

# Exemplification

“How things are”, graduate course, spring term 2011  
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Arguments for exemplification as parthood:

1. from what immanence amounts to
2. from what generic dependence amounts to
3. from the nature of universals

## Aristotelian universals

Most realists about universals think they are dependent entities. They are not individually dependent on their bearers, as tropes are, but nevertheless generically dependent on them. It is part of their nature that they cannot exist unexemplified.

They are not free-floating, as they would be in a Platonic heaven or a Fregean third realm, but are tied to their exemplifications: their ‘what’, so to say, is a ‘how’ – not of themselves, but of the particulars that are qualified by them. The tie that binds Aristotelian universals to their exemplars is quite strong: not just do universals (generically) depend on their exemplifications, they are also individuated by them. Universals are what they are in virtue of how they make their exemplifications to be. The universal *F*, for example, is what it is, in virtue of the fact that it is what all the *F*s have in common. It is immanent to them.

Instantiation requirement:

**(inst)** Every universal is exemplified.

It is unclear, however, what immanence amounts to. My proposal is that immanence is parthood:

**(immun)** A universal is a (non-spatiotemporal) part of every particular that exemplifies it.

At first sight, this may seem implausible.<sup>1</sup> Not even Aristotle believed it (*Cat.* 2: 1a24-25, 5: 3a31-32). The plausibility it may have, I think, stems from two considerations: a general ban on necessary connections between distinct existences, lately come to be known as the doctrine of *Humean supervenience*,<sup>2</sup> and the fact and the nature of the property transfer between universals and their exemplifications.

Can we even go further? Does **(??)** not only give us a necessary, but also a sufficient condition on exemplification? Not so: not all universals that are part of *a* are exemplified by *a*. There are, in other words, both upwards and downwards specific properties. So we need further conditions on parthood to turn **(??)** into an account of exemplification.

Another difficulty is that exemplification and parthood, even with additional conditions imposed, have different logical properties. Parthood is a formal, internal relation, while exemplification is usually taken to be external and material. What we have to do then, is to defend the claim that

<sup>1</sup>Merz calls it the “commonsense, but misleading, model” in its “naive form” (? : 19).

<sup>2</sup>Cf. ? : xi-xiv, ?, ?.

exemplification is an ‘internal’ relation which may hold contingently and to develop a theory allowing us to take exemplified properties to be parts of their exemplifying particulars.

If exemplification is parthood, this means that the world of objects is much more interconnected than we believe to be.<sup>3</sup> Far from being a reductio (we seldom have non-negotiable intuitions about disjointness), I take this to be a mayor advantage of my claim: we can explain similarity as overlap.

## How not to do it: thick and thin particulars

The paradigm case of truthbearers in need of truthmakers are singular existentials, claims to the effect that such and such an entity exists. In such cases, it seems incontestable that the entity in question, iff it exists, makes the corresponding claim true.<sup>4</sup> But how is this compatible with the world’s being a world of states of affairs? John’s existence, after all, is not a state of affairs (? : 6). But perhaps John is?

John is a non-mereological component of the state of affairs of John’s being human, which is making it true that John is human and hence, by the entailment principle (truthmaking distributes over entailment),<sup>5</sup> also that at least one human being exists (? : 21). But is John’s being human a minimal truthmaker? Could not the remainder of the state of affairs be abstracted, leaving us just with John? ? : 55 says it can: though every state of affairs involving humans is a truthmaker for the truth that at least one human exists, only the individual human beings are minimal truthmakers. But are they necessitating it? Only, it seems,<sup>6</sup> if they are essentially human beings, i.e. cannot exist as non-humans. But let this be assumed.<sup>7</sup> In some sense, then, John is more minimal a truthmaker than John’s being human.

