A modal account of essence*

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Abstract

According to the simple modal account of essence, an object has a property essentially just in case it has it in every world in which it exists. As many have observed, the simple modal account is implausible for a number of reasons. This has led to various proposals for strengthening the account, for example, by adding a restriction to the intrinsic or sparse properties. I argue, however, that these amendments to the simple modal account themselves fail. Drawing on lessons from these failures, I propose a new version of a modal account, inspired by Ruth Barcan Marcus's defense of the coherence of quantified modal logic, according to which an object has a property essentially just in case (i) it has it in every world in which it exists, (ii) the property is discriminating (or non-trivial), and (iii) the property is qualitative. The resulting account of essence does not face any of the standard objections other accounts face, and I defend it from other potential objections.

1 Essence and counterfactual dependence

The distinction between essential and accidental properties was important for Aristotle in accounting for persistence, that is, how a thing can exist from one time to another while undergoing change. Changes in a thing that cause a passing-away, the "substantial" changes, involve the loss of properties *essential* to their bearers, while the others, the accidental changes (or "alterations"), tell us nothing concerning *what it is to be that thing*. More commonly nowadays, essential properties are appealed to in determining, not only when a thing ceases to exist from one time to another, but also when it ceases to exist from one *world* to another, a matter of central importance to the philosophy of modality.[1]

Baruch Brody (Brody, 1973) formulates the Aristotelian Account of Essence as follows:

AAE: An object o has a property ϕ essentially iff o has ϕ and would go out of existence if it lost it.[2]

We might also call this *the simple counterfactual account of essence*. The account is intuitive and, I believe, faithful to Aristotle, but it fails in its necessity direction. For suppose that I would have died as a child were it not for the antibiotics that I took. Then even though the right side of AAE is satisfied, surely it is not essential to me that I take antibiotics as a child—it is possible that I live

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[1] Essences have been important also for accounts that forgo possible worlds. For instance, Kit Fine argues that modality is reducible to essence; see e.g. (Fine, 1994).

[2] Brody develops a separate account of essence, which he also dubs 'Aristotelian', in (Brody, 1980). I will not discuss that account here.

a long life without taking any medicine whatsoever as a child. Perhaps it is essential to having lived the life I actually lived that I took antibiotics as a child, but having lived that life is no more essential to me than having taken antibiotics.

If a counterfactual account is to work, then, it needs to be strengthened. One way of doing so is defended by Berit Brogaard and Joe Salerno (Brogaard and Salerno, 2013) in their Counterfactual Account of Essence:

CAE: An object o has ϕ essentially iff (1) if there were no ϕs then o wouldn't exist, and (2) it is metaphysically necessarily that if o exists then o is ϕ.[3]

Thus, even if the first condition is satisfied in the antibiotics case, the second condition is not, and so it is not essential to me, according to CAE, that I took antibiotics as a child. While CAE is an improvement over AAE, it faces three important difficulties.

1. Like any counterfactual analysis, CAE must deal with the problem of counterpossibles, that is, counterfactual conditionals ('counterfactuals' for short) with impossible antecedents. On what is probably the most widely accepted semantics for counterfactuals, viz. the Lewis-Stalnaker account, every counterpossible is vacuously true.[4] In particular, if nothing had the property of being such that two and two are four, anything goes, including the fact that I would not exist, and so it would turn out essential to me, according to CAE, that I am essentially such that two and two are four. But intuitively I am *not* essentially such that two and two are four. What B&S say in response to this problem is that counterpossibles need not be vacuously true, and that, in particular, it is false that if two and two weren't four, I wouldn't exist. Even accepting this much, it does not help with other counterexamples, such as *being such that two and two are four and I don't exist* which, according to CAE, I have essentially. So B&S's version of CAE depends on a less attractive, non-standard account of counterfactuals that is, in any case, insufficient to ward off intuitive counterexamples.[5]

2. Even if we accept B&S's story about the semantics of counterpossibles, it still fails in its sufficiency direction. Consider the following example made popular by Fine but antedated by Michael Dunn.[6] Suppose a set exists iff its members do. Then, necessarily, if Socrates exists, so does {Socrates} of which Socrates is a member, whence condition (2) is satisfied. However, it is also true that if nothing were a member of the singleton, that would be because Socrates doesn't exist—otherwise he would be a member of the singleton. Thus, if nothing were a member of the singleton, Socrates wouldn't exist, whence condition (1) is also satisfied. But, goes the intuition, Socrates is not essentially a member of the singleton, and thus CAE fails.

B&S suggest the following way out:

> The properties: being a member of the set {Tabby}, being such that seven is prime, and being such that it's either raining or not seem irrelevant to the question of what it is to be Tabby [...] Here is an explanation of said intuitions: if there hadn't been sets

[3]They give two accounts, one that corresponds to the "ordinary use" of 'essence', which forgoes condition (2) of CAE and is equivalent to AAE, and the other, i.e. CAE, which corresponds to the "philosophical use" of 'essence'. My interest here is in their philosophical use of 'essence'.

[4]According to the Lewis-Stalnaker semantics, a counterfactual conditional 'If A were the case, B would be the case' is true iff in the "most similar" worlds where A is true, B is also true.

[5]See (Brogaard and Salerno, 2013) for the details. Their account also depends on a non-standard notion of the *a priori* according to which neither mathematical nor logical truths are *a priori*. I think it would be better to restrict the ϕ in CAE to contingent properties or else to rely simply on an intuitive understanding of counterfactuals rather than attempting to provide a more rigorous analysis in terms of impossible worlds and a relation of comparative similarity amongst them. Cases in which it is intuitively unclear what the truth-value of a counterpossible is (that is supposed to serve as a counterexample to CAE) could be dismissed as providing weak evidence against the view.

[6]See (Fine, 1994) and (Dunn, 1990b, §4).

(or if seven hadn't been prime,...), then Tabby might still have existed. (Brogaard and Salerno, 2013, p.646)

However, the counterfactual 'If nothing were a member of {Tabby}...' is not, as they suggest, a counterpossible, and the evaluation of its truth does not, as they suggest, depend on what goes on at worlds where there are no sets. Rather, it only depends on what goes on at worlds where nothing is a member of {Tabby}, and there are plenty of such worlds that are possible, at least on a common assumption (especially in this literature) according to which sets have contingent existence. The closest worlds in which there are no members of the singleton are *possible* worlds in which Tabby, and hence the singleton, doesn't exist—they are not impossible worlds in which no sets exist. CAE is therefore committed to the intuitive falsehood that Tabby is essentially a member of {Tabby}.[7]

Here is a separate worry. Suppose we want to say that the natural number two is essentially the (immediate) successor of one, or that it essentially has a certain position in the natural number sequence. Yet, if two were not the successor of one, that might be because two exists and one doesn't (at least this seems compatible with what B&S say about impossible worlds). But then CAE is committed to the intuitive falsehood that two is not essentially the successor of one. Similarly, perhaps it is essential to two that it have infinitely many successors. Yet, if it didn't, it might still exist because e.g. finitism is true. While one can deny these intuitions about the essence of two, there is a more general worry. If there is some extrinsic property that an object x essentially has in virtue of standing in some relation R to some *other* object y, CAE will wrongly deem it inessential to x that it have that property because, given their account of counterpossibles, its existence will not counterfactually depend in the required way on the existence of y.

