**Essence and Intrinsicality**

In the first half of this paper, I argue that essential properties are intrinsic and that this permits a modal analysis of essence that is immune the sort of objections raised by Fine (1994). In the second half, I argue that intrinsic properties collectively have a certain structure and that this accounts for some observations about essences: that things are essentially determinate; that things often have properties within a certain range essentially; and that the essential properties of things are their core properties.

I

According to Kit Fine (1994: 1), “a property of an object is essential if it must have the property to be what it is; otherwise, the property is accidental.”[[1]](#footnote-1) One might attempt to analyze this in modal terms, i.e. in terms of quantification over worlds:

[M] x has F *essentially* iff x has F at every world.[[2]](#footnote-2)

Often, of course, quantifiers are restricted. Some restrictions on [M]’s world-quantifier vary with context, allowing that x has F essentially in some contexts but not in others; others don’t, e.g., a restriction to worlds where x exists. (This restriction is required if contingent things are to have any essential properties at all. Contingent things don’t have any properties at every world because they don’t exist at every world, and existing is a prerequisite for having properties.)[[3]](#footnote-3)

Fine rejects [M]. For any necessary truth P, the property *being such that P* is one everything has at every world. So, by [M], it is one everything has essentially. But, intuitively, *being such that there are infinitely many primes* or *being such that modus ponens is valid* are not among the essential properties of most things. Primes and logic have nothing to do with what makes me the object I am, for instance. Indeed, since facts about identity and diversity are necessary, and everything is either identical to or distinct from everything, [M] entails that everythingis involved in the essence of everything. Surely not! Surely, it not part of my essence to be distinct from the Eiffel Tower or from some speck of dust on Mars, or from the number 15—these things are just irrelevant to what makes me the object that I am. Restrictions on [M]’s world-quantifier only make matters worse. If the worlds are restricted to those where P is the case, then [M] entails that *being such that P* is one of x’s essential properties, whatever P says. Fine points out that a restriction to worlds where x exists means that existing becomes an essential property of everything, which doesn’t sound very plausible (except perhaps for God).[[4]](#footnote-4)

He concludes that modal analyses of essence are doomed. In fact, he doubts the viability of any analysis; he thinks we should take essence as primitive.[[5]](#footnote-5) He even urges that we turn the tables on [M] and analyze modality in terms of the essences of things:

We should view metaphysical necessity as a special case of essence…[E]ach class of objects…will give rise to its own domain of necessary truths, the truths that flow from the nature of the object in question. The metaphysically necessary truths can then be identified with the propositions that are true in virtue of the nature of all objects whatever. (1994: 9)

From this perspective, [M]’s modal approach fails because each class of objects “…makes its own contribution to the totality of necessary truths; and one can hardly expect to determine from the totality itself what the contributions were.” (1994: 9)

II

However, taking essence as primitive is itself problematic. For one thing, it doesn’t really seem basic enough to make an attractive primitive. When we say that x has F essentially, usually we don’t just mean that x couldn’t survive the loss of F. Usually, we mean that x couldn’t survive any variation in the kind of property to which F belongs. If something is essentially red, then it couldn’t survive not being red, but not simply because it couldn’t survive having redness deleted from its property-profile. Nothing could survive that. That would leave it without any color, and presumably no colored thing could survive becoming uncolored. Indeed, it would leave it with a gappy property-profile, and nothing at all could be like that. Surely everything is essentially determinate. Everything must have a full complement of properties; it must be complete. Things *change* their features; they don’t simply lose them. Something loses redness by gaining some other color instead. And it is that change we usually intend to rule out when we say that x is essentially red. We don’t mean it couldn’t be uncolored, we mean it couldn’t be one of the other colors—blue or green or yellow or… It couldn’t survive any such *variation* in its color. Similarly, Socrates is essentially human not just because he couldn’t survive failing to belong to a species—no living thing could do that—but because he couldn’t survive belonging to a *different* species; he couldn’t be a dog or a marigold or a unicorn. His height, mass or color might vary, but not his species. *Mutatis mutandis*, for almost all quotidian essential properties.[[6]](#footnote-6) Gold has atomic number 79 essentially because pieces of gold cannot vary in the atomic numbers of their atoms, even if they might change in other ways. The table is essentially wooden because it cannot vary in its constituent material, even if it might vary in color or age or shape. And so on. Essence, in short, involves invariance. But that would seem to make essence a poor primitive. How could invariance be conceptually basic? Invariance presupposes a dimension—color, species, atomic number, constituent material—along which there might have been variation, but isn’t.

For another thing, the notion of an essence seems rather too foggy to make a promising primitive. For a start, it is unclear which kinds of properties could be essential to things. Is every qualitative property eligible? The obvious place to start is with the determinate, natural properties. These are the properties on which so much else supervenes; they determine what the world is like. But they are dubious candidates. Could anything really be essentially *exactly* 17.3kg in mass, not a jot more or less? That would be a very fragile thing indeed. Could anything really be essentially just one determinate shape? Or essentially a certain exact shade of red?[[7]](#footnote-7) And what about haecceities, properties of the form, *being so-and-so*, e.g., *being Socrates*? Are they eligible to be essential? *Being 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. Only he could have it, yet we usually want to allow that distinct things, e.g., Socrates and his twin-Earth doppelganger, might share a complete essence, that they might be “essentially the same”. Moreover, we usually think of the essential properties of a thing as its “central” or “core” properties in some sense, but haecceities don’t seem to be central or core properties in any sense.[[8]](#footnote-8) Haecceities are unrelated to all other interesting features of things, such as their qualitative natures, their powers, and their causal relations to other things. Socrates and his doppelganger could be exactly alike in all their interesting features, even extrinsic ones if the universe is suitably symmetrical, despite differing haecceitistically. What about Boolean consequences of essential properties? Are they eligible to be essential properties? Socrates has the property *being human* essentially, but does he also thereby have the property *being human or famous* essentially?[[9]](#footnote-9) It is also unclear which kinds of things have essences. Fine wants to root all necessities in essences, so, since there are necessary truths about every kind of thing, presumably for him, every kind of thing had better have an essence. But why? Why couldn’t there be protean things that have all their properties accidentally? Things usually have some of their properties accidentally, why not all of them? There are few properties that I couldn’t do without, determinate qualitative ones at least. I could have been a little taller or shorter, a little more or less massive, and so on. Finally, it is even unclear whether our talk of the essences of things is really rooted in the natures of the things themselves or merely reflects restrictions evoked by the conversational context. Perhaps essentialism is a wholly linguistic phenomenon.[[10]](#footnote-10)

In short, the notion of an essence is neither conceptually basic nor clear enough to make a very promising primitive. Anyway, could an analysis of modality in terms of the essences of things really succeed? There seem to be many necessary truths that are not rooted in the essences of things, at least not actual things.[[11]](#footnote-11) It is a necessary truth that had Hamlet existed, he would have been human, but there is nothing, no Hamlet, whose essence makes it so. Presumably unicorns are essentially equine, but not in virtue of the essence of any existing thing. One might respond by accepting that essences, including individual essences like Hamlet’s, exist uninstantiated, but not everyone would.

