is a member of the singleton {Socrates}, but, while it *is* essential to {Socrates} that Socrates is a member of it, it is *not* essential to Socrates that he is a member of {Socrates}. Fine glosses ‘essentially true’ as ‘true in virtue of the essence of ...’, where the blank needs to be filled in by a term denoting some object (or class of objects). This explains the noticed asymmetry. The modality involved in essentialist statements thus differs from ‘ordinary’ metaphysical modality. Yet if something is true in virtue of some essence (in Fine’s sense), then it will be necessarily true as well—so there is a close connection between the two modal notions. What the relations between these types of modality precisely are is

not my concern here, but it is important to note that the modality involved in the essentialist inference is *essentialist* modality, not ordinary metaphysical modality.

Essences come in various guises. Some people identify an object's essence with the (set of) properties it essentially has [Plantinga 1974: 70–7; Yablo 1987; Elder 2011: 66–9]), while others, most prominently neo-Aristotelians, hold that a thing has its essential properties *in virtue of* its essence (cf. Fine, Wiggins, Lowe). Although the essentialist inference suits the latter conception best, it does not prejudge this issue, so neither will I.

A further distinction can be made between *individual* essences and *general* ones. If sets have their members essentially, then *this* set (say, {Socrates}) has Socrates as a member essentially. Thus, having Socrates as a member follows from (or is) the individual essence of {Socrates}. On the other hand, for example, Putnam [1975] can be understood to have argued that elm trees are essentially elm trees: all elm trees would, on this construal, have the same (general) essence. Principles of individuation, being principles governing identity and difference, are bound to result in individual essences (as our example of sets illustrates).

There is a possible confusion here. First, individual essences as intended here are not to be identified with the haecceities or primitive this-nesses involved in the bare particularist's view. Individual essences as involved in the essentialist inference are determinates falling under determinables, where the latter are specified precisely by the principle(s) of individuation in question. As we will see (§6), bare particulars are a limiting case of this general idea.

In what follows, I compare the modality to which the essentialist inference gives rise to conceptual modality, and in particular to the kind of modality involved in what is true 'by definition' (cf. §4). I do not mean to invoke any anti-realist bias in using such locutions—my discussion is supposed to be strictly neutral on the issue of realism. If you are an anti-realist, you may indeed take my results as fitting into an anti-realist picture according to which modality is merely conventional, while if you are a realist, you will have to understand my claims in terms of the Aristotelian idea of *real definition*: roughly put, our articulations of the fundamental ontological categories, if successful, express the real natures of these categories.⁴

Since my main example will be essential set membership, it is fitting to briefly remark on the one person (to the best of my knowledge) who has explicitly *denied* set membership to be essential: A. J. Ayer.⁵ Here is his argument [Ayer 1979: 312]:

The pair set consisting of the Crystal Palace and the Eiffel Tower is also the pair set consisting of the largest building erected for the Great Exhibition in London in 1851 and the largest building erected for the Great Exhibition in Paris in 1889. But it is obviously not necessary that these descriptions should be satisfied by the Crystal Palace and the Eiffel Tower. There is therefore a sense in which the pair set consisting of the Crystal Palace and the Eiffel Tower

⁴I defend a version of essentialism that rejects the realism/anti-realism dichotomy in my [2012].

⁵I thank an anonymous referee for drawing my attention to this argument.

might not have contained either of them. The sense is that the set can be uniquely identified by a description which neither of them necessarily satisfies.

Surely the sense in which Ayer is right is merely the sense in which it is true that *to that description* there might have corresponded a different set, not that the set *itself* might have contained different members. We circumvent such semantic subtleties by defaulting to a *de re* reading of set membership attributions.