3. According to CAE Socrates essentially exists, for, (i) if nothing had the property of existing, Socrates wouldn't either, and (ii) necessarily, if Socrates exists then he exists. But, as Kit Fine has claimed, "we do not want to say that he essentially exists" (Fine, 1994, p. 6). Fine raises this objection, among many others, to what I shall call the Simple Modal Account:

SMA: An object o has ϕ essentially iff, necessarily, if o exists then o has ϕ.

CAE inherits the existence counterexample from SMA since the counterfactual condition cannot help here. CAE also inherits the identity problem. It is not essential to Phosphorus that it be Hesperus, assuming identity properties are inessential, and yet CAE deems it so; for if nothing were identical to Hesperus, Phosphorus wouldn't exist. Even worse, consider an arbitrary object o. If nothing were self-identical, would o fail to exist? I would say so, because if nothing were self-identical, nothing at all would exist. (This might constitute an impossible but legitimate situation according to B&S.) But then CAE also wrongly implies that the property of being self-identical is had essentially by everything, a property that tells us absolutely nothing about any object whatever.[8]

4. According to CAE and contrary to intuition, it is essential to any distinct things that one is distinct from the other. For instance, if nothing were distinct from the Eiffel Tower, then only it or nothing would exist, and hence I wouldn't. Moreover, it is necessary that if I exist, I am distinct from the Eiffel Tower. According to CAE then, I am essentially distinct from the Eiffel Tower. These distinctness properties will play a central role in evaluating the various accounts of essence to be discussed below.

[7]The same point is made in (Steward, 2015).

[8]Some, e.g. (Fine, 1995), are careful to distinguish constitutive from consequential essences, where *being self-identical* may be seen as a consequential but non-constitutive essence of everything. However, B&S's discussion does not suggest that they are thinking of essences as consequential. Further objections to CAE can be found in (Torza, 2015) and (Steward, 2015).

It is objections like these that have led Fine to deny the simple modal account, calling it "fundamentally misguided". This has, in turn, motivated a number of attempts to rescue some form of a modal account of essence by adding further conditions to SMA. CAE is one such example, but there are a number of others. Before proposing my own account of essence, I want to look at three additional proposals for reviving a modal account and argue that they too fail. I will use the lessons drawn from these three accounts as a guide to formulating my own.

Since part of my aim is to provide an overview of what I take to be the most promising modal accounts of essence, I have raised potential objections to some of these accounts that I myself do not find worrisome. Indeed, in §5, I defend my own account from precisely these objections. And while my arguments could also be used to defend other accounts, in §6, I argue why one should nonetheless prefer the qualitative account of essence that I defend.

2 Intrinsicality-based accounts

One attempt to save a modal account of essence restricts SMA to intrinsic properties, giving us the Intrinsicality-based Account of Essence:

IAE: An object o has ϕ essentially iff (1) necessarily, if o exists then o has ϕ, and (2) o has ϕ intrinsically.

A version of IAE is defended by David Denby who claims that by "excluding extrinsic properties, [IAE] disqualifies properties that involve things other than their instances from being essential [...] [i]t thereby avoids Fine-style counterexamples, all of which do drag in other things" (Denby, 2014, p. 92).[9] In Fine's influential paper, he raises the following counterexamples to SMA:

1. *being a member of* $\{$*Socrates*$\}$;
2. *being distinct from the Eiffel Tower*;
3. *being such that there are infinitely many primes*;
4. *existence*.

Among these we can include the following additional example:

5. *being identical to o*, for a given object o.

Now there is one example of Fine's that does not "drag in other things", viz., existence. If existence is intrinsic, as it is on many accounts (e.g. it is a property the having of which cannot differ among duplicates—see (Lewis, 1986, pp. 61-62)), then IAE incorrectly deems it an essential property, just as SMA does. Denby says that a "useful test is that an intrinsic property cannot vary among duplicates" and cites Lewis (1986). This is problematic, however, because properties like being such that two and two are four never differs among duplicates, in which case they are intrinsically, necessarily, and hence (according to IAE) essentially had by all. Rae Langton and David Lewis claim that it is an acceptable consequence of their duplication account that all necessary properties turn out intrinsic.[10] Even if that were true, it would hardly be an acceptable

[9] Denby's version varies from IAE only in taking intrinsicality in the second condition to be global, i.e. ϕ must be intrinsic *simpliciter*, not just intrinsicality had by o. See also (Correia, 2007) for a different intrinsicality-based account. Jonathan Livingstone-Banks proposes an account of constitutive essences, as opposed to consequential ones, according to which they are necessary and intrinsic, and so runs into the same problems as discussed here concerning IAE. See (Livingstone-Banks, 2017).

[10] See (Langton and Lewis, 1998, p.340).

consequence of an account of essence that every necessary property is essentially had by all. A defender of IAE could simply disagree with Langton and Lewis and restrict the duplication account to contingent properties, but one should then keep in mind that this restriction carries over to their account of essence. One should also not that the duplication account needs to be restricted to qualitative properties, so defenders of IAE who believe in non-qualitative essences will need to choose a different account of the intrinsic.[11]

A related problem concerns identity properties. Denby says in the onset of his paper that "[b]eing Socrates is a property that Socrates must have if he is to be the object he is, but in some ways it doesn't seem to be a very good candidate for being an essential property either". But if identity properties are intrinsic, as they are on many accounts, then IAE wrongly deems them essential to their bearers. While identity properties are extrinsic according to the duplication account, given the discussion above, it is unclear whether a defender of IAE can help herself to such an account. Depending on what a defender of IAE takes to be the intuitive facts about essentiality they hope to preserve, it is unclear that there is any account of intrinsicality that will give them exactly what they need.

There are two main reasons to think that IAE fails in its necessity direction, one involving kinds and the other origins. It has been argued, for instance, that biological kinds are extrinsic, yet most essentialists take them to be essentially had by their bearers.[12] More generally, it is plausible that most sortal kinds are extrinsically had. One widely accepted solution to the problem of the many—i.e. the problem that there are is a large number of tables in front of me, e.g. my table minus a splinter, my table minus an leg, etc.—is to say that the property of being a table, though intuitively intrinsic, is extrinsic. It is extrinsic because "only the outernost, the sum of this nest of physical objects, counts as a table" (Quine, 1981, p. 93). In other words, *being a chair*, along with kind properties more generally, are *extrinsic*; in order to determine whether something is a chair we must look beyond the thing in question.[13] Since most believe kinds are essential to their bearers, this is perhaps the most devastating objection to IAE.