III

I think we should give the modal approach a second look.[[12]](#footnote-12) In this section, I explore a simple fix to [M]: require that essential properties be *intrinsic*:

[M\*] x has F essentially iff x has F at every world *and F is intrinsic*.

Roughly, a property is intrinsic iff its instantiation is insensitive to the state or nature of anything other than its instances; otherwise, it is extrinsic.[[13]](#footnote-13) Whether something is red, or 3kg, or round is a matter of how it itself is, regardless of anything else. So redness, *being 3kg*, and roundness are intrinsic properties. A useful test is that an intrinsic property cannot vary among duplicates.[[14]](#footnote-14) By contrast, whether something is alone in the universe, or coexists with something red, or is a meter from the wall does depend on how other things are, so *being alone*, *coexisting with something red*, and *being a meter from the wall* are extrinsic properties. (Some extrinsic properties contain an intrinsic admixture. For a thing to instantiate *being the only red thing* not only must everything else be non-red, an extrinsic matter, but it itself must be red, which is an intrinsic matter. For simplicity I’ll ignore these properties and pretend that every extrinsic property is purely extrinsic, i.e. entirely insensitive to the intrinsic nature of its instances, like, e.g., *membership in the singleton of Socrates* and *being a meter from the wall*. This simplification is harmless as long as impurely extrinsic properties all factor into a purely extrinsic property on the one hand and an intrinsic property on the other, which I think they do, though I won’t argue for that here.[[15]](#footnote-15))

By excluding extrinsic properties, [M\*] disqualifies properties that involve things other than their instances from being essential. It thereby avoids Fine-style counterexamples, all of which do drag in other things—primes, argument forms, the Eiffel Tower, specks of dust, etc. Moreover, classifying essences as intrinsic seems natural. What makes an object the object it is surely has to do with *its* features; what other things are like is just irrelevant.[[16]](#footnote-16) Indeed, extrinsic properties, at least the qualitative ones, seem all ultimately to concern not just what other things are like, but what other things are like *intrinsically*.[[17]](#footnote-17) For a thing to have an extrinsic property, something else—another thing, the whole of the rest of the world, a pair (or triple, or…) or a plurality of things—must be a certain way intrinsically.[[18]](#footnote-18) Something is alone iff the rest of the world is empty. Something is a meter from the wall iff the pair of it and the wall has the intrinsic property of having members a meter apart. Something is one of many iff a certain plurality has the intrinsic feature of being numerous. (Qualitative) extrinsic properties, it seems, are grounded ultimately in intrinsic properties of other things—reflected light that requires a light source. How could it really be that x is F by virtue of y’s being F\*, and y is F\* by virtue of z’s being F\*\*, and so on ad infinitum, where F, F\*, F\*\*,… are all (qualitative) extrinsic properties? That seems to be a good reason to think they are not essential to it.

Intrinsicality is a relatively clear notion.[[19]](#footnote-19) And classifying essences as intrinsic dispels some of the fog surrounding essences. Are Boolean consequences of essential properties also essential? It depends on whether the compound is intrinsic. Socrates has both *being human* and *being rational* essentially: he has both properties in all worlds and both properties are intrinsic. He also has their conjunction, *being human and rational*, essentially, for he has it at every world and since the conjunction of intrinsic properties is intrinsic, it is also intrinsic. But he does not have *being human or famous* essentially: it is one he has at every world, but the involvement of fame renders it extrinsic. Does restricting the world-quantifier in [M\*] to worlds where x exists entail that everything exists essentially? Only if existence is an intrinsic property. If, for instance, it is a second-order property and this means that it is not intrinsic (to the things that exist), then nothing exists essentially. [M\*], of course, is neutral on the nature of existence. But leaving the question of whether anything exists essentially as a substantial metaphysical issue having to do with the nature of existence is how it should be.[[20]](#footnote-20) At least it is an improvement on [M]. What is objectionable about something existing essentially is that existence should belong to its *nature*, not that the thing should exist at every world where it exists.[[21]](#footnote-21)

IV

There are some natural worries about proposing to analyze essence in terms of intrinsicality. For one, is it circular? I don’t think so, but I won’t explore the issue. The intrinsic/extrinsic division among a thing’s properties concerns which of them characterize it alone and which are sensitive to its environment, whereas the essential/accidental division concerns which it could lack and which it couldn’t. On the face of it, these seem to be quite different ideas. And clearly things have intrinsic properties that are not essential to them—mine include my particular color, mass, shape, and height.[[22]](#footnote-22)

One might also worry that abstract and grounded entities have some extrinsic properties essentially, in violation of [M\*]. Sets, for instance, are defined by their membership; it is what makes them the very entities that they are. So a set containing Socrates does so essentially. But *contains Socrates* is an extrinsic property. Presumably, whether a set contains Socrates doesn’t have anything to do with its intrinsic properties, whatever they might be. How could a set—or anything else—*intrinsically* involve something distinct from itself? So sets have some extrinsic properties essentially, and [M\*] is false. *Mutatis mutandis* for grounded entities generally: if x is grounded in y, then *being grounded in y* is an extrinsic property that is essential to x.

The best response to this worry, I think, is to deny that sets have their members essentially. This might sound like a non-starter, but it is hard to see what good reason there really is for supposing that they do. Of course, this is not to deny that it is a necessary truth that Socrates’ singleton, “{Socrates}”, contains Socrates[[23]](#footnote-23), but that doesn’t show that it has *contains Socrates* essentially. It is a necessary truth that Socrates is such that modus ponens is valid, but he does not have *being such that modus ponens is valid* essentially. That was Fine’s original objection to [M]—it fails to distinguish a thing’s essential properties from among those it has necessarily. It seems arbitrary just to ignore the distinction in the case of sets (and other grounded entities).

