Who's afraid of Reverse Mereological Essentialism?

Philosophical Studies
https://doi.org/10.1007/s11098-023-01935-5

Who's afraid of reverse mereological essentialism?

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Accepted: 10 February 2023

Abstract
Whereas Mereological Essentialism is the thesis that the parts of an object are essential to it, Reverse Mereological Essentialism is the thesis that the whole is essential to its parts. Specifically—since RME is an Aristotelian doctrine—it is a claim not about objects in general but about substances. Here I set out and explain RME as it should be understood from the perspective of the Aristotelian-Scholastic tradition, as well as proposing a kind of master argument for believing it. A number of objections (many of which have been raised by Kathrin Koslicki or Robert Koons) are then considered, the replies to which help further to clarify and motivate RME. The final section considers some important questions concerning parts and matter in light of Ross Inman's recent defence of RME under the guise of what he calls Substantial Priority. Considering these questions further illustrates right and wrong ways of understanding RME. Overall, the case for Reverse Mereological Essentialism is strong albeit with a number of difficulties that need to be resolved through further investigation.

Keywords Mereology · Essentialism · Aristotle · Parts · Substance · Mereological essentialism · Reverse mereological essentialism

1 Introduction

Mereological Essentialism is the thesis that every whole has its parts necessarily.[1] There is nothing surprising in the elision of 'essential' and 'necessary', since the thesis has its home in extensional mereology, where what is essential and what is necessary are one and the same. For a metaphysician of Aristotelian and Scholastic

[1] Chisholm (1973). Chisholm and also Barry Smith attribute Mereological Essentialism to Brentano, but Brentano's writings are somewhat opaque on this matter. (See Chisholm 1978: 202, with no specific reference to Brentano's own words; Smith 1987: 44, footnoting Chisholm 1976: Appendix B, pp.145–158 where nothing whatsoever is said about Brentano's own view.).

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Published online: 17 March 2023

inclinations, this makes Mereological Essentialism doubly objectionable. First, from the Aristotelian-Scholastic viewpoint, whether parts are had necessarily *depends* on whether they are had essentially, and whether they are had essentially depends on the essence of the object under investigation, say whether it is a set or a setter. Secondly, the thesis is patently false as a general claim about what there is, and likely[2] universally false across whole swathes of the furniture of the cosmos—macrophysical substances.

There is, then, not much to be said for Mereological Essentialism. Might there, however, be more to be said in favour of its converse, which Kathrin Koslicki happily dubs *Reverse* Mereological Essentialism (henceforth RME)?[3] This is the thesis that every part has its whole essentially. That is, if x is a part of y, and y is a whole, then x is essentially a part of y, and so x is necessarily a part of y. For an Aristotelian-Scholastic, RME has far more appeal than its evil twin. Mereological Essentialism threatens us with metaphysical nihilism: if wholes have their parts essentially, and a putative whole evidently does not, then that object is not a whole, or does not exist, or does not exist as we intuitively think it does. This would apply to a rock or a rodent, a lemur or a lump of gold. RME, by contrast, seeks to preserve the intuition that rocks, lumps of gold, rodents and lemurs all exist exactly as we think they do—as substantial wholes. This does not mean that RME is correct, only that the largely disregarded RME is an intuitively better place to start, when understanding wholes and parts—especially those in the realm of material substances—than its converse.

In what follows, I will first (Sect. 2) set out and explain RME as it should be understood from the perspective of the Aristotelian-Scholastic tradition, as well as proposing a kind of master argument for believing it. Section 3 considers a number of objections, the replies to which help further to clarify and motivate RME. The final section considers some instructive aspects, with regard to parts and matter, of Ross Inman's recent defence of RME.[4]

2 What is RME and why should we believe it?

The most important thing to understand immediately about RME is that it is a thesis about *substances* and only substances; hence the reference to 'wholes' above is loose and not strictly correct. The only wholes to which RME applies are whole substances.[5] This renders much of Koslicki's case against RME irrelevant.[6] More charitably, her case is against Verity Harte's version of RME, which Harte argues is to be found in Plato. Whether or not this version of RME is Platonic in origin, it is a strawman for our purposes. We should not, for instance, think that a whole

[2] It would take a separate investigation to establish that Mereological Essentialism was true of *no* substance whatsoever. But we know it is false of many substances—all of the organic ones, for a start.

[3] Koslicki (2008): 113–14.

[4] Inman (2018): chs. 8 and 9.

[5] Might it also apply to *stuffs*, such as water or gold (as opposed to bodies of water or lumps of gold)? I think not, but there is no room for discussion here.

[6] Koslicki (2008): 114–17.

aggregate of objects—say a pile of stones—is essential to each stone, that is, that no stone in the pile exists unless it is a part thereof.[7] Koslicki is right to highlight artefacts here: we should not think that a carburettor cannot, literally, be installed into a car on the ground that, by the lights of RME, it would thereby cease to exist and be replaced by something qualitatively similar.[8]

Neither artefacts nor piles of stones, however, are substances.[9] Artefacts are mind-dependent entities in the sense that the existence of an artefact entails the existence of at least one person (or mind, say) for whom it is usable for the purpose for which it was designed. Aggregates, by which I mean, in loose terms, mere collections of objects, are ontologically dependent on their particular parts: these are one among the sorts of things for which mereological essentialism is a far more plausible doctrine.

Reverse mereological essentialism, by contrast, applies to substances, and these—on the Aristotelian-Scholastic analysis—are ontologically independent entities, or per se existents, to use the Scholastic jargon. The contrast is with an entity existing *in alio*. Aquinas asserts: 'substance is understood as that which has a quiddity to which it belongs to be not in another',[10] which is a variant of and more concise way of putting Aristotle's account of substance in the *Categories*.[11] A formal definition of substance awaits another occasion;[12] the central point for present purposes is that substances, as independent entities, do not *rely* on other entities for their essential operation as the kinds of things they are.[13] This lack of reliance is not a causal or logical matter but, as E.J. Lowe puts it when explaining independence, a 'deeper, ontological' phenomenon.[14] Whereas universals—at least on an Aristotelian conception—rely on their instances to have real being, and particular accidents or modes (aka tropes) rely on their particular bearers, and what is abstract relies on

[7] Indeed it is probably conceding too much even to think that a pile of stones has stones as literal *parts* rather than *members*. A pile of stones is more like a collective than an individual.

[8] Ibid: 114.

[9] For the non-substantiality of artefacts, see Oderberg (2007): 166–70; for aggregates, see Lowe (2009): ch.7, though I do not endorse all of what Lowe affirms concerning this matter. Note: where I speak here of aggregates, Lowe uses the term 'collectives', reserving 'aggregates' for particular kinds of collectives.

[10] 'substantiae intelligitur quod habeat quidditatem cui conveniat esse non in alio' (*Summa Contra Gentiles* I.25.10, Aquinas (1955): 128).

[11] Aristotle, *Categories* I, 1a20ff, in J.L. Ackrill (ed.) (1963): 4ff.

[12] For some plausible proposals, see Lowe (1999): ch.6 and Hoffman and Rosenkrantz (1994).