Properties of origin are largely extrinsic. If it is essential to Socrates that he originate from a certain zygote, then we have a counterexample to IAE. It is unclear whether Denby would be worried by this sort of objection, however, because he nowhere mentions origin essentialism, and he may happy to simply deny the doctrine. I raise it only to flag a potential cost for the view, since any defender of IAE will have to reject origin essentialism.

Another worry has been alluded to above involving abstract objects such as the natural numbers. If it is essential to the number two that it be the (immediate) successor of one, then we have yet another counterexample to IAE. The problem concerns anything that is at least partly extrinsically characterized.[14]

Michael Dunn also develops a intrinsicality-based account of essence in terms of relevant im-

[11]Suppose distinct objects *a* and *b* are duplicates. Since the property of being a duplicate of *a* does not differ among duplicates, it would turn out intrinsic. Thus a restriction to purely qualitative properties is needed.

[12]For discussion, see (Dumsday, 2012).

[13]See (Sider, 2001) for discussion.

[14]Denby argues against a version of the singleton objection that assumes that *having Socrates as member* is extrinsic (hence inessential according to IAE) by denying that sets have their members essentially. He could, instead, argue that the property is intrinsic, hence essential. An Armstrongian about sets, e.g., can hold that that having Socrates as member is intrinsic to the singleton since a set is a state of affairs that has Socrates as a non-mereological part. According to Lewis, the property would be extrinsic since the singleton is mereologically simple, but Lewis's views here are problematic for a number of reasons. See (Caplan et al., 2010) for an account according to which singletons have their members as mereological parts, in which case *having Socrates as member* would be intrinsic to the singleton (but perhaps not for other sets containing Socrates as member). For details concerning Armstrong and Lewis's views about the mereological relationship between sets and their members, see (Armstrong, 1991) and (Lewis, 1991).

plication:

RAE: An object o has ϕ essentially iff $\Box\forall x(x = o \rightarrow \phi(x))$,

where $\rightarrow$ is relevant implication (e.g. of the logic **R**).[15] RAE is a version of an intrinsicality-based account because Dunn reads 'o has ϕ intrinsically' as $\forall x(x = o \rightarrow \phi(x))$, and so RAE is just a formal rendering of IAE based on relevant logic.

From what Dunn says, one would naturally conclude that RAE gracefully deals with all of the standard objections:

> Tom could cease to be a member of the set Tom, Dick by virtue of Dick's non-existence, for then, on at least a standard intuition, the set would no longer exist. But this certainly produces a big change in the set. The only other way that the membership "relation" could fail to hold is for Tom not to exist, and this too would produce a change in the set. To recapitulate, if the membership "relation" were to fail to hold, this would require a change in the set, but it need not require a change in the member (in this case Tom). Thus membership determines relevant properties in only its second position. (Dunn, 1990a, p. 90)

But here Fine is right: "there is nothing in the "logic" of the situation to justify an asymmetric judgement of relevance; the difference lies entirely in the nature of the objects in question" (Fine, 1994, p. 7). Clearly the logic of the conditional cannot tell us that "membership determines relevant properties in only its second position", and so this must be presupposed. RAE therefore fails to deal with the example involving *being a member of* $\{$*Socrates*$\}$ without presupposing what is already at issue.

Like IAE, RAE also faces the objections from existence and identity. If we let ϕ be the property of existing, then the right side of RAE comes out true for any choice of object, and so it deems it essential to anything whatsoever that it exists. This is a consequence of the relevance-based account of intrinsicality according to which existence is intrinsic. Similarly, identity properties turn out essential, since it is a (relevant) logical truth that if anything is identical to o, then that thing is identical to o. Moreover, since the account of intrinsicality is spelled out rigorously, we cannot get around these problems by proposing an account of intrinsicality according to which existence or identity properties are extrinsic, which is at least an option that is open to defenders of less rigid versions of IAE.

These worries concerning (i) existence, (ii) identity, (iii) maximal properties such as kinds, (iv) intrinsic relations and, for some, (v) origin essentialism, raise serious doubts about the tenability of any intrinsicality-based account of essence.

3 Sparsity-based accounts

To keep matters simple, let us say that an arbitrary class of possibilia determines (or is) a property. For instance, $\{$Socrates, The Eiffel Tower$\}$ determines the property of being identical to either Socrates or The Eiffel Tower. Clearly no such property plays a role in making for genuine similarity, but they are nonetheless legitimate, instantiated properties. Call a *sparse* property a property

[15] See (Dunn, 1990b) and (Dunn, 1990a) for details. One can also formulate a relevance-based account where $\Box$ has narrow scope, or by eliminating the necessity operator altogether and using a modally loaded conditional such as that of the logic **E**, which is different from a strict **R**-conditional. One could also go with a disjunctive account based on these variations, so there are quite a few versions of the relevance-based account.

that "carves nature at its joints".[16] Call a property *abundant* if it is not sparse. Given the objections we have so far seen to modal accounts of essence that seem to involve abundant properties, a natural thought would be to restrict SMA to sparse properties, yielding the Sparsity-based Account of Essence:

SAE: An object o has ϕ essentially iff (1) necessarily, if o exists then o has ϕ, and (2) ϕ is sparse.

Nathan Wildman gives an independent motivation for SAE (which he calls *SPM*) as follows:

> Suppose that an abundant property P is metaphysically significant to an actually existing object o, such that P plays a part in determining what o is. Because P is metaphysically significant to o, any attempt to characterise the actual world without citing P would not fully determine what o is and would therefore be incomplete. As such, P is required to characterise things completely and without redundancy. And, since the sparse properties are those properties which characterise things completely and without redundancy, P must then be sparse. This, however, contradicts the initial assumption regarding P's abundance. So either P is not metaphysically significant or P is a sparse property, which is logically equivalent to the claim that being sparse is a necessary condition for being metaphysically significant. (Wildman, 2013, p. 764)

If part of what it is to be an object consists in having certain *non-qualitative* properties, then a property's being metaphysically significant cannot entail its being sparse or even being definable from sparse properties because such properties are typically taken to be *qualitative*. So the argument succeeds only if all properties that are metaphysically significant are qualitative.[17] I myself am partial to such a qualitative view about essences, but I suppose many others will not be, at least not without argument.[18]

On the other hand, if part of what it is to be an object includes only qualitative properties, then I do not see why some of those properties couldn't fail to be sparse. For instance, most would agree that the qualitative property of being a house is part of what it is to be a certain object, say the White House, and yet *being a house* is not a sparse property on even the most liberal understanding of sparsity.[19] It would be a significant bullet to bite to deny that abundant kind properties, such as *being a house* or *being a painting*, are essential to their bearers. Thus, one of the most significant drawbacks of the sparsity-based account is that it is too restrictive in excluding plausible non-sparse essences.[20]

Coming back to the problem of origin essentialism and SAE, and in order to deal with relational essential properties more generally, Wildman suggests disjoining the following to SAE:

SRM: Object o essentially bears relation ϕ to o' iff (i) necessarily, if o exists, then ϕ holds of the ordered pair $\langle o, o' \rangle$ and (ii) ϕ is a sparse relation.