Neither set theory itself nor any of its theoretical deployments seems to require that {Socrates} have *contains Socrates* essentially. They require only that, for any things, there be a unique set having exactly those things as members, and presumably that this be the case at every world.[[24]](#footnote-24) This shows that nothing that doesn’t contain Socrates could qualify as his singleton, but nothing follows about the essence of the singleton itself. At every world, Socrates’ dog belongs to Socrates, but it is not of the essence of any dog to belong to Socrates; it is just that if they part ways, the dog no longer qualifies as his. Indeed, the utility of set theory does not even seem to require that {Socrates} be the same entity at every world—perhaps a different entity plays the {Socrates}-role at different worlds. But even if it is the same entity, it still doesn’t follow that it has *contains Socrates* essentially. One and the same entity is Socrates at every world and he has *being a member of {Socrates}* at every world, yet, as Fine points out, it is implausible to suppose that *being a member of {Socrates}* is essential to Socrates—what makes Socrates the very thing he is surely has nothing to do with set theory.

Nor does the epistemology of sets seem to require that {Socrates} have *contains Socrates* essentially. It is true that we know very little that is distinctive about {Socrates} except that it contains (only) Socrates, but sets are mind-independent entities, so it is hard to see how anything about their essences could follow from epistemological facts, let alone from our ignorance about sets! We know very little that is distinctive about Jonah except that he was swallowed by a whale, but presumably this was not part of his essence. Indeed, if anything, epistemological considerations undermine claims to know about the essences of sets. Sets are abstract, so any putative knowledge of their essences was not gained by causal acquaintance with them. Nor was it gained on the basis of intuitions about the nature of properties like *contains Socrates*. Such properties are non-qualitative and non-natural, which would seem to preclude intuitive insight into them.

Nor does semantics require that {Socrates} have *contains Socrates* essentially. It is true that the reference of ‘{Socrates}’ depends on the reference of ‘Socrates’, but sets are language-independent entities, so it is hard to see how anything about their essences could follow from mere semantic facts. We often refer to things via their accidental properties—the thing by the wall, the father of the bride. Granted, unlike things by the wall and fathers, ‘{Socrates}’ can be referred to in only one way, viz. via Socrates. But how could the impoverishment of our semantic resources reveal anything about the essences of any language-independent things referred to?

Most seriously, there does not even seem to be anything about the metaphysics of sets (or their members) that requires that sets have their members essentially. It is true that {Socrates} exists only if Socrates exists, but Socrates exists only if {Socrates} exists too—they exist at the same worlds—yet, as we have just seen, it is implausible to suppose that *being a member of {Socrates}* is essential to Socrates. It is true that {Socrates} unlike Socrates is *abstract*, but quite what abstraction amounts to is notoriously obscure.[[25]](#footnote-25) If *being abstract* is intrinsic, then it is hard to see how it can have any bearing on whether an extrinsic property like *containing Socrates* is essential to {Socrates}. But even if *being abstract* is extrinsic—perhaps it is a matter of being abstracted *from* something: its origin or source or ground—it is still hard to see how anything about the essence of {Socrates} should follow. Plausibly, blueness is abstracted from blue things, but nothing obviously follows about the essence of blueness. In particular, *being instantiated by the sky* (or by any other actually blue things) does not seem to be essential to blueness—blueness exists at worlds that have only alien blue particulars, and even worlds without any blue particulars at all if Platonists are right. Either way, the fact that sets are abstract does not seem to show that *contains Socrates* isessential to {Socrates}.

Perhaps one thinks, with Fine, that necessary truths must all be grounded somehow in the essences of things. Then the necessary truth that {Socrates} contains Socrates must be grounded in the essence of something. But it is not grounded in the essence of Socrates, so it is tempting to suppose that it must be grounded in the essence of {Socrates} instead. However, there is a third, more natural option: it is grounded in the essence of the *pair* of {Socrates} and Socrates. Pairs, sums, and pluralities have essences too; they’d better if all necessary truths are grounded in essences because they too are the subject of necessary truths. And their essences do not seem in general to reduce to the essences of their members. My essential properties, e.g., do not reduce to the essential properties of the fundamental particles of which I am composed (considered separately); at the least, the particles’ arrangements matter too. Now, the pair of {Socrates} and Socrates has the property that its first member contains its second, and it has this property at every world. Although this property does not reduce to the intrinsic properties either of {Socrates} or of Socrates considered separately—otherwise, Socrates’ doppelganger would be a member of Socrates’ singleton—it does seem to be an intrinsic feature of the pair; it doesn’t seem to depend on anything other than {Socrates} and Socrates and their interrelations. So [M\*] classifies this property as essential to the pair. So [M\*] can allow that the necessary truth that Socrates’ singleton contains Socrates is grounded in the essence of something, just not in the essence either of {Socrates} or of Socrates. Instead, it is grounded in the essence of their pair.

One might point out that {Socrates} is postulated or posited, whereas Socrates is discovered. But to postulate or posit something that is mind- and language-independent is not to generate or produce it. Rather, it is to claim that it was there all along, playing the role we hope something is there to play: containing Socrates.

In sum, neither set theory, epistemology, semantics, nor even metaphysics obviously compels us to think that a set really has its membership essentially. They require only that it be a necessary truth that it does. And that can be attributed to the essences of pairs of sets and their members, if needs be. There are epistemic and semantic asymmetries between sets and their members: our grasp of and reference to {Socrates} must go via Socrates, but not vice versa. Perhaps that is why it seems natural to say that sets have their members essentially: their membership provides our only access to them. However, a metaphysical asymmetry remains elusive. Sets are posited as abstract correlates of things—one for each collection of things. But neither their abstractness nor the fact that they are posited shows that {Socrates} contains Socrates essentially. And the correlation is symmetrical: sets exist iff their members do. I conclude that even if properties like *contains Socrates* are extrinsic, they do not force us to abandon [M\*] because they don’t seem to be essential to their instances. *Mutatis mutandis*, for the defining properties of other grounded entities.

Finally, one might worry that [M\*] misclassifies haecceities, properties of the form *being so-and-so*, e.g., *being Socrates*.[[26]](#footnote-26) Intrinsic properties cannot vary among duplicates, but haecceities can—Socrates instantiates *being Socrates*, but his twin-earth doppelganger does not. So haecceities are not intrinsic, and so, according to [M\*], they are not essential. But, the objection runs, surely haecceities are essential properties *par excellence*—if anything makes Socrates the object he is, it is that he has the property *being Socrates*.