[13] The present paper is not primarily exegetical, but it should be noted that there is a growing literature and ongoing debate concerning the relation between Aristotle's account of substance in the *Categories* (where ontological independence is focal) and in the *Metaphysics* (where hylemorphism is focal). See Peramatzis (2011) for an interesting overview, though I do not agree with this interpretation, particularly of the *Metaphysics*. My own view is that differences between the *Categories* and the *Metaphysics* on substance can be exaggerated: it must be borne in mind that an independence account of substance does not contradict a hylemorphic account, and that both are compatible with a categorial account of substance based on kinds of predication. This is the Scholastic perspective on substance as well. As indicated in the text, I take ontological independence for granted in the present discussion, but I also appeal to hylemorphic concepts when appropriate for clarifying some key points.

[14] Lowe (1999): 137.

the concrete being from which it is abstracted, substances do not rely on any other being for their existence.

The question, then, is how this kind of ontological independence bears upon RME, given that RME is a thesis about compound substances—those with parts. The idea is that since substances do not rely on anything distinct from them for their essential operation as the kinds of things they are,[15] that operation must come from within themselves. But what is within themselves is matter organised by form (to continue the classical account, though this is not strictly necessary to the exposition), and that organisation is at least partially constituted—in the definitional, identity-invoking sense of 'constitution'—by the interaction of the parts of the substance. Given this *constitutive* relation of parts to whole, it follows that the *essence* of the parts is provided by the essence of the substance precisely because the essence of the parts *is* to be part of the essence of the substance. The constitutive relation, then, is not one in which parts bring their own essence to the essence of the whole. Rather, what the parts themselves do is *itself* an ingredient of the overall organisation of the whole, and so an ingredient of the whole's essence, which is given by (formal) organisation. So the parts' essence has no reality independently of the essence of the whole substance of which they are parts.[16]

Note that when speaking of 'parts' in this context, I am referring to *physical* parts, by contrast with *metaphysical* parts.[17] The Aristotelian-Scholastic view is that form and matter, which together compose a substance, are themselves metaphysical parts of the substance—fundamental components that, when combined, yield a substance with its essence. They are not separable from the substance or from each other and are not themselves sensible or empirical, albeit they are real principles of reality. In other words, the essence of the substance is to be *matter* organised by such-and-such a *form*. It would, on this view, be wrongheaded to think of the form and matter as having their *own* essences, let alone having essences given by the substance they compose. They are, rather, ontological principles of essence—that in reality without which no substance could have an essence at all. The *physical* parts,[18] by contrast—arms and legs, hearts and kidneys, slices and chunks, even atoms and molecules—are the parts whose essences are given by the substances to which they belong.[19]

[15] Compound substance rely on their own parts for their essential operation as the kinds of things they are, of course. But this does not violate the requirement that substances not rely on anything distinct from them. The parts of a substance are its proximate material cause, and the material cause of a substance is not distinct from the substance in the following sense: the substance is identical to a compound of form and matter. Evidently, a substance must rely on the things with which, taken jointly, it is identical; the denial of this is incoherent.

[16] Note: the argument here for RME is not designed to help us identify whether something is a substance or not. Nor is RME a thesis about what is a substance and what is not. Both presume a *prior* concept of what a substance is and then tell us what follows from this. For this reason alone, we cannot use the argument, say, to show (ad absurdum) that a pile of stones is a substance, or a team of human acrobats standing on top of each other, and so on.

[17] For a good account of the distinction in the Scholastic tradition, see Mercier (1921): 450–4.

[18] Where 'physical' is contrasted with 'metaphysical', not with 'chemical' or 'organic' or 'immaterial'.

[19] An electron as such, on its own, is not defined by any substance to which it belongs, of course. The claim here is only about entities, including particles, that *are* parts of substances.

Yet since nothing can have more than one essence, the parts cannot also, at the same time, have some *other* essence that is *not* provided by the essence of the substance. Therefore, it is of the essence of the part that it stand in the right kind of relation to the whole such that the essence of whole actually provides the essence of the part. Yet if the part were not part *of the whole*, such a relation could only obtain by magic.[20] Hence the part must stand precisely in the *part of* relation to the whole. More prosaically, the part must be a part of the whole substance—and this means more than mere location, of course. Rather, it means that the part must be, as it were, 'doing its thing' as a part of the substance—that and nothing more, since to do its thing is, precisely, to operate according to its essence. And the essence is, as I have pointed out, provided wholly by the substance of which the part *is* a part.

I have, then, presented what can be called a master argument for RME. A critic might still have concerns. Suppose we have substance *S*, with part *p*, and *p* itself is an *F*. (a) Why does it follow that if *S* essentially has *p*, *p* is essentially *p*? That is, why must the part essentially be a part? The answer is that if it were not a part, it would have to be separated (in the sense of dis-integrated) from *S*, and so *p* would have some other essence *E* that it either retained or lost when joined to *S*. If *p* retained *E*, then *S* would not be truly ontologically independent: it would rely on an essence that was not identical to or part of its own essence as a substance. If *p* lost *E* and took on a new essence *E'*, then one thing would have two essences, which is impossible either synchronically or diachronically.

(b) Why does it follow that if *S* has *p* essentially, *p* is essentially an *F*? Why couldn't *p* be a *G*? The answer is that as long as the part *is* a part, and the part is of a certain kind, then it *must* be of that kind. Otherwise *S* itself lacks an essence or would putatively have an essence it could not possibly have. If the critic postulates that a human has a liver that is not essentially a liver while still a part of the human, one either loses any grip on what a human actually *is* (a human could be literally anything) or is asked to believe that a human essentially has a liver that could be, say, a butterfly, which is impossible or absurd.

(c) Why should we believe that just because *S* has *p*, *p* has any essence other than what it would have *before* being joined to *S* or *after* being separated from *S*? The answer is that no option here would be acceptable. If *p*'s essence is to be a substance in its own right, then *S* will not, contra hypothesis, be a substance after all since substances are not composed of other substances. The same applies if *p* is supposed to be an artefact, a collection, or a part of some other substance.

In short, none of the obvious alternatives—no doubt imaginative metaphysicians could devise others—are acceptable, if we reject the thought that the essence of the parts of a substance is provided wholly and exclusively by the essence of the substance to which they belong. The thesis of Reverse Mereological Essentialism, then, is that the parts of a substance are essentially parts of that substance. Anything not essentially a part of substance *S* is not part of *S* at all. Moreover, if a part *p* of *S* *ceases* to be a part of *S*, then *p* ceases to exist altogether. As we will see, this does not entail that anything vanishes or that no trace of *p* is left behind. Nor does it entail

[20] Koons (2014: 160, n.2) seems, unwittingly, to recognise such magic.

that for *p* to be part of *S*, it must be that *S* is whole or complete. *S* can be a substantial whole (indeed it must be whole if it is substantial) without being a whole substance. It might still lack certain other parts or qualities needed for the normal expression of its essence: an animal is still a substantial whole after it has lost a limb, though the normal expression of its essence is impeded. Hence RME does not entail that loss of an essential part is impossible, only that if the part is lost it ceases to exist. The consequences for the substance itself might be that the substance also ceases to exist (if mereological essentialism is true of it as well) or that the substance continues to exist in an impaired state, as when an organism continues to function without a limb. Further, although RME entails nothing about the truth of emergentism, it does entail that some kind of top-down *formal* causation obtains—both of which positions are congenial to many neo-Aristotelian metaphysicians.[21] It certainly leaves room for agnosticism about top-down *efficient* causation.