[16] It does not matter whether we assume that sparse properties are instantiated.

[17] Alternatively, one could hold that the non-qualitative properties somehow supervene on the qualitative or that some sparse properties are non-qualitative, but these claim are contentious and largely disputed.

[18] I defend a qualitative account of essences below.

[19] I will say a bit more in §5 about the distinction between the qualitative and non-qualitative. Concerning sparseness, defenders of SAE endorse a liberal conception of sparseness according to which "the sparse properties are those properties invoked in the total scientific understanding of the world, regardless of level of occurrence" (Wildman, 2013, p. 766). On this scientific conception of sparseness, see (Schaffer, 2004). Sam Cowling (Cowling, 2012) defends an analogous sparse account of natures, but he thinks that natures are distinct from essences and so he is happy to endorse SMA for essences.

[20] See (Skiles, 2017) for similar and additional objections to a sparsity-based account.

However, I do not see how this is supposed to help with OE unless it is assumed the property *originates from* is sparse, an assumption that looks to me highly contentious. Concerning OE, Wildman says the following:

> SRM accounts for asymmetries in the essentiality of a relation via modal variation: assuming origin essentialism, it is essential to Socrates that he originates from gametes g, but not essential to g that Socrates originates from them. According to SRM, the former is true because, in every world where Socrates exists, the originates from relation holds of $\langle$Socrates, gametes$\rangle$. (Wildman, 2013, p. 773)

But whether SRM helps to account for asymmetries is beside the point. We cannot forget about condition (ii) of SRM which requires that the relation *originates from* be sparse. However, it is scarcely obvious that the origination relation is sparse and if it isn't, the sparsity-based account is incompatible with OE.[21] At any rate, while the defender of SAE is free to reject OE, the point is that they cannot accept OE and get around the problem of origins by an appeal to SRM.

Another problem with SRM is that if membership is sparse, as many think it is, then SRM wrongly yields that it is essential to Socrates that he be a member of $\{$Socrates$\}$. Moreover, if membership is sparse then its converse isn't, and so $\{$Socrates$\}$ won't have essentially Socrates as member.[22] Wildman simply bites the bullet here and maintains that it is essential to Socrates that he be a member of the singleton. I find it more plausible to deny such counterexamples on grounds independent of essence, a topic we will come to shortly.[23]

Alternatively, a defender of SRM could deny the sparsity of membership. But this would be of little help since we can construct a similar objection in terms of parthood which most consider sparse.[24] If a set literally has its members as part, then Socrates necessarily stands in the parthood relation to $\{$Socrates$\}$, and so he will essentially stand in that relation according to SRM.[25] But as many have agreed, it is not essential to Socrates that he be a member of any set. This example suggests the following more general worry involving parthood. Assuming mereological essentialism, it follows from SRM that a part is essentially a part of any whole it composes, if that whole exists whenever the part does (which is not generally the case). For example, assuming a necessary connection between an object o and its singleton, let $o + \{o\}$ be the sum composed of precisely o and its singleton. Then necessarily, if o exists, it is part of $o + \{o\}$. Assuming parthood is sparse, SRM wrongly yields that o is essentially part of $o + \{o\}$. Clearly this argument applies any time there is a necessary connection between distinct objects. For instance, if 2 necessarily exists, then o is essentially part of $o + 2$ for any o, which is certainly counterintuitive.

[21] Wildmam has suggested to me in personal communication that the origination relation will need to be sparse in order to characterize things completely. I would be surprised if this were the case since an object's originating e.g. from some particular matter can be described in terms of properties more fundamental than the origination relation. For instance, if I carve a doorknob out of a hunk of wood, then specifying that the doorknob originates from the wood can be given in terms of a specification of the causal relations and processes leading from my act of carving the knob out of the wood. At any rate, the burden of proof seems to me to lie on the SAE defender to show that *originates from* is sparse.

[22] The converse of a relation R is easily definable from R, so if a sparse relation is one that characterizes things without redundancy, then only one of R and its converse can be sparse, assuming them to be distinct.

[23] A referee offers the following response on behalf of the sparsity-based account: instead of membership, take the converse of membership to be sparse. This gets around both problems, viz. (i) Socrates being essentially a member of his singleton and (ii) the singleton not essentially having Socrates as member. The only issue I have with this clever response is that I find it somewhat implausible that an account of essence should favor one among many *prima facie* equally good set-theoretic primitives. Nonetheless, I think this response is favorable to biting the bullet.

[24] Lewis suggests that membership, parthood and identity are perfectly natural; see (Lewis, 1986, p. 67, fn. 47).

[25] This view is not widely held. David Armstrong held that sets have their members as non-mereological parts since sets are states of affairs; see (Armstrong, 1991). However, see (Caplan et al., 2010) for a view according to which singletons have their members as mereological parts.

A final worry concerns identity. If identity is sparse, then SRM wrongly implies that the property of being self-identical—a property trivially had by everything—is essential. The defender of the sparsity-based account has two options. First, she could deny that self-identity is sparse because e.g. it is definable via Leibniz's law in second-order logic. Second, she could accept that *being self-identical is* essential despite the fact that it plays no role in telling us what an object is. The second option seems to me to be a non-starter given the motivation of the sparsity-based account, according to which essential properties have the role of telling us what it is to be a given object. And the first option is problematic because even if *being self-identical* is logically definable, that does not make it *less* sparse than e.g. the property of being a human, a property which is also definable in terms of more fundamental resources but is nonetheless sparse according to the scientific conception employed by defenders of a sparsity-based account.