One response would be simply to add a clause to [M\*] to accommodate haecceities: F is essential to x iff x has F at every world and either F is intrinsic *or F is the property of being x*. However, this would be *ad hoc* and inelegant. Another response would be to recharacterize intrinsic properties so that haecceities qualify. After all, characterizing them as those that cannot vary among duplicates automatically exclude haecceities simply because haecceities are nonqualitative: ‘duplicate’ here means *qualitative* duplicate. But, one might argue, the real test should be whether the property is sensitive to anything other than its instances, regardless of whether it is qualitative. And by that test, haecceities seem to qualify—surely *being Socrates* is sensitive only to Socrates. However, this response seems flawed. Contrary to initial appearances, haecceities *do* involve other things, albeit implicitly and generically; they even fail this test. Intuitively, if having a certain property—qualitative or not—is an intrinsic matter, then so is lacking that property; if x’s being F is a matter only of how x is, then so is x’s lacking F. So if *being Socrates* were intrinsic, then *being distinct from Socrates* would be intrinsic too, since to have *being distinct from Socrates* just is to lack *being Socrates*. But *being distinct from Socrates* surely does involve something other than its instances, viz. Socrates; it seems to be an extrinsic property *par excellence*. Anyway, it can’t be intrinsic if *being Socrates* is, for, since something has *being Socrates* iff the rest of the world has *being distinct from Socrates*, that would mean that having *being Socrates* constrains the rest of the world *intrinsically*, and surely only an extrinsic property could do that—intrinsic properties vary independently among distinct things. So *being Socrates* is not intrinsic, not just because it is non-qualitative but because it is “uniqueness-entailing”—if x has it, everything else lacks it—and so implicitly it does involve other things after all.[[27]](#footnote-27)

Instead of amending [M\*] or our characterization of intrinsicality to allow that haecceities are essential, I think we should just bite the bullet and deny that they really are. After all, classifying haecceities as essential would drain essences of some of their interest. Haecceities are non-qualitative, non-natural, and they exist iff certain things—their mandatory and only instances—also exist. They don’t correspond to similarities; they don’t figure in the laws of nature; and it is hard to see how we can have intuitive insight into them. And their only theoretical role is to distinguish qualitatively identical possibilities.[[28]](#footnote-28) If [M\*] proves to be plausible and illuminating in other respects, it would be a shame to abandon it on the grounds that it misclassifies such uninteresting properties as haecceities. That leaves us with the task of explaining why we are tempted to classify them—incorrectly—as essential. I speculate that this is because they are properties their instances have necessarily, but unlike other properties a thing has necessarily but not essentially, e.g. *being such that there are infinitely many primes*, they seem to involve their instances alone. That is, they seem essential precisely because they are necessary properties that seem intrinsic. However, since they are uniqueness-entailing, really they do involve other things than their instances, though this is not obvious because they do so implicitly and generically.

In sum, [M\*] doesn’t seem circular, and its classification of certain properties of sets and haecceitistic properties as non-essential is defensible enough to make further exploration of [M\*] worthwhile. There is more to say, especially on haecceities, but I want to turn next to some observations about intrinsic properties. These turn out to illuminate some interesting general observations about essences.

V

Intrinsic properties are posited, primarily, to account for similarities. However, we cannot simply say that things are similar iff they share a property, perhaps as a common (non-spatial) part. Sharing a property is an all-or-nothing matter: things can’t half-share a property. Similarity, by contrast, is a matter of degree: my blue pen is quite similar to my black pencil, and it would be even more similar to it if it were black too. And my pen and my pencil are more similar to one another than either is to my shoe.

A second suggestion: things are similar to degree N iff they share N properties. The idea here is that degrees of similarity reflect the numbers of common properties: the more properties things have in common, the more similar they are. My pen and my pencil share more properties than my pen and my shoe and that’s why they are more similar. But this suggestion won’t do either. Some properties make for greater similarity and so should count for more than others. Sharing exactly the same shade of red makes for more similarity than merely sharing reddishness, which, in turn, makes for more similarity than sharing *being either red or blue*, which makes for almost no similarity at all.

Suggestion three: things are similar to degree N iff the weighted sum of the properties they share = N. Suppose we assign scores to properties that reflect how much similarity they confer on their instances. A specific shade of red would get a higher score than reddishness, which would get a higher score than *being either red or blue*. Summing these scores for all shared properties would give a measure of overall similarity among things that reflects the properties’ unequal contributions. This allows a role for context to play in determining similarity. Perhaps some contexts demand that a lot of weight be given to sameness of mass, while others demand that it barely count at all. However, if similarity is determined by summing, double-counting must be avoided, regardless of context. So disjunctive and other compound properties should get zero weight whatever the context. If things are both F, then no extra similarity is conferred by the fact that they are both also either F or G. And if one is F but not G, and the other is G but not F, then the fact that they are both either F or G is no similarity at all. Intuitively, unspecific properties, e.g., *being reddish*, *being about 10kg*, should also get zero weight, regardless of context.[[29]](#footnote-29) A thing has an unspecific property only by virtue of its specific properties; an unspecific property is not an *additional* way for something to be. A thing can be reddish only by virtue of being some specific shade; it can be about 10kg only by having a specific mass; and so on. How could unspecific properties generate new similarities that weren’t already present at the level of the specific properties on which they supervene? Surely, it is the specific properties of things that fix their natures and so the facts about similarities. Negative properties should get nearly zero weight: *being non-green* makes for barely any similarity, especially if the green is some highly specific shade.