What, then, is the relation between RME and Aristotle's famous Principle of Homonymy? Homonymy for Aristotle is simply the phenomenon whereby two objects may possess the same name but different essences, the sameness of name explained by some similarity between them. The Principle of Homonymy is taken to be a thesis about homonymy as applied to substances and their parts, though the thesis is often found in the context of a discussion of things such as statues and/or their parts[22] or pictures of substances compared to substances themselves.[23] Just as a statue of a man is a man in name only, so the hand of the statue is a hand in name only and a picture of a man is a man in name only.[24] The same applies to a severed part of an organism, the dead part of a living organism, or the part of a dead organism.[25] The principle can then be stated as: necessarily, *p* is a literal part of substance *S* just in case *p* is functioning as a part of *S*. I take the Principle of Homonymy, so stated, to be necessarily extensionally equivalent to RME albeit not saying exactly the same thing. RME is about the essence of the part of a substance, whereas Homonymy is about the metaphysical status of a *former* part of a substance. It is doubtful that this distinction in connotation is metaphysically significant, and equally doubtful that RME could be true while Homonymy was not, and vice versa.

3 Objections to RME with replies

Although I have given a very general master argument for RME, it is in the consideration of objections that I submit much of the defence can be conducted, particularly since some of the objections are based on misunderstandings and misinterpretations

[21] For a recent example, see Tabaczek (2019). For my own understanding of formal causation, see Oderberg (2021).

[22] *De Anima* II.1, 412b20, Ross (1931).

[23] *Meteorologica* IV.12, 390a14, Ross (1931).

[24] *homonū'mōs*.

[25] *De Anima* 412b20; *Metaphysics* VII.10, 1035b23-24, Ross (1928); *Meteorologica* IV.12, 389b35. On homonymy in Aristotle, see further Ward (2008).

of the thesis under examination. Clearing up confusions enhances plausibility, though it will not necessarily convince the sceptic.

(i) Isn't every example of Aristotle's, when discussing Homonymy as applied to substances, about *living* substances?[26] So perhaps he thought it applied only to those. Hence we should only take RME as applying to those as well.

In reply, Aristotle does not speak only of organic substances when defending Homonymy. In the *Meteorology*,[27] he considers fire and water and substances where 'matter predominates most',[28] and also speaks of 'inanimate bodies like copper and silver'.[29] Although the discussion can be difficult to interpret, it is clear that Aristotle speaks indifferently of the animate and inanimate when discussing Homonymy here. He states that 'intermediate bodies', i.e., intermediate between prime matter and pure form,[30] each have a final cause[31] and are not just bodies consisting of, say, fire or water or flesh or intestines. Rather, all such things 'are determined by their function, and the true being of each consists in its ability to perform its particular function.'[32]

A friend of RME might think one ought to concede the objection since it can only help the case. After all, if RME only applies to organisms it is easier to defend, given the special way in which organisms behave as compared to the inorganic world. One should, I submit, gracefully decline the invitation. All parts of all substances, organic and inorganic, are wholly defined by their function in relation to the substances to which they belong. The parts *subserve* the whole in a way that does not apply to, say, an artefact or a pile of stones. By 'subserve' I mean that the parts of a substance, in their essence and function, are wholly defined and constrained by what they do to or for the substance to which they belong, thus contributing *exhaustively* to the essence and function of the substance itself. Although the organic and inorganic are significantly different, this generic subservience of parts to wholes is the same. The exhaustive explanation of the essence and function of a human liver is in terms of what it contributes to the essence and function of the human whose liver it is. The same, I submit, is true of a particular chunk of gold belonging to a lump of gold. I do not mean a piece of gold that is, say, stuck with glue to a lump of gold, or that is found in a larger lump of mineral including other chunks of gold and sundry metals. I mean a chunk that is part of a lump, that overlaps with other chunks belonging to the lump, and that is chemically fused to the rest of the gold in

[26] For example in *Categories* 1a1-5 (Ackrill 1963: 3) and *Meteorologica* IV.12, 390a14, Ross (1931).

[27] *Meteorologica* IV.12, 390a1-14, Ross (1931).

[28] *hópou dē pleiston tēs hūles.*

[29] *ta ápsūcha hoíon chalkós kai árgūros.* Straight after speaking of the hand of a dead man as a hand in name only, he adds that the same can be said of a flute sculpted of stone, which might also be called a flute (*auloì líthinoi*) (*Meteorologica* IV.12, 390a1). Although a flute is an artefact and not a substance, this shows that Aristotle does not apply Homonymy only to the living.

[30] This is my (possibly contentious) gloss on *hē men hūlē oudén állo par' autēn, hē d'ousía oudén állo hē logos*.

[31] *heneká tou.*

[32] *hápanta d'estín ōrisména toi ergoi. tá mén gár dūnámena poieín tó hautōn érgon alēthōs éstin hékaston.*

whatever crystalline structure that lump happens to have, even if the lump contains non-gold impurities, as is so often the case with lumps of mineral.

It might seem that the difference between a human organ, say, and a chunk of gold in a lump of gold is so stark that the very idea of such chunks as parts subserving the whole is absurd. In fact, I think this difference cuts both ways. On one hand, the organic differentiation occurring in organisms with specialised parts makes manifest the idea of subservience: the liver has one special subservient function (or suite of functions), the heart another, legs another, and so on. Nothing like this applies to a lump of mineral. On the other hand, it is this very differentiation that motivates the obvious objection to RME, to be considered shortly, that organs can exist wholly separated from the substances to which they once belonged, as when a heart is removed and kept alive for future transplantation. A lump of gold does not suffer from this problem. It may have all sorts of odd-shaped bits and pieces among its chunks but they do not have specialised functions. So there is hardly a starting intuition that if I removed one of those bits and pieces, or carved out a chunk of gold, the resulting object would be doing just what it did when part of the original lump, albeit unsuccessfully (as when a critic of RME might say that the pre-transplant heart on ice was still doing its thing, namely beating and pumping blood, albeit without complete success or in an attenuated way).

On the contrary, the separated chunk, while still of course *gold*, is in no way functioning as it does when part of the lump. When fused, it is part of the crystalline structure peculiar to that lump. If we are mereological essentialists about lumps of gold, we should say that when part of the lump, the unseparated chunk contributes to the lump's very existence. If we are not mereological essentialists about such things, we should say simply that the chunk contributes to the lump's contingent qualities of shape, weight, volume, and so on. When separated, it does *none* of those things. When separated, it now has its own shape, weight, volume, and other physical characteristics that it very doubtfully has when fused to the lump given that it is overlapped by so (indefinitely) many other chunks. Furthermore, if—as is quite plausible—one could mount a case that a lump of gold does not even *have* parts in any standard sense (so it is mereologically simple without being metaphysically simple tout court), so much the better for RME as applied to such inorganic solids. One might treat RME as trivially true of such solids (the usual philosopher's trick) or else expand the 'M' in RME, holding that it also covers whatever it is that a lump of gold consists of apart from gold itself, such that those constituents, even if not full-fledged parts, are *so* intimately connected to their parent lump that they have not even a scintilla of an essence of their own when removed from their lump. RME, as I see it, would be strengthened on such a view.

(ii) Separation of a part from a substance, if RME is true, would involve the literal destruction of the part and its replacement, as Koslicki puts it, by a 'numerically distinct, qualitatively similar object'—implying that 'the creation and destruction of objects is a much less involved affair than we ordinarily suppose' (Koslicki, 2008: 114). Robert Koons, also sceptical about RME, says it entails that 'whenever a new composite substance, such as an organism, is generated, the material components incorporated into it are literally annihilated and replaced by new elements, each of whose existence and identity are dependent on

the continued existence of the whole substance' (Koons, 2014: 160). Such implications or entailments are, they believe, on the face of it objectionable.