4 Discriminating-based accounts

In the debate between Quine and those who defended the coherence of quantification into modal contexts (what Quine called the third grade of modal involvement), Ruth Barcan Marcus responded to Quine by arguing that quantified modal logic (QML) is not committed to essentialism at all. In particular, QML is in no way committed to things having properties such as *being essentially two-legged* that figured prominently in Quine's arguments against QML's alleged commitment to Aristotelian essences.[26] A reconstruction of Barcan Marcus's defense of QML against Quinean charge of essentialism goes as follows. First, let us call (weak) essentialism the thesis that something bears a property necessarily that something else possibly lacks.[27] Now suppose there are at least two individuals o and o'. Then o has the property of being identical to o which o' lacks, and thus weak essentialism follows. However, while an identity property such as *being identical to o* is essentially had by o, the property of being self-identical is not, since it is non-discriminating (or "trivial" as Barcan Marcus puts it), i.e. it provably holds of everything. Now by the law of abstraction, we have that

Abstraction: $\langle \lambda y.\phi \rangle(o) \iff \langle \lambda y.\phi(o/y) \rangle(o)$,

where $\phi(o/y)$ results by replacing every free occurrence of o in ϕ by y.[28] That is, any predication "referential with respect to o" (i.e. one that involves a predicate abstract with an occurrence of o) is equivalent to one that is non-referential with respect to o. In particular,

$$\langle \lambda y.\Box y = o \rangle(o) \iff \langle \lambda y.\Box y = y \rangle(o);$$

that is, o's having the property of being necessarily identical to o is logically equivalent to o's being necessarily self-identical, which is non-discriminating. Barcan Marcus then says:

> This suggests that there is an additional sense in which provably essential attributes are trivial in QM. For any proof which is carried out with referential attributes may be paralleled by an equivalent proof with non-referential attributes [...] The question remains whether attributes of the sort which Quine discusses, e.g., two-leggedness, could

[26] See (Quine, 1966).

[27] See (Barcan Marcus, 1967). While Barcan Marcus assumes that the domain of each world is constant, we could allow a variable domain and rework the definition to add an existence condition, but to keep matters simple let us assume a constant domain. Fine discusses these two types of modal definitions of essence, calling one categorical and the other conditional.

[28] This assumes that all singular terms are rigid designators.

> be among the provably essential attributes of QM. Clearly they cannot be, for if [‘*o* is necessarily two-legged] were *categorically* true in QM, and since [*being two-legged*] is a non-referential attribute, any proof of [*o*’s being necessarily two-legged] could be carried out for any object whatever. But the implicit assumption of traditional essentialism is that such attributes are necessary to some objects but not to all. (Barcan Marcus, 1967, p. 96).

The last sentence is a demand for a discrimination constraint on essences: a property ϕ is essentially had by something only if it is not essentially had by everything—it must discriminate between objects. More precisely, we can say that an object has a property *non-discriminatingly* if the object's having the property is, given Abstraction, logically equivalent to its having a property that is necessarily had by all. For instance, the property of being identical to *o* is non-discriminatingly had by *o* because *o*'s having the property is, given Abstraction, equivalent to its having the property of being self-identical, which is necessarily had by all. (Properties necessarily had by all are therefore had non-discriminatingly by any object whatsoever.) Thus according to Barcan Marcus's view, *being idenical to o* is inessential to *o*. These considerations lead us to the following Discrimination-based Account of essence:

DAE: An object *o* has ϕ essentially iff (1) necessarily, if *o* exists then *o* has ϕ, and (2) *o* has ϕ discriminatingly, i.e. it is not the case that, necessarily, everything has ϕ, and *o*'s having ϕ is not equivalent to *o*'s having a property that is necessarily had by all.

This account is defended by Michael Della Rocca who formulates the discrimination condition as follows:

> There are two kinds of trivial necessary properties. The first kind consists of properties that are necessary not only to A but also to each thing. Examples are: being male if a bachelor and being self-identical. However, a property's being universally necessary is not required for its being trivial. Consider a property F which A has necesssarily but which is not universally necessary. A's possession of F fails to be grounded in A's specific nature if A's possession of F logically follows from A's possession of G, where G is universally necessary. (Della Rocca, 1996, p. 3)

Unfortunately, there is an infelicity in the way Della Rocca states the discriminating or non-triviality constraint that has caused some to object. In particular, Wildman argues that it leads to the consequence that no property is essential.[29] Consider *being human* which, we assume, is had essentially by Socrates. His having the property logically follows from his having the property of being human *if Socrates*, that is, that Socrates is human is a logical consequence of the fact that Socrates is human if Socrates (and the logical truth that everything is self-identical). But since everything has the property of being human if Socrates, Socrates would not be essentially human, and since the argument generalizes, no property would be essential to anything. However, given the fact that Della Rocca references Barcan Marcus's work and uses the same example involving identity propreties when stating the discriminating constraint, it is plausible that his own view is best captured by DAE. At any rate, Wildman's discussion is instructive by illustrating one way to *not* formulate the discrimination constraint.

DAE is, however, left unscathed by Wildman's objection, for *being human* is not *an instance* of a property that is necessarily had by all. Indeed, DAE does quite well in managing to skirt nearly all of the standard objections to the standard modal account. For instance, in addition to avoiding

[29] See (Wildman, 0126). Livingstone-Banks agrees; see (Livingstone-Banks, 2017, fn. 4; p. 828).

the objection from identity properties, it avoids the objections involving existence, *being such that there are infinitely many primes*, and *being part of the sum of Socrates and the number two*, a property that caused trouble for SAE. Moreover, according to DAE, it is essential to {Socrates} that it have Socrates as member.

Why think that essences need be discriminating? Barcan has already hinted at one. If a property is trivial then it fails to tell us what it is to be a *particular* object over any other object, and so such properties do not play one of the primary roles associates with (constitutive) essences. In other words, the discrimination constraint ensures that essences really do shed light on the true natures of things. Fine also considers the constraint as a way to avoid potential counterexamples, but dismisses it immediately:

> To get round the second difficulty [to the standard modal account according to which everything is essentially such that ϕ, for ϕ a necessary truth], one might make the additional demand on an essential property that it not be an essential property, in the original sense, of every object whatever. The counterexamples which were constructed from necessary truths would then be overturned. But these examples could be readily reinstated by conjoining the given degenerate essential property with one which was not degenerate. (Fine, 1994, p. 7)

Adding the discrimination constraint to the standard modal account (SMA), I am not essentially self-identical, since everything would be essentially so, but I am nonetheless essentially *self-identical and human*, since if I exist I have the property and the property *is* discriminating. But I find it curious that Fine simply *assumes* this to be problematic. The property *being self-identical and human* is necessarily coextensive with *being human*, which on many accounts makes the properties identical, and there is nothing wrong with my being essentially human, hence nothing wrong with my being essentially self-identical and human. It is only problematic on a hyperintensional account of properties that distinguishes the two, and even still it is not obvious that such properties should be inessential.[30]

There are only two standard objections that DAE cannot deal with. First, while it correctly deems it essential to {Socrates} that it have Socrates as member, it also deems it essential to Socrates that he be a member of the singleton, so it cannot account for the asymmetry between these two cases.[31] Second, DAE wrongly deems *being distinct from the Eiffel Tower* essential to Socrates, since the property is discriminating. Even though I am not much bothered by the set-theoretic objection for reasons we will come to shortly, the distinctness objection is serious enough to constitute a counterexample by my lights. So while DAE comes close to providing an adequate account of essence, it doesn't quite get there.