However, even this third suggestion is inadequate. First, things might be very similar despite sharing no specific properties at all. Perhaps one thing is 10kg, red, and square, whereas the other is not quite 10kg but 10.1kg, not quite red but pink, and not quite square but slightly rounded. Indeed, they might be almost perfect duplicates without sharing a single specific property. They would share many less specific properties—*being reddish-pink*, *being about 10kg*, *being roughly square*—but, to repeat, these should be given no weight. Similarities must be accounted for at the level of the specific properties, and at that level there is no sharing of properties at all. Second, given that properties vary in the similarity they confer on their instances, things might be quite dissimilar even though they share nearly all their properties. Two paintings might be exactly alike in every respect except color—perhaps one is entirely blue and the other entirely red. Yet this single difference might count for a lot. In certain contexts—aesthetic ones perhaps—the property-weighting evoked might mean that the pictures are about as dissimilar as can be. Third, things might be similar to different degrees without differing at all in the number of properties they share or in the weightings of those properties. Ceteris paribus, a red thing is more similar to a pink thing than it is to a blue thing, but not because of any difference in the numbers of shared properties or their weightings. Colors are alternatives; things that differ in color differ in *which* properties they have, not in *how many* they have. And, in most contexts, no color is more weighty than any other. Suggestion 3 is powerless to account for any of this.[[30]](#footnote-30)

In sum, similarity is a matter of degree, so it cannot be a matter of sharing properties. Perhaps if it were a matter of degree only at the gross level of overall similarity, it might be a matter of how many properties, suitably weighted, are shared. But it isn’t. It is a matter of degree even at the level of particular respects of similarity—color-similarity, mass-similarity, length-similarity, etc.—where the relevant properties are equally weighted alternatives. And there is no hope of capturing this in terms of a count of shared properties, even a weighted count, because there can be similarity without any sharing, sharing without any similarity, and differences in similarity without any differences in the number of shared properties or their weights. Similarity seems to be a matter of *which* properties things have—which determinate masses, lengths, charges, shapes, and so on—not *how many* properties they share.

An alternative to modeling similarity in terms of sharing properties is suggested by several observations. Focus on the specific, non-compound, intrinsic properties. Notice first that these seem to divide up into families of contraries, e.g., the colors (specific shades of redness, blueness, yellowness…), the masses (*being 3kg*, *being 100kg*, *being 1245.76kg*), the shapes (roundness, squareness,…), etc. Notice also that each family encodes a distance relation among its members, defining the “space” for that family. The structure of this space varies from family to family: the structure of the color-space is captured in the color-wheel; the mass-space, length-space, and the spaces of many other quantities have the structure of the positive reals; the structure of the shape-space is determined both by the number of sides and the ratios of their lengths; and so on. Notice third that every family is inherently *quasi*-*global*: roughly, everything instantiates some member of every family (in fact, a unique member, given that the members are contraries). It is not that some things are colored, some are massive, others are shaped, with perhaps some overlap among the three groups. Rather, the domain of every family is the same and it includes everything: *everything* has some color, some mass, and some shape. I say “roughly” for two reasons. First, the families seem to be global only within an ontological category or other broad domain: physical things might all have some color, mass, shape, etc., but abstract things don’t; living things all belong to some species, but inanimate things don’t. Second, even within a category, the families aren’t straightforwardly global. Electrons, e.g., are physical things but, unlike tables and chairs and other physical things, they have no color at all. And, unlike electrons, tables and chairs do not have dimensions precise to the nearest Planck length. However, it does seem that everything at least overlaps or is overlapped by something that instantiates some member of every family—fundamental particles might not have any color, but their fusions do; tables might not have very precise dimensions, but their parts do.[[31]](#footnote-31) (One might still object. According to our best theories, photons lack any (rest) mass, despite having an energy, frequency, speed, etc., which shows that the mass family is not global. I disagree: photons have zero (rest) mass, which is quite different from being massless.[[32]](#footnote-32) If a thing lacks mass, then its momentum and the effects of a force on it are ill-defined; not so for something with zero mass. And a physical object that lacked a well-defined momentum or responses to forces would be a dubious thing indeed. Photons might have zero mass, but they don’t lack mass altogether.) Anyway, I will suppress these two qualifications from now on. When I use ‘global’, I’ll presuppose that we are sticking to one ontological category or broad domain, and we are counting things as falling in the domain of a family if their parts or fusions do. I don’t think anything turns on this simplification.

Properties that are unspecific or Boolean compounds of other properties or extrinsic do not in general belong to unique, quasi-global families of contraries under a distance relation. Some unspecific properties in the same family, e.g., *being reddish* and *being bluish*, are not contraries—purple things are both reddish and bluish. Some compound properties, e.g., *being 10kg and round*, have a foot in more than one family. Some extrinsic properties, e.g., *being a sibling*, lack contraries altogether, while others, e.g., being a meter from the wall, belong just as naturally to families of non-contraries, e.g., the *being-a-meter-from-x* family, as to families of contraries, e.g., the *being-x-meters-from-the-wall* family. However, intuitively, all such properties ultimately supervene on the specific, non-compound, intrinsic properties (of their instances or of other things); it is to the latter we should look to account for similarities. And these all do seem to belong to such families.

These observations, though rough, suggest a different model of similarity. Each specific, non-compound, intrinsic property belongs to a unique family of contraries under a distance relation. These families constitute “dimensions” of similarity—color-similarity, mass-similarity, shape-similarity, and so on. Similarity between things on a given dimension is determined by the distance between the properties within that family’s space that the things instantiate: for any family F, the closer these properties are in the F-space, the more F-similar their instances are. If things instantiate the very same F, then they are perfectly F-similar. If they instantiate very distant Fs, then they are very F-dissimilar. Distance is undefined for properties belonging to different families—one thing being blue and another being 10kg, or one thing being positively charged and another being round makes for neither similarity nor dissimilarity. Similarities among things might vary with different dimensions. Two things might very similar in color and shape (one is red, the other pink; one is octagonal, the other nonagonal), but very dissimilar in mass and charge (one is 10-34kg, the other 1034kg; one is positive, the other negative). And various dimensions of similarity might differ in how important they are in determining overall similarity. So each family could be assigned a score to reflect this.[[33]](#footnote-33) Again, the scores might be context-sensitive. And again, there will some acontextual constraints on the weighting to avoid double-counting similarities. Finally, we can say: x and y are similar to degree N iff the weighted sum for all property-families F, of the F-similarities/dissimilarities between x and y = N.[[34]](#footnote-34)

On this model, the fundamental entity is not the individual property, but the structured family of contraries, a quasi-global classification space. In effect, where the earlier suggestions look to *identities* between x’s properties and y’s properties, i.e. to shared properties, this suggestion looks to the *distances* between their properties, subsuming the case of a shared property as the limiting case of zero distance. Similarity is a matter of closeness within a sea of alternatives, not partial identity. It is still determined by which specific properties things instantiate, but it is a matter of degree even at the level of specific respects of similarity, obviating the need to resort to counting properties.

Even without filling in the details of this sketch—saying how to identify which properties are compounds or negative or unspecific, how to understand quasi-globality, how to add similarities and differences drawn from different dimensions, and so on—the picture is clear enough, I think, that we can profitably return now to essences. If essences really are intrinsic, as I claim, they too have this family-structure. And we can already see how this structure, sketchy though it is, accounts for certain observations about essences. In the next section, I discuss three such observations.