Sometimes, however, the (non-mereological) inclusion relation goes in the other direction: while the mereological fusion of Venus and Mars, for example, is a truthmaker for the truth that Venus is greater in size than Mars, it is not a minimal truthmaker:

“For this truth, it seems that we do not need all the properties of the two objects, or even all their non-relational properties. It is enough that Venus is a certain particular size, and that Mars is a certain particular size. These are states of affairs. The minimal truthmaker appears to be the mereological fusion of these two states of affairs. The other properties of Venus and Mars seem irrelevant.” (? : 50)<sup>8</sup>

Here, the inclusion, goes the other way round: *Venus’s being of size m+Mars’s being of size n* is here said to be more minimal than *Venus+Mars*. A distinction is needed.

<sup>3</sup>? : 45 takes this to be a reductio of the thesis: “The property of *being a table* cannot literally be a physical *part* of a table. For suppose we have two tables in front of us. If *being a table* were a physical part of *one* of them, then the *other* wouldn’t be a table since it doesn’t share any parts with the first.”

<sup>4</sup>(Cf. eg. ? : 300) ? : 6 calls the relation between John and the proposition that John exists “the simplest of all truthmaking relations”.

<sup>5</sup>? : 11 restricts the entailment principle to ‘purely contingent truths’ $\square\square$ , i.e. truths that do not contain any necessary conjunct on any level of analysis.

<sup>6</sup>Cf. ? : 194, ? : 332 and ?.

<sup>7</sup>Curiously, Armstrong extends this account to merely possible entities. He says that the minimal truthmaker for the truth that there are no arctic penguins is the totality states of affair that these some fusion comprises all the arctic animals (? : 75–76). He then continues: “In the same way, if we work with the totality of all birds, we eliminate the phoenix” (? : 76) But this presupposes that the phoenix, if it existed, were essentially a bird. In the same spirit, the minimal truthmaker for “there are no unicorns” is said to be the totality state of affairs that all ‘horse-like creatures’ lack ‘unicorn-making characteristics’ (? : 36,76) – but for this to *exclude* unicorns, it has to be assumed that unicorns are essentially horse-like and essentially have the unicorn-making characteristics. But if, contra Kripke, the possibility of unicorns is conceded, then certainly also the possibility of unicorns that lost their horn or some other of the ‘unicorn-making characteristics’.

<sup>8</sup>In the same vein, ? : 34 says that *O* itself is a truthmaker of “*O* has a mass of five kilograms”, albeit not a minimal one.

In response to the criticism of ? : 98 that his account renders exemplification obscure, ? : 109–110 claims that while we can distinguish the bare or ‘thin’ particular from its properties and the unexemplified universal from its exemplifications in ‘thick’ particulars, neither can exist without the other. The thin particular is the “thing taken in abstraction from all its properties” (? : 114), the particular “taken apart from its properties” (? : 95), it is “the particularity of a particular, abstracted from its properties” (? : 105).<sup>9</sup> It is the thin particular John that is contained, as a proper but non-mereological part, within the state of affairs of John’s being human.

The thick particular, on the other hand, is the “particular taken along with all and only the particular’s non-relational properties” (? : 124). It is the state of affairs of the (thin!) particular’s having all its nonrelational properties (? : 95), the particular “with all [its] (non-relational) properties upon [it]” (? : 176). These properties are said to be “contained within it” (the scare quotes are Armstrong’s) and it “enfolds” these properties “within itself” (? : 95). It is in the fusion of the thick particulars that *Venus’s being of size m* and *Mars’s being of size n* are contained.

Here we have another violation of combinatorialism: the thick particular depends on the thin and the thin on the thick. They are ‘wholly distinct’ in the sense that they do not overlap in a mereological part. The thick particular could not exist without a ‘hook’ to hang the properties on; it could not be a mere bundle of properties. The thin particular, however, is a mere abstraction which does not enjoy independent existence: though there is no thick particular of which it must be a component, it must be a component of at least one (? : 52).