[30] On an account that identifies strictly equivalent properties, an account of essence need not be thought of as consequential rather than constitutive. For even if o is essentially ϕ, it cannot be essentially $\phi \vee \neg\phi$ (where $\vee$ is understood as property-forming) according to DAE, for instance.

[31] It is important to note that while the property *being such that Socrates is a member of* {*Socrates*} is trivial, neither *being a member of* {*Socrates*} nor *being a singleton having Socrates as member* are instances of it. I mention this because Zylstra objects to a modal account by arguing that for any such account there will be a pair of necessarily coexistent objects "that differ with respect to what is essential to them concerning some polyadic predicate they jointly satisfy" (Zylstra, 2017, p. 2), making such an account inadequate. To show this he implicitly appeals to Socrates and {Socrates} as a witness pair, claiming that only the singleton has essentially *being such that Socrates is a member of* {*Socrates*}. The problem is that both of them have this *non-discriminating*, Cambridge-looking property and, moreover, one has it essentially iff the other does. The asymmetry can only be captured through the use of the two *discrminating* properties each of which is had by precisely one of the pair, and this enough to undermine Zylstra's objection. The problem appears to lie in a confusion between the properties *being a member of* {*Socrates*} and *being such that Socrates is a member of* {*Socrates*}.

5 A qualitativeness-based account

I think DAE is two thirds correct, and one third incomplete—essences must be necessarily had and discriminating, but an additional constraint is missing. The two counterexamples to the account involving singletons and distinctness properties lead, I think, to a highly plausible third condition, but this condition is, I will argue, a very natural constraint on an account of essence, independently of avoiding counterexamples. The condition is that an individual has a property essentially only if the property is *qualitative*. This leads to the following Qualitativeness-based Account of Essence:

QAE: An object o has ϕ essentially iff (1) necessarily, if o exists then o has ϕ, and (2) o has ϕ discriminatingly, i.e. it is not the case that, necessarily, everything has ϕ, and o's having ϕ is not equivalent to o's having a property that is necessarily had by all, and (3) ϕ is qualitative.

QAE avoids all of Fine's counterexamples plus the identity one. Socrates does not have *being a member of* $\{$*Socrates*$\}$ essentially since the property is non-qualitative, and likewise for *being distinct from the Eiffel Tower* and *being identical to Socrates*. He does not have *being such that there are infinitely many primes* since the property is non-discriminating, and likewise for the property of existing and being self-identical.

What is it for a property to be non-qualitative? Roughly, it is for the property to essentially involve or depend on a particular (e.g. time, place, or individual). For instance, the property of being a tower is qualitative while the property of being distinct from the Eiffel Tower is not. Lewis defines the qualitative properties as those that are definable from the sparse (what he calls the "perfectly natural") ones, but many other proposals have been suggested.[32] For present purposes, I will simply take the notion as intuitive.

What motivates the view that essences be qualitative? First, non-qualitative properties seem to tell us very little if anything about the nature of things. For instance, consider identity and distinctness properties, such as *being identical to o* and *being distinct from o*. The bearing of such properties tells us nothing about the nature of the bearers partly because they make specific reference to the entity whose nature is under discussion or else to distinct entities altogether. Second, according to a naturalistic metaphysics that I favor, essences are scientifically "discoverable"; they are properties that are important to science that shed insight on the natures of *kinds* of entities. Third, there are what I take to be convincing reasons to reject non-qualitative essences—such as haecceities—that are posited as a means of providing *sufficient* conditions for transworld identity.[33] There are, however, three potentially problematic cases for a qualitative constraint on essences: (i) origin essentialism (OE), (ii) mereological essentialism, and (iii) membership essentialism (as I shall call it). I will address each of these in turn.

(i) Since this is not the place to give detailed arguments against OE, I will refer the reader to some excellent sources.[34] However, let me briefly explain what I take to be one of the main reasons for rejecting OE. Typically, OE is leveraged as a means for answering questions of transworld identity—that is, in telling us when two objects from different worlds are (possibly) the same.[35] Now suppose an object o originates from z, e.g., suppose I originate from a certain zygote z. Then, in order to determine whether something else in another world w is me, we need to determine

[32] See (Lewis, 1983) for Lewis's account, and (Cowling, 2015) for an overview of various other ways of drawing the qualitative and non-qualitative divide.

[33] The having of a property can provide a sufficient condition for being identical to o at one world but not another, e.g., because it is possible that two things satisfy the property. For this reason I am avoiding the term 'individual essence'.

[34] See e.g. (Robertson, 1998) and (Mackie, 2006, §§3.4–3.6).

[35] Being the same needn't mean being strictly identical, for two people, tables, etc. from different worlds can be the same people, tables, etc. without sharing all their properties.

whether that thing in w originates from z. (I am setting aside tangential worries, e.g. that two things in w could have originated from z.) In turn, determining whether something z' is z would require—given the purpose of positing origins—that z also have an origin and then determining whether z and z' have the same origin. Eventually, determining whether something in w is me will eventually bottom out in determining whether something in w originates from a certain hunk of matter m. For simplicity, let us assume that this something is the zygote z itself from which I originated. Therefore, in determining whether something is me in a world, we need to determine whether something originates from m. The problem, which Mackie calls the recycling problem, is that, intuitively, the zygote z need not have originated from m—z could have been synthesized from different material to form a structurally identical zygote from which I could have originated. Thus if OE plays a role in determining transworld identity, it needs to apply "all the way down". But it's implausible that it does, since hunks of matter don't have their origins essentially.[36]

Even if a defender of OE relaxes the principle of origin for certain objects, e.g. by requiring only that z originate from matter largely overlapping z—a view known as *flexible origin essentialism*—equally worrying problems arise. Through a chain of possibilities we can obtain the impossibility that o_1 could have been the same as o_2 which could have been the same as... which could have been the same as o_n, and yet o_1 and o_n originate from matter that fail to largely overlap, implying that they could have failed to be the same. This violates the principle that if o could have been o' and o' could have been o'' then o could have been o'', which follows from the necessity of identities. For suppose that *abc* originates from *a*, *b*, and *c*, that *cde* originates from *c*, *d*, and *e*, and that *acd* originates from *a*, *c*, and *d* and that for these objects originating from matter having at least two parts in common with one's actual origins is sufficient to originate from matter largely overlapping one's origins. It then follows, according to a flexible OE, that both *abc* and *cde* could have been *acd*, but that neither could have been the other; whence the thesis of flexible origins is false.[37]

Nonetheless, I see that a rejection of OE remains a potential cost for QAE. It could be avoided if properties of origin, such as having originated from some particular zygote, are qualitatively specifiable, but it is highly controversial that such properties are qualitative. Nonetheless, one reason in favor of defending qualitative properties of origin is that doing so allows one to avoid a commitment to haecceitism. For if the having of only one of the properties in question in a particular world is sufficient to be me, then there is a qualitatively indiscernible world that differs in what it represents *de re* concerning me, and this implies haecceitism.[38] So, for those who would prefer to avoid haecceitism, e.g. in order to maintain a supervenience thesis according to which representation *de re* supervenes on the qualitative, there may be reason for maintaining that properties of origin are qualitatively specifiable.