VI

The first is that everything is essentially *determinate*; everything essentially has a full complement of properties. It is just inconceivable that something should be ontologically incomplete. This determinacy has several aspects. One is that nothing can have a determinable property (*being colored*, *being massive, having a shape*) without also having one of its determinates (*being red*, *being 10kg*, roundness). Another is that the determinates of a given determinable are exclusive. When a thing has a determinate color, mass, shape, etc., it is thereby determined whether or not it has any other determinate color, mass or shape: it doesn’t. If it is red, it isn’t blue or yellow or…; if it is round, it isn’t square or triangular or…. A third is that determinables are exhaustive: their determinates exhaust the alternatives for their instances. Although something that is colored, massive, or shaped usually could have all sorts of different determinate colors, masses, and shapes, it couldn’t have *no* color, mass or shape; anything colored, massive, or shaped is essentially so.

The above model accounts for these three aspects of the essential determinacy of things straightforwardly. We need only identify the determinable properties with the properties that correspond to the families—to have a determinable property is just to instantiate one of the family-members—and the determinate properties with the family-members themselves. Then it is automatic that something instantiates a determinable iff it instantiates one of its determinates—the first aspect of determinacy. The fact that the family-members are contraries guarantees that determinates of the same determinable are exclusive. And the fact that the families are (quasi-)global guarantees that they are exhaustive. Moreover, it is not clear how to accommodate the essential determinacy of everything without thinking of determinables and their determinates along these lines, as constituting quasi-global classificational spaces. Identifying determinables with disjunctions or sums of determinate properties might account for the first aspect of determinacy, but not the others. The disjuncts of a disjunctive property are not in general exclusive or exhaustive: a thing might be blue or 10kg, or both, or neither. Likewise for the parts of a complex property: perhaps *being a man* and *being unmarried* are the parts of the complex property of bachelorhood, but clearly some people—bachelors—are both male and unmarried, and other people—wives—are neither.[[35]](#footnote-35)

This dispels some of the fog surrounding whether there could be protean things that instantiate all their properties accidentally. In one sense of ‘protean’, there couldn’t be. Since the determinables are global or near enough, nothing could fail to instantiate every determinable. Everything is essentially colored, massive, shaped, and so on. However, there is another sense of ‘protean’ in which there might be. Nothing in this model precludes the possibility of things that could instantiate any determinate at all from each family, something that could be any shape, or any mass, or any color, in any combination.

A second observation about essences that the family-structure of intrinsicality helps account for is that often a thing doesn’t have a particular determinate property essentially, but rather some determinate property or other within a certain *range*. There are all sorts of shapes I could have, but probably I couldn’t be perfectly round or a straight line; I could have a greater or smaller mass, but probably I couldn’t have zero mass or infinite mass or even a mass of 200 trillion kg. Sometimes things do have particular determinates essentially—it is essential to all pieces of gold that their constituents have atomic number 79, no more no less—but “range-essences” seem to be more common. Very few colored things couldn’t be at least a slightly different shade. Very few massive things have their exact masses essentially. Some variation is usually possible. Quite how much seems to depend on the things involved. Perhaps there could be something so fragile that for every family, there is one particular determinate property in that family that the thing has to instantiate. Its essence ranges as narrowly as possible. At the other extreme, perhaps there could be a protean thing whose essence ranges as widely as possible, that could instantiate any particular determinate property at all, or even any combination of them. Most things lie somewhere between these extremes: I couldn’t vary at all in my species, I could vary somewhat in mass, and I could vary a lot in color.

The above model of intrinsic properties can accommodate range-essences straightforwardly in terms of the distance relations that define the spaces of the various property-families. I could only have those shapes or masses that are within a certain distance of those I actually have—*being perfectly round* and *being infinite in mass* are probably too far away. Where a particular determinate is essential, any distance is too far; this is simply the limiting case, a range of one. Moreover, without a distance relation among properties, it is hard to see how to make sense of range-essences. Are they just disjunctive properties that things have essentially? Is it that x has a length between 1.9m and 2.1m essentially, say, iff it has the disjunctive property, *being 1.9m or,…, or 2.1m* essentially, where there is a disjunct for each determinate length property in the range from 1.9mto 2.1m? Not in general. The “disjunction” would often be infinite and so ungraspable, which range-essences clearly are not. Moreover, sharing a range-essence, at least if the range is not too wide, implies similarity, whereas instantiating a disjunctive property generally does not: if x is black and y is white, they share *being either black or white* but they are not similar. Are range-essences just unspecific properties that things have essentially? Is it that x has a length between 1.9m and 2.1m essentially iff it has the unspecific property, *being about 1m long* essentially? I don’t think so. Unspecific properties are not independent ways to be—nothing could have an unspecific length or shape or color. Rather, something has an unspecific length *by virtue of* having some specific length; it is not an additional feature of it. To attempt to make sense of a range of specific properties in terms of an unspecific property would be to put the cart before the horse.

This dispels some of the fog surrounding which qualitative properties are eligible to be essential. As I remarked above, most determinate, natural properties, e.g., *being exactly* 17.3kg, *being perfectly circular*, seem poor candidates—how could anything really be so fragile? On the other hand, as we have just seen, unspecific or non-natural features of things like *being quite massive* or *being grue* or *being* *round or square* also seem poor candidates. They are instantiated only in virtue of determinate, natural properties, and it is at that level that we should look for essences. Viewing essences through the lens of intrinsicality and its family-structure resolves the difficulty: what a thing has essentially is not usually some particular determinate natural property or some unspecific, imperfectly natural property, but some natural, determinate property within a certain range. And presumably most determinate natural properties are eligible to be in a range of properties that a thing has essentially.