3. The Essentialist Inference: A Formal Approach

A principle of individuation for *Fs* typically takes the following form:

$$(PI) \ x \text{ and } y \text{ are } Fs \rightarrow (x = y \leftrightarrow \varphi(x,y))$$

$\varphi(x,y)$ should, of course, amount at least to an equivalence relation over the *Fs*, and it should be compatible with Leibniz's Law, which states that identicals share all their properties:

$$(LL) \ x = y \rightarrow \forall \Psi (\Psi x \leftrightarrow \Psi y)$$

The φ -part of a principle of individuation is the crucial part. Presupposed is that whatever is involved in φ applies to *Fs*—e.g., in the case of sets, the membership relation. One form which this φ in (PI) plausibly takes is that of a biconditional, possibly prefixed by a number of quantifiers, as follows:

$$(PI') \ x \text{ and } y \text{ are } Fs \rightarrow \\ (x = y \leftrightarrow \forall z_1, \dots, z_n (\varphi'(x, z_1, \dots, z_n) \leftrightarrow \varphi'(y, z_1, \dots, z_n)))$$

For ease of discussion, I will mostly stick to this form in what follows. We will see in due course that nothing really hinges on this pragmatic choice.

The essentialist inference now seems to work as follows. Given a principle of the form (PI'), if we assume some instance of the φ' -part of that principle:

$$(EI1) \ \varphi'(x, z_1, \dots, z_n)$$

we may derive the corresponding essentialist claim:

$$(EI2) \ \Box_x \varphi'(x, z_1, \dots, z_n)$$

where the symbol \Box_x stands for the essentialist modality (in Fine's [1994] words: it is true in virtue of the nature of *x* that ...). Given this result, we may go on to conclude the universal closure:

$$(EI3) \ \forall z_1, \dots, z_n (\varphi'(x, z_1, \dots, z_n) \rightarrow \Box_x \varphi'(x, z_1, \dots, z_n))$$

Applying this general scheme to our example of sets, we get the following. The principle of individuation for sets looks as follows:

$$\text{(Set)} \quad x \text{ and } y \text{ are sets} \rightarrow (x = y \leftrightarrow \forall z(z \in x \leftrightarrow z \in y))$$

And the essentialist inference now licenses the inferential step from (S1) to (S2) and (S3):

$$\begin{aligned} \text{(S1)} \quad & z \in x \\ \text{(S2)} \quad & \Box_x(z \in x) \\ \text{(S3)} \quad & \forall z(z \in x \rightarrow \Box_x(z \in x)) \end{aligned}$$

This indeed gives us essential membership for sets.

Now that we have a rough conception of how the essentialist inference works, formally speaking, we may ask whether the essentialist inference can indeed be conceived of as a purely formal inference, so that from any true statement of the form (PI) some essentialist conclusion follows. The answer turns out to be decidedly negative.

4. Why the Formal Approach Fails

A simple consideration immediately makes clear why the essentialist inference cannot apply to just any statement of the form (PI) or (PI'). For suppose that there is a creature who likes cabbages very much—call him *Cabbs*. For every cabbage there has been, is, and will be, Cabbs devotes precisely one day to contemplating just that cabbage. So now we may individuate cabbages by the day on which they get contemplated by Cabbs ($C(x,y)$ denotes the relation of Cabbs contemplating x on day y):

$$\text{(Cab)} \quad x \text{ and } y \text{ are cabbages} \rightarrow (x = y \leftrightarrow \forall z(C(x,z) \leftrightarrow C(y,z)))$$

Now it is obviously wrong to suppose that cabbages *essentially* get contemplated on specific days by Cabbs. There just happens to be, *ex hypothesi*, a suitable injective map from cabbages to days, so that one can write down a principle like (Cab) that is actually true. But Cabbs might have had a different hobby, of course—he might have been fond of carrots instead of cabbages.⁶ It seems, then, that (Cab) is just a (contingent) truth about cabbages, not a principle of individuation for them (although, if true, (Cab) could of course be useful as an *epistemological* principle of individuation—see §2).