In reply, take first the question of qualitatively similar or identical replacements. This is not quite the right interpretation of what happens when a substance gains or loses parts, and I suggest that Koslicki is misled by the carburettor example she uses in this context. A separated part of an artefact, despite losing some or all function, still exists in the context of a world of minds with intentions and purposes for that part. A carburettor that is not, right now, mixing air and fuel inside a car for internal combustion is still *intended* to do so, and is in this sense no different ontologically to a bread knife that is not, right now, cutting bread. Against this background, it is correct to say that the mechanic is, literally, going to put the repaired carburettor back in the car. There are, by contrast—and by definition—no minds or intentions on which a substance is ontologically dependent.[33] Hence there is not, on this score, any ontological foundation that could ground the continued existence of a separated part of a substance as opposed to the separated part of an artefact.

It is wrong to think of the separated part of a substance as an object that has done no more than shift its location, remaining otherwise qualitatively similar or even identical. Along the same lines, it is wrong to conceive of such a separation as a so-called Cambridge change, as when Fred becomes the tallest man in the room once all the taller people have left. In fact there is a quite *visible* change in a separated part of a substance, or more precisely when a part is separated from a substance. The separated entity, though it may be in many intrinsic respects—possibly all but I suspect this is never the case—similar to the unseparated part, is no longer *integrated* with the substance, and so cannot possibly be doing any of the things the unseparated part must, by definition, do that consist in *subserving* the whole substance. The putative separated heart—not a literal heart—is doing none of what a genuine heart does. But surely a separated heart can, with available technology, continue to beat and even circulate blood? I will say more about this sort of case later, claiming only for now that beating and circulating blood are *not* essential properties of a heart. The relevant essential properties of a human heart are to beat *inside* a human body and to circulate blood *around* a human body. Lest I be accused of question-begging stipulation, the point is that mere *beating* and *pumping* no more illuminate what a heart essentially is than *contracting* and *storing electricity*. It is how these functions and operations contribute to the function and operation of the organism with a heart that gives the essence. It is, then, quite arbitrary metaphysically to focus on beating and pumping as essential any more than contracting, storing electricity, or for that matter making a noise or being pink and shiny.

[33] What about their creator, on the assumption that God exists and maintains all substances in continued existence as well? But this can be true without its being the case that divine intentions bear the same relation to the divine creation as that those of an artificer to an artefact. For more on this distinction, see Feser (2013).

The relation of a chunk of gold separated from a lump of gold is no different in this respect. The separated (putative) chunk is no longer physico-chemically integrated with the lump and so makes no contribution to the overall crystalline structure, weight, density, volume, or other properties of the lump. It is, then, in no way rightfully called a chunk—in the specific sense used here. It is, rather, a new lump of gold; the chunk literally went out of existence when the matter constituting it was removed from the lump. The same can be said of, for example, a water molecule removed from a puddle of water. I take it that a puddle of water is a substance and that its water molecules are parts. If a single water molecule could be removed by electrolysis from the puddle, the resulting entity—the separated molecule of H2O—would still chemically be water, but it would not be doing any of what it does essentially as part of the puddle. It contributes nothing to the crystalline structure of the puddle, nothing to its liquidity, viscosity, volume, and so on. But if the separated entity is to be literally a part of the puddle it *must* do these things, otherwise to call it a part is vacuous, or a kind of metaphysical voodoo. I could multiply examples, but the general line of argument should be clear enough.

(iii) Now consider the closely related worry that separating a part from a substance involves the annihilation of the part, and conversely introducing a part to a substance means creating the part. We have already seen how both Koons and Koslicki are perplexed by this apparent consequence of RME.

In reply, if someone is puzzled by what happens ontologically when a part is separated from a substance, they should be puzzled by *all* substantial change. Every case of substantial change, be it metabolism, chemical transmutation, the destruction of a rock under a jackhammer, the fertilisation of an ovum by a spermatozoon, or the binary fission of an amoeba, involves the literal going out of existence of one substance and the coming into existence of another. How easy or 'involved' it is to produce or destroy a substance is metaphysically irrelevant. Moreover, the use of terms such as 'creation' and 'annihilation' is misleading, since no literal creation or annihilation takes place in substantial change. There is, to be sure, what Aristotelian-Scholastics call 'generation' and 'corruption', but true creation and annihilation are *ex nihilo* and *in nihilum*—from literal nothing and into literal nothing. Substantial change does not instantiate creation and annihilation precisely because of the existence of prime matter—another discussion for another occasion. Even if one is sceptical of prime matter, the scepticism should not carry over to the separation of a part from a substance, or the introduction of a new part, because there is guaranteed to be an existing material substrate for both processes—an existing piece of matter, whether or not qualitatively similar, in some appropriate sense, to the prior or later part. In other words, whilst RME in no way commits one to creation and annihilation, it does commit one to the *transformation* of matter from one metaphysical state to another. This, I suggest, is far less to swallow than what the critics suppose must be accepted.

(iv) Koons discusses the 'radical thesis' expounded by Anna Marmodoro, following Theodore Scaltsas, following Aristotle, that the parts of a substance exist 'only

potentially'. This he takes to entail that substances literally have no parts and so there are no composite substances at all. Yet this is absurd on its face.[34]

Reply: There is a lot going on in Koons' objection, and in the thesis itself, the main points of which I will unpack here. (iv.a) As to the question of whether there are only 'potential parts' of a substance: there are indeed potential parts of a substance in the sense that, say, a lump of cardiac flesh on ice can be a potential part of Fred. This is the sense Scaltsas intends when, again unfortunately, he uses the example of an artefact.[35] Such an example, discussed in the context of the 'radical thesis' as Scaltsas does, is bound to confuse. Koons, I submit, seems to have taken on, via Marmodoro, some of the confusion generated by Scaltsas inasmuch as he mixes together the diachronic creation/annihilation issue with the synchronic 'status of the parts' issue. The former I have already dealt with: parts taken on by, or lost by, a substance are not created or annihilated. Here, I would say that Marmodoro is more measured in her exposition, saying that 'being unified into a whole *re-identifies*[36] the parts in a way they cannot be when apart from the whole.'[37] Reidentification is consistent with non-creation and non-annihilation, as long as we understand it in terms of the persistence of a material substrate that literally takes on a new form, constituting a numerically distinct entity from the one that belonged to the substance pre-separation or that was separate from the substance before introduction into it.

(iv.b) As to whether RME in any way has or threatens the 'nihilistic'[38] implication that substances literally have no parts: this takes us to the synchronic status question concerning how we should think of the parts of a substance when, tautologically, they are joined to it and functioning according to their essence. Koons is right that there are nihilistic implications in taking the parts of a substance literally not to exist.[39] To think that we are systematically wrong in our belief that people have hearts, dogs have tails, molecules contain atoms, lumps of gold have chunks, puddles of water contain H2O molecules, and so on, is beyond consideration. The question is, then, one of admitting the truth of such beliefs while respecting RME. To this end, we must hold that there are literal parts of substances, but the way in which these parts exist is through their existential dependence on the whole, whose form gives them the essence by which they operate to subserve that whole. This, moreover, is consistent with the idea that, when some matter is joined to a substance and becomes a part of that substance, it brings with it qualities that are *not* defined by relation to the substance the matter joins. So when hydrogen and oxygen are combined to form water in a fuel cell, the hydrogen is largely responsible for the surface tension of the water. When a lump of cardiac flesh is transplanted into a human body, the qualities of that particular tissue enable the survival of the patient; not any

[34] Koons (2014): 160ff; Marmodoro (2013): 15, n.12; Scaltsas (1994): 188.
[35] Scaltsas (1994): 189.
[36] Emphasis in original.
[37] Marmodoro (2013): 15.
[38] Koons (2014): an apposite description of the view that substances have no parts.
[39] Leaving aside my earlier speculation about a class of mereologically simple substances that were not metaphysically simple.

old human tissue will do. So it would be as crazy to deny that pre-existing qualities enter into, and remain qualities of, parts of substances as it would be to deny the existence of the parts themselves.