It is a slip from thin with thick particulars, I think, that made Armstrong infer necessitarianism and not just internalism from the sufficiency argument in favour of states of affairs. If truthmakers are to be sufficient for the truthmaking they do, this just means that their standing in the truthmaking relation to certain truthbearers cannot depend on anything external to them, i.e. that it must supervene on their intrinsic properties. Only if these intrinsic properties are conceived of as the properties of thick particulars is the truthmaking relation itself *necessitated* by the mere existence of the truthmaker. Thin particulars, or more generally particulars having not all their intrinsic properties essentially, can be ‘sufficient’ for their truthmaking job without being so necessarily.

The confusion is most apparent in the case of singular existentials: if John is to make it true that John exists, then the truthmaker cannot be the thick particular John. For thick John could fail to exist (i.e. John could have different intrinsic properties) and it still be true that John exists. So must be thin John, or at any rate John stripped of his non-essential properties, that makes it true that John exist. But these entities are mere abstractions in Armstrong’s ontology – it is not even clear how they can have any properties at all.<sup>10</sup> The “cross-categorial unity” of thin particulars and universals seems indeed “the most puzzling unity of all” (? : 267).<sup>11</sup> But it is not just puzzling what it is, but

<sup>9</sup>? : 109 says it is “the particular abstracted in thought from its non-relational properties”, but then makes it clear later that he means all properties (? : 123). Sometimes, eg. in ? : 95 and ? : 52, Armstrong says that the thin particular has some properties: though it is thin, it is still clothed and not bare. It is not clear, however, which properties these might be. They are not the essential properties, for the thin particular together with its essential properties is intermediate between the thin and the thick particular (? : 124). Presumably, the thin particular has just its formal properties, like *being a particular* (cf. ? : 68). If we arrive at our concept of thin particulars by ‘partial consideration’ (? : 109), then their properties would be those we cannot abstract even in thought.

<sup>10</sup>It is even doubtful whether thin particulars can make true the statement that there are thin particulars. For if the world is a world of states of affairs and truthmaker theory is our guide to ontology; then, as Armstrong repeatedly argues, truthmakers are states of affairs, i.e. what thin particulars precisely are not. The problem generalises to necessary relations more generally: whenever two things are ‘internally’ (essentially) related, Armstrong says repeatedly, some statement to that effect is made true just by the two things themselves (cf. eg. ? : 2–3, 89 and ? : 50, 121). Because the things could not both exist without standing in that relation, their joint existence itself makes it true that they do so. But if there are internal relations between universals, like resemblance, parthood and identity, then at least some truthmakers are not states of affairs.

<sup>11</sup>As Armstrong recognises, the puzzlement is not avoided by speaking of a non-relational tie. This is just to label the problem: “One’s first response to this is naturally extremely negative: are there two constituents involved or not? If so, how can they fail to be distinct terms? If they are distinct terms, how can they be ‘tied’ together except by a relation? It is no

even how it can be possible at all. Exemplification between a 'thin' particular and some properties, it seems, would be an external relation, connecting the particular with something outside itself.<sup>12</sup> The sufficiency argument, however, then requires us to bring this external relation into the truthmaker – Bradley's regress would follow.

Exemplification, however, is no less mysterious when considered a relation between the thick particular and its properties. The 'thick' particular "is conceived as already possessing its properties" (? : 114) and thus does not need to exemplify them. ? : 52 and ? : 125 say that the 'thick' particular has its properties *necessarily*. Strictly speaking, however, the 'thick' particular does not exemplify *any* of its (first-order) properties (except perhaps its relational properties). It is, so to say, already 'saturated' (the terminology is from ? : 109); properties exemplified by it would be second-degree properties. Second-degree properties, however, would give us second-degree states of affairs, which are (according to Armstrong even necessarily) different from first-degree ones.

It seems mysterious, then, how either the thin or the thick particular could have any properties.<sup>13</sup> But even if they can, they do not exemplify them in a way that helps us in our quest for truthmakers for contingent predications. The thin particular, even in conjunction with its properties, does not necessitate any contingent truths about it. The thick particular does necessitate the truth, but only because it necessarily has the property attributed to it. Necessitarian truthmaking by particulars of contingent predications and factualism are incompatible.