A third observation is that the essential properties of a thing constitute its *core* or *central* properties. This is a traditional metaphor, but it is opaque. It doesn’t seem to mean the thing’s most *salient* properties, those that contribute most to similarities. Often accidental features, e.g., its determinate mass, charge, or color, matter more. Sometimes even extrinsic features matter most for similarity. Conversely, in many contexts, some essential properties contribute little or nothing to similarity. It could well be essential to me that I have something close to the DNA that I actually have, yet in most contexts that is not a very salient feature of me. Nor does it seem to mean its most *fundamental* properties, those on which its other properties supervene. My features supervene on the intrinsic properties of and interrelations among the fundamental particles that compose me. But it is not essential to me that I be composed of particles having these features. I could survive all sorts of changes in my constituent particles (though not all, of course): countless rearrangements, swaps, slight increases in mass, etc. Conversely, many of the properties that are essential to me, e.g., my humanity and my various functional and organizational properties, are not fundamental. Nor does it seem to mean the most *explanatory* properties.[[36]](#footnote-36) In fact, essential properties have a limited explanatory role. Presumably, they do not explain their instances’ accidental properties, not fully at least, since what makes a property accidental is that it can vary independently of any essential properties and so cannot be explained by them. Nor do they explain causally, though they might play an auxiliary role in causal explanations. Causation is a contingent relation, involving other things. Causal explanations for why a thing is as it is feature its accidental and extrinsic properties. The only explanatory role that seems to require a thing’s essential properties is grounding its other necessary properties. Anyway, why should there be any connection between explanation and essence at all? Prima facie, explanation is a matter *sufficient* conditions for why a thing exists and is the way it is, whereas essences are a matter of *necessary* conditions for its survival. These just seem to be different ideas.[[37]](#footnote-37)

So what *does* it mean to say that the essential properties of a thing constitute its core or central properties? Again, attention to the family-structure of intrinsic properties suggests an answer. Notice that painting a bar of gold would change its color but little else about it; its mass, malleability, etc. would be unaffected. But changing the number of protons in its constituent atoms would have a huge effect; its chemistry would change radically. In fact, doing so would wreak such havoc on the bar’s overall intrinsic property-profile that it wouldn’t survive; not so, with changing its color. This suggests another sense in which a thing’s essential properties might be its core properties: their loss would bring too much intrinsic change in its wake for the thing to survive. But how are we to make sense of change as a matter of degree? It is here that it is helps to think of the property-unit as a quasi-global family of contraries under a distance relation rather than the individual property. If a thing loses some determinate property F belonging to one family, it often also changes in which determinates belonging to *other* families it instantiates. And it does so to varying degrees. Perhaps, losing F will utterly transform its mass and charge, only slightly affect its color, and not affect its atomic number at all. Suppose then that for every property-family, we have some measure of how much the loss of F will affect which determinate property of that family the thing instantiates. Perhaps losing F will decrease its mass by 75%, reverse its charge, and alter its color by one shade. And suppose we also have some way to weight the families affected according to how important they are (in the context). Then the weighted sum of all such changes provides a measure of the total change that the thing would suffer if it were to lose F. Now, a thing can usually survive only so much change. So we can say that F is a *central* or *core* property of x iff the total change in x’s intrinsic nature that would result from losing F exceeds x’s threshold of survivable change.[[38]](#footnote-38) And it is not clear that this too-much-intrinsic-change-to-survive interpretation is available without appealing to something like the family-structure I have argued is characteristic of intrinsic properties. How much something has changed is a matter of how similar overall it is after the change to how it was before. And, as we have already seen, overall similarity cannot be captured by any (weighted) count of properties. It seems to require a distance relation among them.

This dispels some more of the fog surrounding our talk of essences. We can now see how essences could be rooted in things themselves not just in context-evoked quantifier-restrictions. Although the threshold of survivable change and the weights assigned to the various families might well be contextually relativized, how sensitive various property-families are to the loss of a given property, i.e. how central that property is, is a context-independent feature of the world. Scientific laws relating families—volume, temperature, and pressure; force and acceleration; atomic number and chemistry; etc.—thus contribute to our understanding of essences by capturing the covariance of properties.

VI

The essential properties of a thing are connected with its identity: its existence is impossible without them. But that’s not all. Its essential properties must be features of *it*; properties involving other things—objects near and far, the rest of the world, sets or pluralities to which it belongs—are not eligible to belong to *its* essence. Essential properties are intrinsic. Recognizing this saves the modal analysis of essence from Fine-style objections. Although it does mean that things do not have their haecceities essentially, and, more alarmingly, that sets do not have their members essentially, these are defensible consequences. And classifying essential properties as intrinsic proves illuminating. Intrinsic properties constitute quasi-global families of contraries under a distance relation and this accounts for various observations about essences, e.g. that everything is essentially determinate, and that things often have range-essences. It also enables a more promising interpretation of the sense in which a thing’s essential properties are its core properties than that they are somehow always more salient or fundamental or explanatory, viz. that their loss would bring too much overall change in its wake for the thing to survive.