(ii) Let us now turn to mereological essentialism. Take the sum of *a* and *b*. If it has its parts essentially, then it has at least two non-qualitative properties essentially. So the question is whether sums have their parts essentially. I believe they do not for the reason that (concrete) objects, such as people and tables, just are the sums of their parts, and objects such as these could have had different parts. Consider the table before me. It is the sum of certain parts including its legs, and it is hardly plausible to say that its legs are essential to it. So the table, which I believe is the sum

[36] A referee suggests the following counterexample to QAE: it seems essential to the painting Guernica that it was created by Picasso. However, the argument just given against OE applies equally to artefacts such as paintings. If *being created by Picasso according to a certain plan* is used to uniquely pick out Guernica in worlds in which it exists, then there must be a property that uniquely picks out Picasso in worlds in which he (or at lest Guernica) exists, contrary to the argument just given. Moreover, I do not find it more compelling that artefacts should have non-qualitative essences than should non-artefacts, such as people.

[37] Alternatively, the defender of flexible origins could deny the necessity of identities, but this would constitute a significant cost for most defenders of OE.

[38] I am here following Lewis's definition of haecceitism; see (Lewis, 1986, §4.4).

of its parts, could have had different parts. I believe in sums *because* I believe in composite objects, and I believe that a composite object is, at any given time, nothing more than the sums of its parts at that time. Since I also believe that ordinary composite objects could have had different parts, I believe the same of sums.[39]

One reason, and I think a poor one, to accept mereological essentialism derives from the view that sums are akin to sets, which the majority believe to have their members essentially. Why believe that sets and sums are analogous in this respect? One reason, I imagine, comes from the view that sums (at least some of them) are individuated *entirely* by their parts in the same way that sets are individuated entirely by their members. Once you've specified a set's members, you've specified the set, and that gives us some reason to think that sets have their members essentially. But if ordinary things are the sums of their parts, then the analogy between sums and sets breaks down. I am the sum of my constituents, but I am individuated neither entirely nor even partly by my constituents. It's possible that something have the same parts as me and yet that thing fails to be me, even when those parts are arranged in the same way my parts are now arranged. Moreover, even arbitrarily specified sums fail to have their parts essentially because (i) their parts could have had different parts, as with the sum of this table and the Eiffel Tower, and (ii) parthood is transitive (unlike membership). It would not help the mereological essentialist to say "let o be the object having exactly the parts a and b, where a and b are simples" (further assuming that a simple could not have had parts) with the intention of denoting an object that essentially has a and b as parts. For there is no reason to think that we can define into existence objects having precisely the essences we desire. The mere fact that an object is picked out entirely in terms of its parts does not make it essential to that object that it have those parts. I conclude that there is no good reason to think that sums and sets are analogous in the respect of having their constituents (i.e. parts or members) essentially.

One worry for the anti-essentialist view I've just sketched concerns the problem of coincidence. If composite objects are nothing more than the sums of their parts, then since a statue and the sum of its constituents have the same parts, I am committed to their identity. Yet, intuitively, they have different properties, e.g. one could have survived squashing and the other not, whence by Leibniz's law the two are distinct. What I say in this case is that whether a thing has a certain, e.g. modal but also temporal, property depends on how the thing is picked out. This is similar to a counterpart-theoretic solution to the problem, according to which one and the same thing may have different properties in virtue of being picked out by names that evoke different counterpart relations, such as one that emphasizes the statuehood of an object or one that emphasizes its being a lump of clay. This makes it true that a statue *can* survive squashing as long as it is picked out using the right sortal or expression that evokes a counterpart relation according to which the statue has counterparts that survive squashing.[40]

(iii) What about sets then? Is it not essential to {Socartes}, e.g., that it have the non-qualitative property of having Socrates as member? I am a structuralist about abstracta such as sets, and what does not exist cannot have essential properties, so potentially problematic cases involving non-qualitative essences of sets do not arise for me. However, since not everyone believes in structuralism (or nominalism), let me briefly discuss a few additional reasons for rejecting essentialism about membership.

We should first distinguish two separate principles. The first is a modal version of Extension-

[39]See (van Inwagen, 2006) for a defense of such a view.

[40]See (Noonan, 1991), (Fine, 1999), and (Paul, 2004) for related but importantly different views. In particular, Paul does not maintain the identity of the statue with its constituents since they bear different representational properties and are thus distinct objects. Similarly, for Fine the lump and the lump qua statue have different modal properties, but they are again distinct objects.

ality:

Extensionality: $\Box\forall z((z \in x \leftrightarrow z \in y) \rightarrow x = y)$,

which says that, necessarily, any two sets with the same members are the same set. Extensionality provides an individuation condition for sets—it tells us exactly when two sets are identical. Clearly, however, it is not an essentialist principle—it does not imply that sets have their members necessarily. Indeed, no modalized version of the axioms of set theory (e.g. **ZFC**) entails an essentialist principle, so essentialism about membership does not flow from our best theory (or theories) of what sets are. Such an essentialist principle constitutes a further metaphysical postulate that is up for negotiation. Whether we accept the following very distinct principle of Membership Essentialism (or some analog) will depend on many things, including a consideration of the role sets are supposed to play within various discourses:

ME: $\Box\forall x\forall y(x \in y \rightarrow \Box(E!y \rightarrow (E!x \wedge x \in y)))$.[41]

The main point is that ME does not follow from a *mathematical* conception of set, a conception that gives us our best (and consistent) handle on what sets are.

What role is the notion of a set supposed to play? Some tell us that "a pack of wolves, a bunch of grapes, or a flock of pigeons are all examples of sets of things" (Halmos, 1974, p. 1). But packs of wolves, bunches of grapes, and the like do not have their members essentially; when one amongst the pack dies, the whole pack does not cease to exist. Similarly, others tell us that "a set is a collection of all elements that satisfy a certain given property" (Jech, 2006, p. 3). But the collection of things that are red can change its members from one time to another. Thus, according to one of the roles played by sets, sets do not have their members essentially. One may argue that the technical notion of a set is different from the intuitive notion of a collection (which must be the case if the latter is inconsistent) and that we therefore have little to no reason to buy into this sort of argument against membership essentialism, but the point is simply that, while one finds no justification for membership essentialism in the *technical* notion of a set, one will equally find no justification for the doctrine in the *intuitive* notion either.