Thus, not every statement of the form (PI) or (PI') expresses a principle of individuation. But the essentialist inference is thought to apply only to principles of individuation. Hence, if my formal presentation of the essentialist

⁶Geach [1980] provides lots of interesting examples of such spurious principles of individuation—introduced by him in support of his thesis of relative identity. Though it would be interesting to compare my discussion with his relativism (I believe they are compatible), I cannot delve into this topic within the scope of the present essay.

inference is correct, the essentialist inference cannot be a purely formal kind of inference.⁷

Let us consider a more serious example from the literature to further illustrate the point. Lowe's and Williamson's [1991] discussions of principles of individuation centred on Frege's famous principle for directions ($d(x)$ is a function from lines to their directions and $\text{Par}(x,y)$ denotes the relation of parallelism):

$$(\text{Dir}) \forall x \forall y (d(x) = d(y) \leftrightarrow \text{Par}(x,y))$$

This principle is not of the form (PI), and Williamson [1991] argues that all attempts to reformulate it so as to fit (PI) are unacceptable. For consider the following two proposals (where $\text{Of}(x,y)$ denotes the relation that holds between a direction x and a line y just if x is the direction of y):⁸

$$\begin{aligned} (\text{Dir}') \quad &x \text{ and } y \text{ are directions} \rightarrow \\ &(x = y \leftrightarrow \forall z_1 \forall z_2 (\text{Par}(z_1, z_2) \rightarrow (\text{Of}(x, z_1) \leftrightarrow \text{Of}(y, z_2)))) \end{aligned}$$

$$\begin{aligned} (\text{Dir}'') \quad &x \text{ and } y \text{ are directions} \rightarrow \\ &(x = y \leftrightarrow \forall z (\text{Of}(x, z) \leftrightarrow \text{Of}(y, z))) \end{aligned}$$

The principle (Dir') seems faithful to Frege's idea to have parallelism play a major part in the individuation of directions, and hence looks like a suitable candidate. However, there is no sound reason to prefer (Dir') over (Dir''), which works just as well and is simpler, but does not mention parallelism at all, and hence fails to capture the gist of Frege's idea. Now, we do not want two different principles of individuation for one and the same kind of thing: that would lead, via the essentialist inference, to diverging ascriptions of essential features—for example, is parallelism essential to directions or not? So it seems that we have got ourselves into an awkward situation.

We should be careful, however, to distinguish Frege's project from the issue of principles of individuation in general. (Dir'') works just like (Set): it says that directions are identical just if they 'have' all and only the same lines. Whether or not one accepts this as *the* principle of individuation for directions depends on one's further ontological outlook, in particular on one's take on abstract objects. For instance, one may indeed follow Frege in associating objects with any partitioning induced by any equivalence relation, and thus accept directions to be *objects*; or one might argue that directions are determinate *properties* falling under the determinable 'has a direction', much like specific colours relate to 'has a colour'. Moreover, one might disagree with Frege about what is more fundamental and use (Dir'')

⁷This was observed some time ago by van Cleve [1985]. He uses a more abstract example, the identity of indiscernibles:

$$(\text{II}) \quad x \text{ and } y \text{ are things} \rightarrow (x = y \leftrightarrow \forall \Psi (\Psi x \leftrightarrow \Psi y))$$

This principle has form (PI') but surely one would not want to claim that everything has all its properties essentially.

⁸The proposals I consider are slightly different from the ones Lowe and Williamson consider; this is because I wish to stay as close as possible to (PI'), not just to (PI).

to define parallelism in terms of directions, instead of *vice versa*. However that may be, there is one important lesson to draw, which I here take from Lowe [1991: 193]:

[I]t is surely not at all surprising that a criterion of identity [i.e., a principle of individuation] for *Fs*, taken in conjunction with one or more further necessary truths concerning *Fs* or related objects, should entail a proposition which, although not *itself* a criterion of identity for *Fs*, states a necessary and sufficient condition for *F*-identity.

We don't need to worry about (Dir'') following from (Dir') together with certain further truths about lines and directions: if we have reasons to prefer (Dir') as the correct principle of individuation for directions, the truth of (Dir'') is simply irrelevant. Apparently, then, just having form (PI) or (PI') is not enough to count as a principle of individuation: what matters is the role such principles play in our theory of the things they are supposed to individuate.⁹

I argue that the essentialist inference is *not* a purely formal inference by exploring *just one* way of formally presenting such an inference. Strictly speaking, that observation does not provide enough evidence for my claim—there may be other, more successful ways of formalizing the inference. Yet some reflection on the matter may provide the missing warrant. A principle of individuation will at the very least have to express a necessary and sufficient condition for identity, and hence will have to take the form $x = y \leftrightarrow \dots$. Now, however one fills in the blank, the problem is, as I have shown by way of example, that there is no reason at all to think that there are no *other* truths that happen to have that very same form.