## What universals essentially are

A deeper explanation of the modal asymmetry (if there is one): properties have their exemplifications essentially, while kinds have their instances accidentally. Kinds *have* roles, while properties *are* roles.

In a formulation that presupposes a non-identity solution to the problem of accidental intrinsics (contingent identity) or contingent essence:

If *a* exemplifies *F*, *a* exemplifies the property (of) *having F as a property* and *F* exemplifies the property (of) *being a property of a*. While the first is essential to *a* iff *F* is, the latter is always essential to *F*.

*A worry*: Is this possible? It better had be: (i) Aquinas; it is essential to the world to have been created by God, but it is not essential to God to have created the world. (ii) Kripke: it is essential to me to have the parents I have, but it is not essential to my parents to have begotten me. Fine: it is essential to the set  $\{a, b\}$  that *a* is a member of it, but it is not essential to *a* to be a member of the set.

## In terms of possible worlds

A formulation in possible-world talk: The counterpart relations for properties is strict numerical identity. (Heller 1998 defines counterpart relations for properties in terms of similarities of their

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good simply *talking* about non-relational ties: or, to put it another way, one philosopher's solution is another philosopher's problem." (? : 15); "A non-relational tie between distinct things is pretty mysterious. Seemingly, if the things are distinct then the tie is a relation. If the tie is not a relation then they are not distinct. So a non-relational tie could hold between distinct things only if they are not distinct. That's how it seems at first. Still, we need the tie if we want universals and particulars." (? : 449)

<sup>12</sup>Numbering relations, e.g., would be external if they held between properties and *thin* particulars (? : 176).

<sup>13</sup>This means that the introduction of states of affairs does not *explain* the relation of exemplification: This has been, e.g., Linsky's view: "The notion of a fact is introduced precisely to provide an explanation where others just provide truth conditions. Facts are deemed necessary in order to show what it is for an object to have a property." (? : 193) Armstrong is much more cautious: ? : 114–115 says that we need states of affairs because something "is needed to weld [universals and particulars] together" and ? : 33 holds that the acceptance of states of affairs helps us avoiding the problem of explaining exemplification. States of affairs rather presuppose that we can already make sense of particulars and universals combining into entities that exist if and only if a corresponding proposition is true. They do not, contra ? : 24 provide the "ontological connection between subjects and predicates" but presuppose that such a connection has already been made.

roles, but has to take these similarities as primitive.)

But similarities between the roles of properties does not make for similarity of properties. The fact that two properties are the philosophers' favourite property in their respective world does not make them similar, for the philosophers in question may be different.

More generally: we cannot have primitive transworld-identity between particulars because they may differ in accidental intrinsics: the same particular cannot be straight and bent. This presupposes, however, primitive transworld-identity for properties: it is the *same* property that cannot be had by one and lacked by the other. And: properties do not have accidental intrinsics.

A modal-realist argument for primitive transworld-identity of properties:

- i (Some) properties make for similarity across possibilities (in different worlds).
- ii If some possibilities similar, they (literally) share a property.
- iii So (some) properties are strictly identical across possible worlds.
- iv So they cannot differ in properties which are not implicitly relational.
- v The property of being exemplified by *a* is not implicitly relational.
- vi So if it is had in some world by some of these properties, it is had in all in which it exists.

### **Haecceities and quiddities:**

Haecceities are what distinguish indiscernibles in different worlds. If counterparthood is a matter of similarity and perfect similarity across worlds is possible, haecceities are needed to falsify the identity of indiscernibles.