There are, of course, different ways to denote a set, and one way is to provide an exhaustive list of its members, as with '{Obama, Lincoln}'. Every set can be denoted non-rigidly, e.g. the previous set by 'the set of US presidents to have served either in 1862 or 2010'. Assuming the extensions of the expressions is identical, does that extension have its members essentially or not? I see no compelling reason to think that it does. If there is a particular worry about not being able to pick out "the same set" from world to world, I think that worry is easily appeased by the fact that we can introduce a term that rigidly picks out {Obama, Lincoln}. Again, it is a further question whether that term picks out a particular set with its own nature.

Another role sets serve is to represent (or be) properties or universals, a view known as *class nominalism*. One of the main objections to this brand of nominalism is known as Wolterstorff's argument which runs as follows.[42]

1. Sets have their members essentially.[43]

2. Properties do not have their instances essentially.

[41] See (Forbes, 1983) for discussion of a related principle, viz. $\Box\forall x\Box\forall y\Box(y \in x \rightarrow \Box(E!x \rightarrow y \in x))$.

[42] See (Wolterstorff, 1970).

[43] There is often a distinction made between sets and classes, where the latter may be so large that they cannot be members of other classes, such as the class of all ordinals. Such classes are called *proper*. This distinction will play no role in the discussion to follow so I will 'set' and 'class' interchangeably.

3. Therefore, properties are not sets.

The first premise is simply assumed. If we assume the second premise and class nominalism, we could just as well conclude that sets fail to have their members essentially.[44] This is analogous to inferring, as I did above, that things like tables are sums which fail to have their parts essentially, so (at least some) sums fail to have their parts essentially. What can we say, then, about the problem that *being renate* and *being cordate* are intuitively distinct and yet they have the same members, making them the same set according to extensionality? The only available option for this strategy is to deny that the sets are distinct, despite having the same members. This requires giving up Extensionality as a criterion for set individuation, but that should be unsurprising for anyone going this route. Sets will be individuated the same way properties are.[45]

Another way to avoid the conclusion of Wolterstorff's argument is to maintain that there is a sense in which properties do have their instances essentially: if properties are sets of their *possible* instances, then since the *possible* instances of a property never change, properties have their (possible) instances essentially. This is Lewis's way out of a variant of Wolterstorff's argument: the property of being renate has the same set of instances as the property of being cordate, yet the properties are distinct. Since they have different possible instances, they are distinct on Lewis's view, and the objection is avoided.[46] The main drawback of Lewis's solution is that it relies on modal realism, but I see no reason in principle why the ersatzist couldn't pursue the same strategy as long as they have enough ersatz possible individuals at their disposal.[47]

Just as the statue and its constituents are identical because they have the same parts, it can differ with respect to its own modal and hence essential properties depending on how it is picked out. Likewise, the set that is referred to by 'the set consisting of all and only the creatures with a kidney' will have different possible instances when it is referred to by 'the set consisting of all and only the creatures with a heart'. So there is reason after all to hold that sets and sum are analogous with respect to whether they have their constituents essentially.

In the end, I am not wedded to the view that certain objects, such as sets or mere sums, fail to have their *constituents* essentially. Perhaps there are good reasons to hold that mere sums have their parts essentially, or that states of affairs have their constituents essentially, or that sets have their members essentially. If they do, then I would be fine with weakening QAE to allow that an object o can have a non-qualitative essence but only insofar as that essence involves no more than the constituents of o. Let me therefore propose a slight weakening of QAE that is compatible with there being a very restricted class of non-qualitative essences:

QAE*: An object o has ϕ essentially iff (1) necessarily, if o exists then o has ϕ, and (2) ϕ is discriminating (i.e. it is not the case that, necessarily, everything has ϕ and ϕ is not an instance of a property that everything necessarily has), and (3) ϕ is qualitative *unless it concerns a constituent of* o.

I do not think the qualification on the third condition is *ad hoc* for the reason that there arise only very few cases, e.g. involving sets or sums, that motivate the restriction.

[44] Cf. (Barcan Marcus, 1974).

[45] This might be thought to get things backwards. The whole point of class nominalism is to identify properties with well-behaved entities whose individuation conditions are unproblematically specified. What are the individuation conditions of properties?

[46] See (Lewis, 1986, pp. 51–57).

[47] Cf. (Busse, 2016).

6 Final remarks

Where does this leave us? Besides the simple modal account, we have considered six separate modal accounts of essence. It will be helpful to diagram the views to illustrate how they compare in terms of the main counterexamples discussed. An 'X' indicates that the counterexample of the left-most column—*or a closely related one*—is a problem for the account, a '✓' indicates that it is not, and a '—' indicates that it may or may not be depending on certain background assumptions. In other words, 'X's are negative for the account while checks are positive.[48]

	CAE	IAE	SAE	DAE	QAE	QAE*
$x \in \{\text{Socrates}\}$	X	✓	X	X	✓	✓
$x \neq$ Eiffel Tower	X	✓	✓	X	✓	✓
$\langle \lambda x.2+2=4 \rangle$	✓	X	✓	✓	✓	✓
$\exists y y = x$	X	X	X	✓	✓	✓
$\langle \lambda x.x = \text{Socrates} \rangle$	X	—	X	✓	✓	✓
x is a house	✓	X	X	✓	✓	✓
$x = x$	—	—	X	✓	✓	✓
Membership essentialism	✓	X	X	✓	X	✓
Origin essentialism	✓	X	—	✓	X	✓

First, some of the potential counterexamples may be considered weightier than others which is a consideration the table fails to take into account. Second, some of the potential counterexamples might cause problem for an account for the same reason, in which case the table has counted one objection twice over. Nonetheless, I think the table strongly suggests that some version of a qualitative account prevails. Third, while QAE* appears the most impressive, it does face the objection that is relies on a constraint that is *ad hoc*. However, while I did not have space to argue for the claim, I think it can be defended on various grounds that the restricted qualitative constraint is well justified.

I have defended QAE in part by rejecting some popular essentialisms. What is to stop defenders of other accounts from doing the same, in an effort to make their account appear more attractive? Nothing, of course. However, even adding checks to the last two rows of IAE and SAE would not paint them in a substantially better light compared to QAE and QAE*. For they still face a number of compelling counterexamples that a qualitative account needn't worry about.

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[48]To simplify matters, I have assumed the CAE is specifically the account of Brogaard and Salerno, and that SAE is Wildman's version of the account.

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