In fact, there will *always* be such truths: one can derive from a given principle of identity, however one settles the question as to their canonical form, indefinitely many other truths of that same form by simply adding necessary truths, like $2 + 2 = 4$, to the individuator. Here is an example derived from (Dir'')

$$\begin{aligned} &(\text{Dir}^*) \ x \text{ and } y \text{ are directions} \rightarrow \\ & \quad (x = y \leftrightarrow \forall z((\text{Of}(x, z) \wedge 2 + 2 = 4) \leftrightarrow (\text{Of}(y, z) \wedge 2 + 2 = 4))) \end{aligned}$$

Applying the essentialist inference to all such derived truths would yield inclusion of all necessary truths in the essence of everything that has an essence.¹⁰ This short consideration might all by itself be enough to conclude that the essentialist inference is not a purely formal matter, unless one is prepared to accept such inclusion of necessary truths as just an innocent or trivial aspect of essences. That is why I opened this section with a stronger argument that turns on inclusion of *contingent* truths into the essence of things.

The essentialist conclusion follows from a statement of form (PI) only if it is being put forward *as* a principle of individuation. What does it mean to

⁹Failure to notice this fact leads to a trivialization of the very notion of a principle of individuation, as is exemplified by Noonan [2009], who alludes to examples that no one would seriously propose as principles of individuation (i.e., examples like our cabbage example above) in order to argue, in effect, that such principles are not very informative.

¹⁰Thanks to an anonymous referee for pointing this out to me.

put forward principles *as* principles of individuation? What is such a principle of individuation supposed to do? On a first approximation, it should settle questions as to whether two given *Fs* are identical or not. In order for the principle to provide such guidance, it should not *presuppose* the individuation of the very *Fs* at stake.

We can read statements of the form (PI) in two ways: *stipulatively*, as principles of individuation that do not presuppose properly individuated things, or *factively*, as just truths about things we already have before us, properly individuated. I have presupposed a factive reading of (Cab) in my example above, and a stipulative reading of (Set). If we read (Set) as just a factive statement about sets, not a stipulative principle of individuation for them, it *presupposes* a suitable realm of properly individuated entities, sets, about which things can be said. On the other hand, if we read it stipulatively, as a principle of individuation of sets, it partly *establishes* that very realm (assuming that sets exist).

The distinction I have been trying to characterize resembles the distinction between plain truth and truth by *definition*, or, if you prefer, between plain truth and conceptual truth. Indeed, one intuitive way of presenting the essentialist inference for sets is to say that, since a set has the members it has *by definition*, it *cannot* fail to have just these members.¹¹

5. Ontology and the Essentialist Inference

Until now, we have been tacitly assuming that the essentialist inference is valid, and concluded that, in so far as it is, it crucially depends on the characteristic job of principles of individuation. Hence, in order to decide whether the essentialist inference is indeed any good, we have to understand more clearly what principles of individuation exactly *do*. To that end, we need to take a closer look at the project of ontology in general.

If you claim, as an ontologist, that there are *Fs*, you should be able to explain *what* these *Fs* are. For suppose someone informs you that her ontology includes *mimsy borogoves*, and that, upon asking what she means, she simply replies: 'I haven't the faintest idea, but they really are amongst the basic furniture of reality.' This obviously doesn't make sense: if we cannot say *what* it is, we should not say *that* it is, and to say what it is is precisely to provide a suitable principle of individuation (*inter alia*). No entity without identity, as Quine famously said.