The quiddity of a property would be its individual essence, as opposed to its role, something over and above what it bestows on the particulars exemplifying it. Quiddities are needed to make sense of scenarios of role swap, e.g. the possibility of a world with the same exemplification pattern than ours except that one of the quark colours has been swapped for one of the flavours (Lewis 1986: 162). But quiddities do not exist: as Lewis himself noticed, property swapping leads to 'Ramseyan humility' (Lewis 2006) and Kantianism.

Ramsey's question – how can it be that all of  $(\lambda x(xRb))a$ ,  $(\lambda y(aRy))b$  and  $(\lambda x, y(xRy))(a, b)$  are the same proposition, given that they have different components – may now be answered: the three sentences express indeed the same proposition in the sense that they have the same truth-conditions; they differ, however, in being *about* different things, the first one being about *a*, the second about *b* and the third about their pair. If the sentences are understood purely classificatory, this difference does not show up: all three of them classify  $\langle a, b \rangle$  as being *R*-interrelated (in this order). Interpreted as property-ascriptions, however, the sentences differ radically: what it takes to *R* *b* may be very different from what it takes to be *Red* by *a*. If this does not show up in the respective formalisations, all the worse for them.

### **A tentative theory**

Whenever exemplification is exemplified, say by *a* and *F*, two relational properties are exemplified, namely *being exemplified by a*  $(\lambda x E(x, a))$  and *exemplifying F*  $(\lambda x E(F, x))$ . From our account of second-degree properties it follows that the former, but not in general, of course, the latter is a property had intrinsically. This seems reasonable: Given how a property is all by itself, it follows which particulars exemplify it, whereas it does not follow from how a particular is all by itself which properties it does exemplify. It has to be noted, however, that given our account of relations and our reduction of extrinsic to relational properties, any property is had intrinsically by *something*, by a world if not by anything smaller than a world. This now gives us a way to say what fusion of properties we mean by the nature of *a*:

**Definition 1.** *The nature of  $a$  is the fusion of all universals that overlap  $a$  and are not properly included in any universal which overlaps  $a$ .*

The nature of  $a$  is the least universal which contains all nonspatiotemporal parts of  $a$ . The intrinsic properties of  $a$  are, as we have seen, those properly included in  $a$ . The *extrinsic nature* of  $a$  thus is the fusion of all universals which overlap, but are not included in  $a$  nor included in any universal overlapping  $a$ .

Our account of natures now gives us a way to say what exemplification is:

**Definition 2.** *A particular  $x$  exemplifies a (monadic) universal  $F$  (has the property  $F$ ) iff  $F$  is part of  $x$ 's nature. Some particulars  $x_1 \dots x_n$  exemplify an  $n$ -ary universal  $R$  (stand in the relation  $R$ ) iff  $x_1 \dots x_n$  exemplify the corresponding relational properties.*

Recall now our problems with upwards specific properties. Being part of a particular, apparently, sometimes suffices for  $F$  to be a property of it, sometimes it does not. In both cases, however,  $F$  is wholly present where the particular is, the difference being only that it is sometimes more easily ascribed not to the particular itself but to a proper part of it. It is perhaps helpful to compare this peculiar situation to the way we ascribe locations to things. Some parts 'inherit' their location from the wholes of which they are parts, while others do not. Although part of a fusion with the Eiffel tower, the chair I am sitting on is wholly here and not at all in France. My foot, on the other hand, is here, where I am sitting, although it would, were it detached, be about half a meter away.<sup>14</sup>