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1. Fine (1995b: 53). He is following a long tradition. See, e.g., Aristotle (*Metaphysics*: 1029b14): “the essence of a thing is what it is said to be in respect of itself”. [↑](#footnote-ref-1)
2. [M] is roughly what Fine (1994) calls the “categorical approach”. He also discusses two more complicated conditional variants of [M], which I’ll ignore here. [↑](#footnote-ref-2)
3. Henceforth, I will suppress this restriction. When I say that something is true of x at every world, I will mean it is true of x at every world *at which x exists*. [↑](#footnote-ref-3)
4. Though see Zalta (2006) for whom even ordinary concrete objects exist essentially (but are only contingently concrete). [↑](#footnote-ref-4)
5. Strictly, he proposes explaining essences in terms of “real definitions”, but a real definition is characterized, a la Aristotle, only as “…the formula of the essence” (*Metaphysics*: 1031a12), which is tantamount to taking essence as primitive. Anyway, the notion of definition is obscure, especially if things and not just words are supposed to have definitions. A further worry is that things (or at least words) often have more than one definition, threatening to render (complete) essences non-unique. [↑](#footnote-ref-5)
6. I discuss some exceptions below. [↑](#footnote-ref-6)
7. Similarly for determinate natural relations: could any pair of things be essentially precisely one meter apart, no more, no less? [↑](#footnote-ref-7)
8. Gorman (2005: 2), for instance, characterizes essentialism as expressing “…the intuition that some features of a thing are more central and important than others are.” [↑](#footnote-ref-8)
9. Fine (1995b: 57) distinguishes properties that are “constitutively essential” like *being a man* from those that are mere logical consequences of them, e.g., *being a man or a mountain*. He grants, however, that it is not obvious how to formulate the distinction precisely. See also Gorman (2005: 5). [↑](#footnote-ref-9)
10. The *locus classicus* of such a view is Quine (1960: 199). See also Lewis (1986: 248-63). [↑](#footnote-ref-10)
11. Cameron makes this point (2010 §2) [↑](#footnote-ref-11)
12. I’m not the only one—see also Della Rocca (1996), Gorman (2005), Zalta (2006), and Correia (2007). [↑](#footnote-ref-12)
13. Perhaps properties aren’t intrinsic or extrinsic *simpliciter*, but intrinsic to some things and extrinsic to others (Dunn (1990: 183); Francescotti (1999: 591-2)). Perhaps, e.g., the property *being such that there are chairs* is intrinsic to my chair, but extrinsic to me. I will ignore this complication. It has no bearing on what follows. (Actually, I’m not convinced. Chairs might have chairhood intrinsically, and necessarily, if something has chairhood, it also has *being such that there are chairs*, but why think that necessary consequences of intrinsic properties are in general intrinsic? It is not plausible that *being human or popular* is intrinsic to me even though *being human* is.) [↑](#footnote-ref-13)
14. Lewis (1986: 61-3) [↑](#footnote-ref-14)
15. See Denby (2010) [↑](#footnote-ref-15)
16. See Della Rocca (1996), Gorman (2005), Zalta (2006), and Correia (2007) for other ways to analyze Fine-style counterexamples’ failure to be fully “about” their instances. [↑](#footnote-ref-16)
17. Below, I discuss whether some non-qualitative properties—haecceities, membership in various sets—are also grounded in the intrinsic features of other things. I will ignore others that depend on the non-existence rather than the intrinsic properties of other things, e.g., *being a world* (something is a world iff nothing other than it exists). They don’t seem to undermine the intuitions I am trying to elicit here. [↑](#footnote-ref-17)
18. By ‘something else’ here I mean something not identical to it, so even if a pair (or plurality, or…) involves a thing, it counts as something else. [↑](#footnote-ref-18)
19. In (Denby 2006, 2010) I argue that it can be characterized precisely in quasi-logical terms. Not everyone agrees (Marshall 2009), and not everyone agrees that it is clear (Dennett 1988). But it does at least seem clearer than the notion of an essence. [↑](#footnote-ref-19)
20. Here it might matter whether intrinsicality is a relative or absolute notion (see fn. 13). One might want to allow that some things have existence intrinsically and others don’t. [↑](#footnote-ref-20)
21. Classifying essences as intrinsic also clarifies the other issues I mentioned above—Are all qualitative determinate properties eligible to essences? Does everything have some properties essentially? Is the source of essentialism metaphysical or merely linguistic?—though I postpone discussion till section VI. [↑](#footnote-ref-21)
22. Some philosophers have indeed appealed to essences in analyzing intrinsicality (Francescotti (1999), Witmer, Butchard, and Trogdon (2005)), but it is not clear these appeals are ineliminable. I have argued (Denby 2006, 2010) that intrinsicality is analyzable in terms of relations among *properties*, albeit modal ones. These relations presuppose nothing about the essences of their instances. [↑](#footnote-ref-22)
23. That is, at every world at which it exists, {Socrates} contains Socrates. Recall that I am suppressing the restriction to worlds where the subjects exist. [↑](#footnote-ref-23)
24. Ignoring the usual restrictions required to avoid paradox. [↑](#footnote-ref-24)
25. See (Lewis 1986: 81-6). [↑](#footnote-ref-25)
26. Haecceitistic or non-qualitative properties are those tied to a specific individual, e.g., *being near Socrates* and *liking Paris*. I use ‘haecceity’ for haecceistic properties whose instantiation is a matter of being identical to a specific individual, e.g., *being Socrates*. [↑](#footnote-ref-26)
27. Whence the necessity, if Fine is right that all necessities are grounded in essences? It is of the essence of any pair <x, x> that its members be identical. And this is intrinsic to the pair—any duplicate of the pair would also have to have identical members. Even if x\* is a distinct duplicate of x, the pair <x, x\*> would not be a duplicate of <x, x>, at least if x and x\* are physical objects—the members of <x, x\*> are some distance apart but the members of <x, x> aren’t, for instance. [↑](#footnote-ref-27)
28. And perhaps they are not needed even there. See (Lewis 1986: 220-48) [↑](#footnote-ref-28)
29. Lewis suggests (1986: 61) that unspecific properties just are disjunctive properties anyway. [↑](#footnote-ref-29)
30. There is nothing special about colors. Similarity is still a matter of degree even at the level of the most fundamental properties. Things could be more or less similar in mass, e.g., even if they differ in no other way. [↑](#footnote-ref-30)
31. Of course, this raises a number of questions. What about lone particles afloat in space? How could the fusion of some things be less precise than they are? I address these questions elsewhere (Denby MS). [↑](#footnote-ref-31)
32. *Pace* Bricker (forthcoming, 2013) [↑](#footnote-ref-32)
33. Perhaps the story is a bit more complicated. Rather than a fixed score for each family—one for color, one for mass, one for charge, etc.—perhaps there is a function that assigns different scores to different distances within the same family. Maybe instantiating nearby shades of red should count for more than instantiating nearby shades of blue. [↑](#footnote-ref-33)
34. This model covers only intrinsic similarity. A full account of similarity requires that we extend it to take extrinsic similarities into account. [↑](#footnote-ref-34)
35. Are there other aspects of determinacy than these? One candidate is the fact that anything red must have a determinate shade of red, anything 3 meters in length to the nearest meter must be some determinate length, etc. Perhaps this is indeed another aspect of determinacy, but perhaps it is already covered. Perhaps it just reflects the fact that some determinables come in more and less fine-grained versions. There is the fine-grained color determinable that classifies things according to their specific shades and the coarse-grained color determinable that classifies things according to whether they are red, or blue, or yellow, or… There are various length determinables that classify things with different degrees of precision—to the nearest millimeter, to the nearest meter, and so on. (There are some interesting and delicate issues here. Macroscopic entities like tables and chairs have determinate dimensions, but they do not have dimensions to the nearest Planck length. See (Denby MS)). [↑](#footnote-ref-35)
36. *Contra* Copi (1954) and Gorman (2005: 2). [↑](#footnote-ref-36)
37. There are, of course, other worries about appealing to explanation: it is a notoriously obscure notion, and may be interest-relative, which would render essences unacceptably subjective. [↑](#footnote-ref-37)
38. Presumably, we need only consider *intrinsic* families. Losing F might well affect the extrinsic properties of x, but as I argued above, that is ultimately a matter of the intrinsic features of *other* things, and so is irrelevant to the identity and survival of x itself. [↑](#footnote-ref-38)