That said, the term 'potential part' or part 'existing potentially' is an unfortunate one and best eschewed. A 'potential' part, as understood by classical Aristotelians, is in fact an *actual* part that exercises its *powers* or *potentialities* wholly in subservience to the substance to which it belongs. For this reason, I prefer the term 'virtual' part, with the gloss that a virtual part of a substance is a *real* part exercising its function by its *virtues*—the somewhat archaic term for powers—and that these are essential powers bestowed by the substance. Still, the term does play on the virtual/real contrast, because if by 'real' we mean something like 'having independent existence', then virtual parts are *not* real in that sense. They are existentially dependent on the wholes to which they belong.

One marker of this is the phenomenon of *loss* of qualities when a material object joins to a substance or combines with other objects to generate a substance. The boiling point of hydrogen is minus 252.9 Celsius but you will not be able boil any hydrogen in a puddle of water at that temperature. Oxygen boils at minus 183 Celsius but you can't boil it at that temperature when the atoms are part of water. A plant grafted onto another plant will lose its roots before grafting, disabling it from taking in any water through roots other than those provided by the recipient. There is, of course, correlative *gain* of qualities on separation: a detached limb of an animal gains the power of decomposition, which it does not have as a functioning limb.[40]

(iv.c) Consideration of the synchronic status question does raise a delicate issue regarding the relation of the form of the whole to the form of the part. Concerns about this relation might lie behind some of the worry expressed in objection (iv). Since a part of a substance is not itself a substance, it has no substantial form of its own. And yet, as we have seen, the part derives its essence wholly from its role as subservient to the substance to which it belongs. So how can it *not* have the substantial form of the whole, particularly in light of the Aristotelian-Scholastic doctrine of the unicity of substantial form?[41] According to this doctrine, there are not competing or complementary substantial forms in a substance—for example, in the case of a dog, the canine form, the mammalian form, and the animal form. There is but a single form, from which the genera to which the dog belongs are no more than abstractions. Hence Fido is as much a possessor of the canine substantial form in one of his paws as in his whole being. I am as much a human in my little toe as I am in my whole human being. But then what could the relationship be between, say, the human substantial form and the parts of a human? We cannot, of course, say that my heart is a human being—only that it is a human heart. What we have to say, then, is that the human heart only has *accidental* forms, albeit *necessary* accidental forms—true *properties*—bestowed by the substantial form of the human. Those necessary

[40] When the animal dies the conjoined limb decomposes, but a dead animal has no functioning parts anyway so this is irrelevant.

[41] For more on the unicity doctrine, see Oderberg (2007): 68–71.

accidents—being a certain kind of tissue, being capable of electrical conduction and of pumping, having four chambers, and so on—owe their entire being and organisation among themselves to the substantial form of the human being. Just as the heart is existentially dependent on the human, so the properties of the heart are existentially dependent on the substantial form of the human. What we should say, then, is that the parts of a substance share in the substantial form of the substance by *participation* only.

(iv.d) Concerning Marmodoro's position, which gives rise to Koons' worry in objection (iv) that substances, on RME, might be taken to have no parts: she says that the parts of a substance 'have no distinctness in the substance; they exist in it holistically'.[42] The issue here is more one of proper locution than of content. The parts of a substance do have a distinct existence, just not an independent one. They exist holistically only inasmuch as their essence is delivered by the substance itself, but not in any sense implying that substances have no parts or that they have parts without a clear and distinct identity (modulo the vagueness that might be thought to infect all of ontology).

(v) The claim that the essence of the part is given by the essence of the substance is obscure at worst, implausible at best.

Reply: The short answer to this short objection is that it amounts to no more than denying the Aristotelian-Scholastic theory of substance. We can, of course, say more. The idea of essence being 'given', or 'bestowed', or 'conferred'[43] by the substance is that of *formal* causation.[44] The human heart is what it is in virtue of being part of a *human*, not the other way around. Here, the explanation is *metaphysical*. It is by no means historical, since the question of where humans and/or their hearts came from, over time, is a different question entirely. Nor is it a matter of epistemic priority, for it is plausible—albeit arguable—that we *understand* what humans are by first understanding their parts and how they interact. Metaphysically, however, the parts depend on the whole for their very existence and identity. The substantial form, on this account, unifies matter into the human being—not prior human parts, since there are no human parts, with their own essences, ready to be unified. For what would be their essences—their *real* definitions—that made no necessary reference to the human being itself? By contrast, the real definition of a human being—a rational animal—makes no necessary reference to human parts.

In fact this is too quick, and instructively so. For if we take body plan to be part of the human essence, then we do, if only implicitly, make necessary reference to human parts when defining the human being as a rational animal. We do not, however, make necessary reference to human parts *qua* human, whereas of course, when we define the human heart in terms of the human being, we make necessary reference to the human being qua human. For an even clearer illustration, take the definition of a dolphin. Without getting into the specifics of defining the cetaceans, it is plausible to include flippers as part of the definition, but it is not necessary to make

[42] Marmodoro (2013): 15.

[43] See Marmodoro (2013) for 'conferred'.

[44] On formal causation, see Oderberg (2021) and the other papers in Jansen and Sandstad (Eds.).

reference to flippers *qua* dolphin flippers: it is not of the essence of dolphins to have dolphin flippers! It is, however, of the essence of dolphin flippers to belong to dolphins. This is enough, as far as the present discussion goes, to give plausible content to the idea that the essence of the parts of a substance is given by the essence of the substance, not the other way around.

In answering this objection, I have alternated between talk of metaphysical explanation and of definitions that make reference to entities, which might not seem an innocent switch of locution. For an Aristotelian-Scholastic metaphysician, however, there will be less to this than meets the eye. The *real* definition of a thing[45] is an expression of its *essence*, whether that thing be a substance, a part, an accident, or some other worldly entity, whether dependent or not on other entities in various ways. To say that the (real) definition of a part *p* of a substance *S* makes necessary reference, whether explicit or implicit, to *S* itself, is simply the definitional way of saying, in purely ontic terms, that *p* is what it is—more precisely, has the essence it has—because of what *S* is and *p*'s relation to *S*. Moreover, the converse cannot be true (without countenancing definitional circularity, thereby reflecting circular metaphysical explanation—which should commend itself neither to a Scholastic nor to any other kind of metaphysician). The examples just given are designed to illustrate these points, and the more informal way of speaking—that the essence of the part is *given* by the essence of the whole—should be understood in these more precise terms.