Up- or downwards specificity is an objective fact, a substantive second-degree property. How is it to be explained? With natures. Our comprehension schemata give us what we need to draw the relevant distinctions, namely enough unspecific properties of the forms *having a (proper) part with nature  $F$*  and *being a (proper) part of a fusion with nature  $G$* . Let's choose *having a rabbit as a part* as upwards unspecific (or equivalently, *being part of a rabbit* as a downwards unspecific) and *being a rabbit* as specific property.<sup>15</sup> The fusion of a particular rabbit  $a$  and my nose  $b$  has both universals as parts, but it is not a rabbit, although it has a rabbit as part. How can we account for that difference? In terms of totality properties. Whereas *being a rabbit* is part of a fusion that stands in the  $T$  relation to *being a property of  $a$*  but is not part of a fusion that stands in the  $T$  relation to *being a property of  $a \oplus b$* , *having a rabbit as a part* is part of both fusions. Thus the latter, but not the former universal is included in the 'totality' property of  $a \oplus b$ . This gives us a property, i.e. *being part of a fusion that stands in the  $T$  relation*, that distinguishes the two universals. Thus there are two ways for a universal to be part of a particular. It can be a *mere part*, i.e. be part of it, but not be included in its 'totality' property, or it can be an *constituent part*, being both a part and included in its 'totality' property. If  $F$  is a mere part of  $a$ , it is not exemplified by it, for it is then part of the property *having an  $F$  part* which itself is exemplified by  $a$ .

This distinction allows us to reconcile the transitivity of parthood with the nontransitivity of exemplification as follows: If  $F$  is a property of  $a$  and  $G$  a property of  $F$ , then  $G$  is part not only of  $F$ , but also of  $a$ . It will not, however, in general be a constituent part and so transitivity is blocked.<sup>16</sup> If a nature  $F$  (i.e. a property which has a 'totality' property as a part) is part of a particular  $a$ , either  $F$  or *having an  $F$  as a (proper) part* is included in  $a$ 's 'totality' property. As natures are radically specific (not exemplified by proper fusions nor proper parts of their exemplifications), no nature is at the

<sup>14</sup>Of course, this has something to do with my being able to move my chair without moving the Eiffel tower and my incapacity to move my foot without moving my body.

<sup>15</sup>My choice of unspecific property may be criticized as prejudiced. It is difficult, however, to find completely unspecific properties which are not of the form *being partly an  $F$* . Most properties, perhaps all, are only relatively unspecific (if they are not outright specific), i.e. had by some, but not all mereological fusions of which their exemplifications are parts.

<sup>16</sup>Exploiting we can explain the otherwise mysterious fact that second-degree properties give rise to second-order properties. For *having a (constituent) part that is  $G$*  will be a property of  $a$ , whether or not  $G$  is.

same time a mere and a constituent part of the same particular. So natures are structural in a way other universals are not.

This has two welcome consequences. We are given, first, a procedure to ‘read off’ a particular decomposition of a complex particular into simpler parts from its nature. It will be an objective fact whether the nature  $F$  of a proper part will be included as  $F$  or as *having a proper  $F$  part* in the nature of the whole.<sup>17</sup> The  $F$  part will be uniquely determined by the specificity of natures. We then see why it is reasonable to expect from a theory of universals that it “carves nature at its joints”, i.e. distinguishes ‘well-’ from ‘ill-defined’ parts. Second, we can (in principle) uniquely compose any fusion of natures into a determinate number of parts that are natures. Whenever we are given such a fusion  $F$ , we take the particular that exemplifies it, which will always be mereologically complex, say  $a \oplus b$ . If  $a$  has a nature  $G$  which is part of  $F$ , we decompose  $F = A \oplus G$ . If not, we decompose the particular differently,  $a \oplus b = c \oplus d$ , and repeat the procedure. When we have found enough natures to get our original  $F$  as their fusion, we stop.

*Being a constituent part of  $a$*  or, equivalently, *being exemplified by  $a$*  is a property of  $F$  and hence a constituent part of  $F$  just in case  $a$  is  $F$ . I deny necessity of constitution for particulars, at least if “constitution” is taken to include nonspatiotemporal parts. Universals, on the other hand, have all their constituent parts essentially. This can be seen as follows: If a property  $F$  has constituent parts  $G$  and  $H$ ,  $G$  and  $H$  are wholly present when- and wherever  $F$  is exemplified. So  $G$  and  $H$  are exemplified too, either by a part of the particular  $a$  that exemplifies  $F$  or by  $a$  itself. If it were possible that  $F$  lacked  $G$ , then, by the necessity of (??), it could have been wholly present while lacking a part. This, however, is impossible. This form of ‘necessity of constitution’ does not hold for mere parts, however. If  $G$  is only a mere, but not a constituent part of  $F$ ,  $F$  could be exemplified without  $G$  being exemplified.