The task of the ontologist is to provide and justify an exhaustive list of ontologically fundamental categories of properly individuated entities. For instance, the nominalist attempts to exclude from his list abstract objects, such as universals; the dualist claims that there are two distinct categories of concrete things, physical and mental; the physicalist claims that everything there is is physical; the Humean will exclude modal properties such as dispositions and capacities; the (neo-)Aristotelian will include a rich variety of basic

¹¹For those with realist inclinations: 'by definition' can be taken to mean metaphysical or real definition, and the corresponding truths can be taken to be metaphysical truths.

substantial kinds, probably ordered in some kind of hierarchy, etc. Another part of the ontologist's job is to show that everything there is ultimately reduces to just these categories—which may include denying the existence of some things intuitively held to exist.¹² Thus the nominalist will argue that properties are not universals but rather particulars (e.g., tropes); the physicalist will argue that the mind is in fact physical (or can be reduced to the physical, or supervenes upon the physical, or doesn't exist, etc.); the Humean will argue that dispositions are reducible to categorical properties in some way or other; etc.¹³

Of course, interesting questions can be asked as to the motivations for an ontologist to suggest one or another ontology, as well as to the credibility and cogency of one or another reductive or eliminative claim. These questions are not my concern here—rather, I want to make a very general point. Take any ontology, and consider any type of things, *Fs*, that can be reduced, according to that ontology—say, the *Fs* are just *Gs*, e.g., singletons are just sets. Individuation of the *Fs* will then be achieved by reference to *Gs*—e.g., for singletons *x* and *y* it holds good that they are the same just if they are the same set, i.e., have all and only the same members. Let us say that *Gs* are *ontologically prior* to *Fs* precisely if such a reductive relation obtains. This relation of ontological priority is transitive and asymmetric. We can now take the *ontologically fundamental* categories to be precisely such that there is nothing they are reduced to: they are the basic building blocks, metaphysically speaking.

This notion of ontological fundamentality deserves some separate attention. Notice, first, that I assume infinitely descending reductions (without a fundamental level) to be impossible. I won't argue for that claim here—suffice it to say that virtually all actual ontologies are *not* like that.¹⁴ This assumption, however, does not at all prevent the possibility of a range of fundamental categories each of which is *accounted for* partly in terms of some (or all) of the others.¹⁵ Indeed, I take this to be a very likely scenario.

Given an ontology, you have a realm of suitably individuated, ontologically fundamental things at your disposal that can be used for reductions of non-fundamental things along the described lines. When presenting the ontology *itself*, however, no such realm is available. That very realm is thereby being determined, after all.¹⁶ The ontologist finds herself in the peculiar

¹²This is usually called elimination rather than reduction, but that distinction is rather obscure, because the one's reduction can very well be the other's elimination—e.g., some philosophers attempt to reduce the mind to the brain, while others complain that such a 'reduction' is in effect an elimination of the mind in favour of some surrogate. Hence I will simply ignore this distinction and stick to 'reduction' throughout.

¹³All of these metaphysical debates are conceived of rather differently by anti-realists than by realists: for the former they are a matter of semantic decision, convention, or perhaps of the inescapable formal structure that our minds impose on reality, while for the latter they concern substantial questions to which there is in principle a mind-independent answer.

¹⁴One might think that the theory of non-wellfounded sets contradicts this claim, but it does not: both ordinary and non-wellfounded sets are not *reduced* to their members, but only *individuated* by them. What *might* pose a problem for my claim is Ladyman and Ross's contention that 'there might not be a fundamental level', but their notion of fundamentality seems to be a mereological one, and hence quite different from mine [Ladyman and Ross 2007: 178].

¹⁵It does not even exclude infinite such chains of fundamental categories.

¹⁶For 'determined', you may read either 'established, stipulated' or 'discovered, traced out', depending on your attitude towards the realism/anti-realism issue.

situation that she is to characterize the ontologically fundamental items and give principles of individuation for them *from scratch*, so to speak: the individuation of the ontologically fundamental items is *sui generis*, it does not—indeed *cannot*—depend on the individuation of other, ontologically prior things.

Earlier, I said that there is a factive reading of principles of the form (PI), principles like (Set), according to which they simply state something about (e.g.) sets, and that this reading does not provide any grounds for an essentialist inference. A factive reading of (Set) presupposes the existence of sets, which must already come equipped with a proper principle of individuation: it says *of such things* that they are, in fact, identical if and only if coextensive. On this reading, (Set) cannot be used by the ontologist to present her ontology: it presupposes proper individuation for sets.