Might we, then, appeal to the fashionable concept of *grounding*,[46] or to one among various kinds of ontological dependence discussed in recent years,[47] to give more flesh to my account of how to understand RME in basic terms? There is no agreement on how to understand grounding, though the idea of a primitive relation of metaphysical explanation—such as '[true] in virtue of [the nature of]'[48]—is not uncommon. It should be clear that inasmuch as grounding involves metaphysical explanation, it must—if my account is correct—be essentialist explanation, and so if anything is to be taken as primitive, essences themselves are a better candidate than grounding.[49] How one might formulate in more depth the kind of 'grounding' in play here, which is a *dependence* relation between part and substantial whole, is for another occasion. Suffice it to say that some candidate ideas in the literature are of greater potential use than others.[50]

[45] See Fine (1994), Oderberg (2007).

[46] A useful survey can be found in Correia and Schnieder (2012).

[47] For an overview of some key concepts, see Koslicki (2013).

[48] Correia (2005). He is explicit that reference to 'nature' does not entail commitment to essentialism (29).

[49] I am not saying that essences should be taken as primitive, only that they play a more basic role than grounding itself, if metaphysical explanation is what we have in mind.

[50] Might the Scholastic defender of RME help themselves, then, to one of the varieties of 'essential dependence' on offer in the literature? E.J. Lowe's 'essential identity-dependence' is one of several important dependence relations he identifies (Lowe, 2013): the informal idea is that one thing is essentially identity-dependent on a second just in case it is part of its essence to be functionally related (in a broad) sense to the second, but not conversely. There is also Kit Fine's 'constitutive essential dependence' (as Koslicki calls it), whereby if one thing is a constituent of the essence of a second, then the sec-

(vi) Koons[51] and Koslicki both distinguish between RME as true of *particulars* and RME as true of *kinds*. Koons explicitly, and Koslicki implicitly, find RME_k, as we can denominate it, more plausible than RME_p. RME_p says (using Koons' formulation): 'If *x* is a proper part of substance *y*, then, necessarily, if *x* exists, then *y* exists and *x* is a proper part of *y*', whereas RME_k says: 'If *x* is a proper part of a substance of kind *K*, then, necessarily, if *x* exists, then *x* is a proper part of some substance of kind *K*.' The former entails the latter but not vice versa. Why should we believe one but not the other? Both Koons and Koslicki appeal to organ transplants. RME_k but not RME_p would, as Koons puts it, 'be compatible with the possibility of organ transplants: a heart could continue to exist in a new host, even though separated from its original donor.'[52] As Koslicki puts it, 'we may be tempted to say that my heart survives by becoming part of the body of another human being.'[53]

Reply: The problem with this position, however, is that once the heart leaves the human to which it belongs it ceases to exist altogether; all that remains is a lump of cardiac flesh. If RME does not entail that, it does not entail anything. So RME, however formulated, must respect this Aristotelian insight. RME_k, as Koons would have it, means that if Fred's heart is transplanted into Frieda, it undergoes intermittent existence, ceasing to exist when separated from Fred and coming *back* into existence when joined to Frieda. Yet what independent reason could there be for countenancing intermittent existence? Note how Koons and Koslicki frame the intuition: that 'a heart could continue to exist in a new host' and that 'my heart survives'. I am not sure there is such an intuition, and if not, their framing merely begs the question against RME_p. When we say, 'How selfless of Fred to be an organ donor; Frieda now has his heart', this statement is perfectly compatible with both formulations of RME. To say that Frieda now has Fred's heart, or that Fred's heart survives in Frieda, can happily be given a reading that does not take the speaker to be committed to Fred's heart's popping out of and back into existence. To be sure, it can be uttered without a commitment to RME at all, so perhaps we should avoid appeals to breezy locutions, as opposed to entrenched intuitions, when trying to resolve subtle metaphysical difficulties. That said, I would cheekily add that when someone donates ten pounds to charity, they do not expect the very same banknote, or the very same arrangement of pixels on a screen, to be handed over to the beneficiary.

Less facetiously, the reason one might favour RME_k over RME_p is the thought that Fred's heart does literally still exist between separation and transplant, in which case we should think that what goes into Frieda just is Fred's heart. Otherwise, what could even ground the thought that it is *Fred*'s heart, rather than merely *a* heart, that Frieda receives? Note: Frieda's receiving a heart does not imply that a heart existed to be received, only that what ends up in her body is a heart. But if Fred's

Footnote 50 (continued)
ond is essentially dependent on the first (Fine, 1995). Both formulas are congenial to the defence of RME presented here, but it would take us too far afield to examine them in detail.

[51] Koons (2014): 160; Koslicki (2008): 113, n.28.

[52] Koons (2014): 160.

[53] Koslicki (2008): 113, n.28.

heart is right there, on the table, just before transplant, the obvious thought to have is that what Frieda receives is the pre-existing heart of Fred. And if this is the line of thinking behind Koons' and Koslicki's remarks, then it is hard to see what is left of RME. Koons asks: 'What should we say about the heart when it is in transit, between the donor and the recipient?' His answer: 'I would suggest that it remains part of the body of the host, even when physically separated from it, until it has been successfully integrated into the functioning of the recipient's body. Up to that point, it seems reasonable to suppose that it is still supposed to be contributing to the functioning of the donor's body.'[54]

Yet it seems bizarre on its face—or maybe the kind of magic I disclaimed earlier—to suggest that something not conjoined in any way to a substance, not integrated[55] with it, not doing anything to it or for it, is nevertheless a *part* of that substance. Further, to say that the separated organ is 'supposed' to be contributing to the functioning of the donor looks like a claim that the heart is some kind of *artefact*, ontologically dependent on what someone supposes it should do. But if this is not what is meant—and I doubt Koons meant it—then what else could 'supposed' mean except some kind of objective essentialist designation? In which case, if the heart on ice is supposed to contribute to *Fred's* functioning, RME_p is vindicated after all, as it will be part of the essence of the heart to subserve the function of a particular individual. If Koons does not mean this either, then it is not clear what he means.

(vii) If the essence of the part is given by the essence of the substance, and if RME_p is true, what should we say of an organ shared by conjoined twins? Is this not a defeater of one or other of these conjuncts?

Reply: The essence of the part is given both by the *substantial form* of the substance to which the part belongs and, assuming RME_p, by the particular substance involved. The contribution of substantial form is, then, both universal and particular. Considered as a universal—the term *substantial kind* comes close to this concept in contemporary jargon—the substantial form contributes to the part's having the essence of subserving something and only something with that form, in other words, something belonging to the kind in question. Considered as a particular, however—the particular instance of that universal substantial form, informing that particular body—the substantial form contributes, to the essence of the part, the individual identity of the substance to which the part belongs.

Given, then, that conjoined twins share the same universal substantial form, the essence of the shared organ is still given by that form, but we would have to regard it as a case of overdetermination by formal causation. No obvious objection to formal causal overdetermination is apparent. Secondly, that the shared organ belongs to each twin is consistent with the essence of the organ being given by the essence of

[54] Koons (2014): 160, n.2.

[55] Where 'integration' implies that a part need not be *physically connected* to a substance to be integrated with it in a mereological way. Whether it does need to be physically connected, or whether it can be integrated into the life or operation of the substance without such a connection, will depend on what kind of substance we are considering. I will leave that taxonomic question as an exercise for the reader. (Thanks to Jumbly Grindrod for encouraging me to highlight this distinction.).

the human to which it belongs: its essence is given by *both* humans. In other words, we have not required that the essence of a part be given by one and only one substance. What this situation entails, though, is that should one twin die and the other survive, the result would be the same as in the case of separation and donation to someone else—a new organ would come into existence. The difference would be that there was no gap in between the ceasing to exist of the old, shared organ, and the coming into existence of the new, unshared organ. So there would be no question about the status of the lump of organic matter in the middle of the process—the 'shared organ on ice', to put it loosely. If the result seems strange, all I can say is that conjoined twins are an unusual phenomenon.[56]

A parting thought before moving on to the final section. My defence of RME_p, which I will now revert to calling good old RME, gains support from the comparison with modes—individualised qualities or tropes to use the contemporary terminology. Modes are ontologically dependent entities as well. The redness of *this* fire engine essentially belongs to this fire engine. It cannot migrate to another fire engine or to another kind of object such as a beach ball,[57] any more than a name can migrate from one person to another even if the second takes on the first's name (such as a child or spouse). Fred's heart is wrongly characterised as merely a human heart that happens to be in Fred, and not because Fred was born with it. Even a person with a donor heart does not have a heart that happens to be in them. Rather, it is a particularised part with a particularised role, with its individuation dependent on the identity of the person it belongs to. A redness mode such as the redness of a particular fire engine cannot migrate to a beach ball because the mode does not have its *own* essence, in the sense of an essence not bestowed on it by its possessor. The essence is not wholly bestowed: after all, that a redness mode has a certain saturation or hue need not depend on the identity of its possessor. Similarly, a heart is constituted by flesh that can, for some time, persist outside any human. But that is not all there is to the essences in either case. The mode inheres in a particular individual, which is why it is a particularised quality in the first place. And the heart belongs to a particular individual, which is why it is a particular heart. That it loses its function outside the individual, and so ceases to exist as a heart at all, proves that it cannot migrate. (In this respect modes are different, of course, as they are not spatio-temporal individuals.) A heart transplant is not an example of the metaphysical version of 'pass the parcel'.

4 The matter and parts of RME

We can further illustrate some right and wrong ways of understanding the Aristotelian-Scholastic position by considering Ross Inman's recent defence of what he calls Substantial Priority (SP): 'the view that some ordinary, composite objects fall

[56] What if the conjoined animals belonged to different species? I am content to leave the science fiction to one side unless/until that possible world becomes actual.

[57] Here I agree with Lowe (2006): 27.

within the category of substance', where by substance he means entities that 'are not only metaphysically prior to each of their parts, but also ground the existence and identity of each of their parts.'[58] Inman takes Substantial Priority to be equivalent to reverse mereological essentialism, and I will proceed on the assumption of a rough equivalence albeit the theses are not identical in content.

Inman tackles the objection to RME by Koons to the effect that the thesis violates what Koons calls the Substrate Principle: 'something, the substrate, exists both before [and after] every kind of change, including substantial change'. RME is inconsistent with the Substrate Principle 'since RME entails that both the substance and all of its material parts begin to exist at the same moment,'[59] whereas the principle requires a substrate that is 'numerically one and the same before and after substantial change.'[60] Inman's response is, first, to deny that RME entails any particular view of persistence, but then to argue that whilst RME does hold that the pre-existing entities that are joined to a substance (and the post-existing ones that are separated from it) are not numerically identical to the part or parts they become, still there is a 'quantity or portion of stuff' that is numerically the same throughout the substantial change.[61]

Note first that Koons surely misspoke by saying RME requires that the substance and all its parts begin to exist at the same moment. This is obviously false: one need only eat some food to discover that one acquires extra flesh that comes into existence after oneself. Substances do nothing if they do not gain and lose parts throughout their careers, even if it is of course true that every substance's *initial* and *terminal* parts begin and cease to exist at the same time the substance comes into and goes out of existence, respectively. Koons' real worry is that there is no persisting material substrate during substantial change of the kind involved in the gain or loss of parts. Inman posits a quantity or portion of stuff. Yet he does not tell us *what* stuff. If the change is genuinely *substantial*, however, the Aristotelian tells us it is, quite simply, *prime matter*.[62] This literally amorphous stuff—the closest one can get to nothing without being nothing—has the form of cardiac flesh pre-transplant and the accidental forms bestowed by the substantial form of the recipient after transplant. Unfortunately, as close as Inman gets to acknowledging prime matter here, he does not take the final step. Yet for the Aristotelian-Scholastic, prime matter is precisely the necessary metaphysical posit that functions as the substratum of *all* substantial change. Moreover, it is not merely the substrate of *actual* substantial change, whether from food to the metabolites needed by the animal that eats it, or from a proton to a neutron via inverse beta decay. It is the substrate that makes substantial change a *real possibility*, or a potentiality: in other words, wherever substantial change has the potential to occur, even if it does not actually occur, there must be prime matter as the real substrate allowing for this standing potentiality. (Compare, at the level of

[58] Inman (2018): 5.
[59] Koons (2014): 162.
[60] Koons (2014): 163.
[61] Inman (2018): 246.
[62] On which, see Oderberg (2007), (2022).

'ordinary' matter—*secondary* matter, as the Aristotelian calls it—standing powers for manifestations that never obtain.) Inman takes us, Moses-like, to the promised land—of prime matter—but for some reason does not go all the way.

A further lesson from Inman's analysis is the need, first, to remember that RME is a *mereological* theory if it is anything at all, and secondly to distinguish sharply between *mere* proper parts and *substantial* proper parts. Inman considers the serious worry that RME (his SP) is empirically inadequate inasmuch as it 'fails to capture the fundamental causal activity of what appear to be substantial proper parts of composite substances.' He goes on: '[Is] it not true that some of our best empirical theories involve reference to fundamental or irreducible causal properties of the proper parts of composite substances? That is, does not the truth of scientific explanations require the existence of substantial proper parts of substances qua bearers of causally fundamental properties?' Inman offers the 'dispositional properties of genes' as an example of 'causal powers [that] are perfectly natural or non-redundant'.[63]

Inman offers, without adjudicating between them, five possible responses to what he calls a 'formidable objection'. I will not repeat the details, noting the key point for present purposes, which is that once we fix with clarity on the distinction between substantial proper parts and mere proper parts,[64] remembering all the while that RME is no theory at all without an underlying mereology, we see immediately that there was never any reason to indulge in the first four options Inman considers. The first three—what he calls 'distributional properties' (following Parsons),[65] 'localized tropes',[66] and 'regionalized instantiation'[67]—are all inconsistent with the existence of any proper parts of a substance. As Inman tellingly puts it when describing the second option: 'It is in virtue of a substance instantiating a localized perfectly natural property that it's *as-if* a proper part that occupies one its sub-regions instantiates that property.'[68] It is not merely that the existence of parts of a substance (parts simpliciter as I am calling them) is an essential component of RME, but that—as we have already noted—any theory denying the literal existence of such parts is so contrary to what is evident to both reason and the senses as to be a non-starter.