So, if the ontologist's project is to make sense at all, there has to be a way for her to present an ontology without using statements read factively. That is, there has to be a *stipulative* reading of principles such as (Set) as well, one that amounts to taking (Set) as a conceptual truth. (Set), on such a stipulative reading, will be part of the story the ontologist tells us about her fundamental ontological category of sets. Of course, (Set) will continue to be true on a factive reading as well, but that is not the intended reading of the ontologist. What the ontologist tells us about sets is true by stipulation, it is *definitive* of sets. Which is just to say that nothing *counts* as a set unless it fits the ontologist's account, and that nothing counts as *the same* set unless it obeys the principle of individuation included in that account.¹⁷

It is useful to compare the ontologist's definitions of her fundamental ontological categories with other definitions. We may, for instance, define *bachelor* as 'unmarried male human being'.¹⁸ It will then be true by definition (a conceptual truth) that all bachelors are unmarried; nothing counts as a bachelor unless it fits this definition. Yet bachelors are not essentially unmarried. This is so because our definition of *bachelor* applies to a realm of ontologically prior, independently individuated things, namely, human beings. Not so for the ontologist's definition of ontological categories: these are supposed to delineate the ontologically most fundamental categories.

It is time to confront our ultimate question: is the essentialist inference applicable to principles of individuation of ontologically fundamental categories, e.g., of sets? Let us suppose, for *reductio*, that it is not. Now, take a certain set *s*: it could have had different members, according to our supposition. This requires, however, that we have a handle on *s* independently from its being the set it is—that is, we are supposing that *s* is individuated independently from its members. Now, there is nothing wrong with that, except for the fact that we thereby are assuming that sets *aren't* ontologically fundamental: apparently, sets are individuated independently from their being (or not being) sets—just as bachelors are individuated independently from their

¹⁷A reminder: these remarks can be read anti-realistically under the assumption that ontological stipulation is merely conventional, or realistically under the assumption that the ontologist is trying to capture what is really ('mind-independently') out there. In the first case, we have a 'mere' conceptual truth, in the second case, the conceptual truth amounts also to a metaphysical truth.

¹⁸That is, without claiming that this definition coincides with ordinary usage of the term 'bachelor'—five-year-olds aren't bachelors in the usual sense, of course.

being (or not being) bachelors. That contradicts our assumption that sets make up an ontologically *fundamental* category. So the essentialist inference applies: if something is a set, and sets are ontologically fundamental, then it cannot fail to be the very set it is. Every thing is what it is, and not another thing, to use Bishop Butler's famous statement. One may quarrel about which ontology is to be preferred or which one is correct, but however we cut that cake, the essentialist inference is going to apply to the ontologically fundamental categories. Whether we like it or not. As realists, that leaves us with real essences; as anti-realists, we have conventional or 'nominal' essences.¹⁹

To conclude this section, let me illustrate the role of principles of individuation by way of an analogy. Consider model theory: we construct models for theories (or sentences) by choosing appropriate domains and appropriate interpretations for the constants, predicates, and functors in the relevant language. If we don't put any restrictions on these interpretations, the elements of the domain can be understood to be bare particulars—the only thing that holds of them generally is their identity and difference. But if we do put restrictions on the interpretations, and thereby limit the range of admissible models, we get more interesting results. The difference between the stipulative and the factive readings, on which my explication of the essentialist inference rests, is very much like the difference between statements used to delineate admissible models and statements that we interpret within some given range of admissible models.

6. Applications

There may seem to be a tension between my highly general claims and my focus on the specific example of sets. For sets, being abstract objects, can be clearly and precisely defined, while the more controversial and interesting applications of the essentialist inference occur not in set theory but rather in more encompassing, realist ontologies. Let us therefore have a look at how my results bear on such ontologies.

A neo-Aristotelian view takes the fundamental ontological categories to include such concrete and specific things as oak trees, red squirrels, and human beings. On behalf of the neo-Aristotelian, two things need to be noted: first, that such concrete objects are indeed very different from abstract ones in that we need empirical investigation in order to arrive at their essences, and, secondly, that we can still have a grasp on part of their essences by way of an Aristotelian story about the genera under which they fall (substance, living being, animal, . . .). The essentialist inference, in this case, can be properly applied only when some significant blanks have been filled in by empirical investigation, but it is nonetheless valid on the same grounds as in the case of sets.

¹⁹For a defence of real essences that fits with the conception I have developed, see [Oderberg \[2007\]](#); for a defence of conventional essences, see [Sidelle \[1989\]](#).

It is interesting to consider another application of my conclusions, to a radically different ontology: that of David Lewis [1986, 1991], who defended, quite brilliantly, a coherent and comprehensive metaphysical picture according to which material objects are just the contents of arbitrary regions of space-time, such that extensional mereology applies to them.²⁰ In effect, then, he is proposing the following principle of individuation for his fundamental ontological category of material objects:²¹

$$\begin{aligned} (\text{MO}) \quad & x \text{ and } y \text{ are material objects} \rightarrow (x = y \leftrightarrow r(x) = r(y)) \\ (\text{MO}') \quad & x \text{ and } y \text{ are material objects} \rightarrow \\ & (x = y \leftrightarrow \forall z(z = r(x) \leftrightarrow z = r(y))) \end{aligned}$$

($r(x)$ denotes a function that takes objects to the regions of space-time they occupy; (MO) states the principle in its intuitive form, (MO') in the form of (PI').)

Being put forward in the ontologist's stipulative mode, this principle licenses the essentialist inference, resulting in the view that objects essentially occupy the region of space-time they in fact occupy:

$$\begin{aligned} (\text{MO1}) \quad & z = r(x) \\ (\text{MO2}) \quad & \Box_x(z = r(x)) \\ (\text{MO3}) \quad & \forall z(z = r(x) \rightarrow \Box_x(z = r(x))) \end{aligned}$$

This result creates a peculiar tension in Lewis's views. His ontology gives rise, by way of the essentialist inference, to a type of modality, individuation-based modality, that stands in stark contrast with his own notion of counterpart-based modality. Counterpart-based modal truths about some object reduce to non-modal truths concerning that object and its counterparts at other possible worlds in a systematic way. The ontological basis for this reduction is given by Lewis's ontology of material objects (and of possible worlds). Individuation-based modality, on the other hand, arises directly from this ontologically fundamental level. These two conceptions of modality are in conflict: it is counterpart-wise possible that some object occupies a different spatio-temporal region from the one it in fact occupies, yet the very individuation of the objects does not allow for the possibility of such spatio-temporal divergence.²²

One might, on behalf of Lewis, consider various ways of dealing with this tension. For example, one might point out that individuation-based modality is 'intra-world' while counterpart-based modality concerns 'inter-world'

²⁰Extensional mereology, or the calculus of individuals, is a formal calculus for the part-whole relation according to which to any number of objects there corresponds precisely one object, their mereological sum, which has all of them as parts and includes nothing that does not overlap any of them. See Simons [1987] for a detailed and critical discussion of various systems of mereology.

²¹Quine has formulated just such a theory of material objects explicitly *as* his principle of individuation for them; cf. Quine [1985: 167; 1960: 171].

²²Lewis might argue that he has a region-of-space-time counterpart relation at his disposal, which picks out for a given object only counterparts that occupy regions of space-time exactly similar to the one it in fact occupies, and thus yields exactly the same statements as I have given—(MO2) and (MO3). However, this would be a very superficial remark: the content of the counterpart-based versions of (MO2) and (MO3) would be different from the content they have on an individuation-based account. Syntactically, the difference shows up in the small suffix x I have attached to the \Box .

relations (of similarity), and that therefore there is no real tension between the two notions. Anyway, attempts to absorb individuation-based modality into the counterpart-theoretic framework are bound to fail.²³ For present purposes it suffices to simply indicate the far from trivial consequences that my proposed understanding of the relation between the essentialist inference and the task of the ontologist have, by way of some interesting examples.