Inman's discussion contains a persistent indeterminacy about whether he takes RME to be inconsistent with the existence of proper parts of substances, or whether it is only inconsistent with the existence of *substantial* proper parts of substances. We see this in his fourth proposal, which involves endorsing an ontology that includes portions of 'stuff' as well as the objects constituted by them.[69] Although if we adhere to RME (SP) we cannot, says Inman puzzlingly, attribute spatial intrinsics—different intrinsic qualities present at different locations of a single substance—to that substance's proper parts, we can attribute them to the *portions of*

[63] Inman (2018): 257.
[64] As Inman (2018) does at p.217.
[65] Inman (2018): 259–61; Parsons (2004).
[66] Inman (2018): 262.
[67] Inman (2018): 263.
[68] Inman (2018): 262 (emphasis in original).
[69] Inman (2018): 263–5; Markosian (2015).

stuff constituting the substance. It is not nit-picking to observe that Inman says: 'On this approach, while no proper part per se of the substantial whole instantiates perfectly natural properties, we can say that the stuff that constitutes its parts are the bearers of fundamental causal powers.'[70] There is some confusion in this sentence. The use of 'are' with 'stuff' might be a mere slip, but Inman says there are *parts* of the substance that are constituted by stuff, so maybe he is thinking of the *portions* of stuff constituting those parts. But if there are indeed parts, why not pin the intrinsics directly onto them rather than onto the portions of stuff constituting them? What is to be gained?

Again, the move here seems due to a failure to see that one might endorse proper parts of a substance without further attributing *substantiality* to those parts themselves. If one thinks the parts themselves are substances in their own right, doubts about RME emerge, since one might wonder which objects are in the ontological 'driver's seat', as it were—the parts that are themselves substances or the substance of which they are parts. These doubts can be assuaged by regarding the parts as *non-substantial*, and hence as having—as RME teaches us—no independent principle of operation of their own, that is, no principle ontologically independent of the principle of operation of the whole substance to which the parts belong.

It is the fifth option considered by Inman that gets us closer to the truth for an Aristotelian-Scholastic. The idea, which he calls 'comparative naturalness',[71] is that the defender of RME should not even concede to the critic that the causal powers of the parts of substances are *fundamental* in the sense of not being metaphysically grounded in the substances to which they belong. Such parts can have natural properties that are non-redundant and causally relevant to the operation of the substance, without being ontologically independent of the substance. Substances, then, may not have proper parts that are themselves substances. They *do*,[72] however, have proper parts, and those proper parts have properties that play a real causal role in the operation of the substances whose parts they are. And this is consistent with those properties, and the parts possessing them, having essences that are given by the substances themselves.

5 Conclusion

At first consideration, one might think that Reverse Mereological Essentialism is every bit as implausible as Mereological Essentialism itself—overly strong to the point of denying the obvious (to the extent anything is obvious in metaphysics) and doing violence to a relatively common-sensical understanding of reality. Yet it has never, as far as I can tell, been expounded and defended in a way that makes a virtue of its strength by revealing the general argument behind it and taking on directly the many serious objections that have been levelled against this key plank

[70] Inman (2018): 264.
[71] Inman (2018): 266–9.
[72] The compound ones, at least!

of Aristotelian-Scholastic metaphysics. The present analysis is offered as a contribution to the task of reappraisal that Reverse Mereological Essentialism deserves.

Acknowledgements I would like to thank, for comments and feedback, colleagues at the University of Reading, participants at the conference 'Neo-Aristotelian Perspectives on Persistence and Modality', especially the organisers Dirk Franken and Florian Fischer, and anonymous referees for this journal.

References

Ackrill, J. L. (1963). *Aristotle: Categories and De Interpretatione*. Clarendon Press.
Aquinas, St. T. (1955/c.1260) *Summa Contra Gentiles, Book 1: God, book 1 of On the Truth of the Catholic Faith* (trans.: Pegis, A.C.). Garden City, NY: Image Books/Doubleday & Company, Inc.
Chisholm, R. (1973). Parts as essential to their wholes. *The Review of Metaphysics, 26*, 581–603.
Chisholm, R. (1976). *Person and object: A metaphysical study*. Open Court Publishing Company.
Chisholm, R. (1978). Brentano's conception of substance and accident. *Grazer Philosophische Studien, 5*(1978), 197–210.
Correia, F. (2005). *Existential dependence and cognate notions*. Philosophia Verlag.
Correia, F., & Schnieder, B. (Eds.). (2012). *Metaphysical grounding: Understanding the structure of reality*. Cambridge University Press.
Feser, E. (2013). Between Aristotle and William Paley: Aquinas's Fifth Way. *Nova Et Vetera, 11*, 707–749.
Fine, K. (1994). Essence and modality. In *Philosophical perspectives* (Vol. 8, pp. 1–16). Ridgeview Publishing Company.
Fine, K. (1995). Ontological dependence. *Proceedings of the Aristotelian Society, 95*, 269–290.
Hoeltje, M., Schnieder, B., & Steinberg, A. (Eds.). (2013). *Varieties of dependence*. Philosophia Verlag.
Hoffman, J., & Rosenkrantz, G. S. (1994). *Substance among other categories*. Cambridge University Press.
Inman, R. D. (2018). *Substance and the fundamentality of the familiar*. Routledge.
Koons, R. (2014). Staunch vs. faint-hearted hylomorphism: 'Toward an Aristotelian account of composition'. *Res Philosophica, 91*, 151–177.
Koslicki, K. (2008). *The structure of objects*. Oxford University Press.
Koslicki, K. (2013). Ontological dependence: An opinionated survey. In M. Hoeltje, B. Schnieder, & A. Steinberg (Eds.) (pp. 31–64).
Lowe, E. J. (1999). *The possibility of metaphysics: Substance, identity, and time*. Clarendon Press.
Lowe, E. J. (2006). *The four-category ontology*. Oxford University Press.
Lowe, E. J. (2009). *More kinds of being*. Wiley-Blackwell.
Lowe, E. J. (2013). Some varieties of metaphysical dependence. In M. Hoeltje, B. Schnieder, & A. Steinberg (Eds.) (pp. 193–210).
Markosian, N. (2015). The right stuff. *Australasian Journal of Philosophy, 93*, 665–687.
Marmodoro, A. (2013). Aristotle's hylomorphism without reconditioning. *Philosophical Inquiry, 36*, 5–22.
Mercier, C. D. (1921). *A manual of modern scholastic philosophy* (Vol. 1). Kegan Paul, Trench, Trubner & Co., Ltd.
Oderberg, D.S. (2007). *Real essentialism.* Routledge.

Oderberg, D.S. (2021). Formal causation: accidental and substantial. In L. Jansen and P. Sandstad (Eds.), *Neo-Aristotelian perspectives on formal causation* (pp. 40–61). Routledge.
Oderberg, D.S. (2022). Is prime matter energy? *Australasian Journal of Philosophy*. https://doi.org/10.1080/00048402.2021.2010222.
Parsons, J. (2004). Distributional properties. In F. Jackson & G. Priest (Eds.), *Lewisian themes: The philosophy of David K. Lewis* (pp. 173–180). Oxford University Press.
Peramatzis, M. (2011). *Priority in Aristotle's metaphysics*. Oxford University Press.
Ross, W. D. (1928). *Aristotle: Metaphysics* (2nd ed.). Clarendon Press. Vol. VIII of The Works of Aristotle.
Ross, W. D. (1931). *Aristotle: De Anima*. Clarendon Press. Vol. III of The Works of Aristotle.
Scaltsas, T. (1994). *Substances and universals in Aristotle's metaphysics*. Cornell University Press.
Smith, B. (1987). The substance of Brentano's ontology. *Topoi, 6*, 39–49.
Tabaczek, M. (2019). *Emergence: Towards a new metaphysics and philosophy of science*. University of Notre Dame Press.
Ward, J. K. (2008). *Aristotle on homonymy: Dialectic and science*. Cambridge University Press.