Another such example is the view known as *bare particularism*. I choose this example, despite all the delicate problems that it invites, because it illustrates the limiting case, so to speak, of the essentialist inference. On at least some versions of the doctrine, every existing thing is, at bottom, a bare particular which exemplifies a range of properties none of which is essential to it. The view in effect proposes an ontological reduction (in my sense) of everything to bare particulars: for existing things across the board, it holds that $x = y$ just if they are (or ‘have’) the same bare particular. Identity is *always* spelled out in terms of identity between bare particulars, whose identity and difference is, in turn, a brute fact.²⁴ It is important to note that this does not result in an ontology *without* essentialist commitments—it just makes these commitments very shallow and uninteresting. Take any random object, say, Socrates: he *can* be (identical to) anything (a set, a tree, a galaxy, . . .), but he will always be the self-same bare particular, in accordance with a principle of individuation like the following:

$$\begin{aligned} \text{(BP)} \quad x \text{ and } y \text{ exist} &\rightarrow (x = y \leftrightarrow b(x) = b(y)) \\ \text{(BP')} \quad x \text{ and } y \text{ exist} &\rightarrow (x = y \leftrightarrow \forall z(z = b(x) \leftrightarrow z = b(y))) \end{aligned}$$

($b(x)$ denotes the bare particular of x ; (BP) states the principle in its intuitive form, and (BP') in accordance with (PI')). Along familiar lines, we may conclude on the basis of (BP') that any existing thing has its bare particular essentially—and nothing more.²⁵

The bare particularist has to say that what it is to be (say) a set, is just to be a bare particular satisfying certain conditions that it could also fail to satisfy, just as most ontologists will say that what it is to be a bachelor (as defined earlier) just is to be a human being satisfying certain conditions (i.e., being unmarried and male) that it could also fail to satisfy.

For the not so austere ontologist who defends a more variegated list of ontological categories it is impossible to deny the essentialist inference for the categories that she allows without moving towards bare particularism. And even the bare particularist himself cannot avoid a residue of essentialism, however trivial that may seem to be (i.e., essential self-identity).²⁶

²³For a more thorough discussion of the issue, see my [2010].

²⁴For recent defences of bare particularism as a metaphysical view, see Moreland [1998, 2001]; Mackie [2006]; Sider [2006]; Davis and Brown [2007]—to be sure, none of them will accept my toy version of the doctrine. For recent critical discussion, see Mertz [2001, 2003]; Bailey [2010].

²⁵As I said, the discussions on these matters are fraught with difficulties. It is argued, for example, that Socrates is still essentially human, on a certain understanding of bare particularism, because Socrates needs to be human even though his bare particular need not. Such a view obviously does not reduce everything to bare particulars (or at least not Socrates). See, e.g., Moreland [1998, 2001]; Pickavance [2009]. I am not sure whether such views really make sense, but I won't pursue the matter here.

²⁶For a powerful defence of the same claim from a rather different point of view, cf. Fine's detailed analysis of Quine's arguments against 'quantifying in': Fine [1989, 1990, 2005].

7. Concluding Remarks

As we have seen, there is no way to pull any essentialist conclusions out of the hat of the mere statement of a principle of the form (PI) or (PI'). By reflection on the job of the ontologist, however, we have found out that what she says about the fundamental ontological categories is, in an important sense, different from everything we may then go on to say or ask about instances of these categories. While presenting her list of categories, the ontologist goes into the *stipulative mode*, so to speak; once they have been laid out, we can go into the *factive mode* and consider them and their instances.

What the ontologist tells us about the entities there are provides the background conditions for engaging in discussions about these entities, for considering what is, can or must be true of them. So if the ontologist says that sets are individuated by their members in accordance with (Set), this is meant to be part of these background conditions and hence not a matter of dispute once we accepted the ontology. We may of course question the ontology, but that's an entirely different game.

I have not elaborated on my sketchy formal reconstruction of the essentialist inference. Although this can surely be done (cf. the proposals in this direction by van Cleve [1985]), it would not change much with regard to the topic of this essay: the principles one needs to invoke in order to lay down such a formal reconstruction can be justified only by reference to considerations such as the ones I have given concerning the ontologist's project.

To conclude: the essentialist inference is as unproblematic as acknowledging the conceptual necessity of bachelors being unmarried. But, as Quine said, no entity without identity—we need principles of individuation for our ontologically fundamental categories. It is the peculiar role of ontological characterizations of such fundamental categories that makes the essentialist inference have interesting consequences. As long as one accepts that peculiar role—as surely most metaphysicians who subscribe to Quine's dictum do, realists and anti-realists alike—there seems to be little room for not accepting it. Some form of essentialism is simply inescapable.²⁷

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