Having now the distinction between properties and (mere) universals at our disposal, it is to be noted that the above diagnosed asymmetry holds only for properties: only properties could not have had other instances than they actually have, whereas (mere) universals could have been parts of other particulars. If  $F$  is an constituent part and hence a property of  $a$ , it is part of  $a$ ’s nature (that fusion of universals that are part of  $a$  that stands in the  $T$  relation to *being a property of  $a$* ).  $a$ ’s nature can be a part only of  $a$ . If  $F$ , on the other hand, were a part of  $b$  which is not (actually)  $F$ , then it would be a mere part, so it would not be part of  $b$ ’s nature and not a property of  $b$ . So the properties of  $a$  are exactly those universals that are necessarily parts of  $a$ .<sup>18</sup> Universals that are mere parts of  $a$ , on the other hand, are not essentially parts of  $a$ . For although they have their property *being part of a fusion (of properties) with nature  $F$*  essentially and the nature  $F$  of  $a$ ’s nature contains *being the nature of  $a$* ,  $a$  could have had another nature - in which case the universals in question would still be parts of something with nature  $F$ , but no longer parts of the fusion of properties which is the nature of  $a$ .

I call “determination” the special case of exemplification where the exemplified property determines *all* the (intrinsic) qualitative features of the exemplifying thing. Every determining property entails all the properties exemplified by whatever exemplifies it:

**(det)**  $G$  determines  $a$  :  $\iff \forall F (Fa \rightarrow G \Vdash F)$

<sup>17</sup>The comprehension principles give us a general method to deal with specific but non-structural properties. If  $F$  bestows extra causal powers on  $a \oplus b$ , powers which cannot be accounted for in terms of properties of either  $a$  or  $b$ , they both have the property of being part of an  $F$  that is composed of an  $A$  and a  $B$  (the natures of  $a$  and  $b$  respectively) and having those extra powers.  $a$  has the property of adding up with a  $B$  to an  $F$ , and  $b$  has the property of adding up with an  $A$  to an  $F$ . In mereological terms,  $a$  has as a property  $F \setminus \text{being } b$  and  $b$  conversely has the property  $F \setminus \text{being } a$ . If  $a$  has causal powers bestowed by  $F$ , but loses these when integrated into  $a \oplus b$ , then there must be something about  $a \oplus b$ ’s nature  $G$  that inhibits the display of  $F$ -powers by proper parts. So  $a$  has these powers only if it not only has  $F$ , but also if it lacks the property *being part of a  $G$  fusion*.

<sup>18</sup>It is misleading, though convenient, to speak of necessity here: the necessity of “ $Fa$ ” flows from the nature of  $F$ , not of  $a$ .

Necessary coextensiveness being at least a necessary condition on property identity, “ $G \Vdash F$ ” implies that every  $G$  is  $F$ . I do not wish to commit myself to any particular account of property identity, so I simply stipulate that entailment between property predicates (i.e. inclusion of their extensions and whatever else might be needed) gives us a partial (reflexive, antisymmetric and transitive) order on properties. Given (??), it is tempting to analyse property entailment as the converse of parthood:  $\forall x(Gx \rightarrow Fx)$  would then follow from  $G \Vdash F$  by the transitivity of parthood.

Determination is monotone: if  $G$  determines  $a$ , any property having  $G$  as a part also determines  $a$ . The least thing determining  $a$  is  $a$ 's nature. No property that is not a nature or a fusion of natures can determine and be exemplified by the same thing: so determination is just the restriction of exemplification to natures and their fusions.<sup>19</sup> Property entailment  $\Vdash$  being defined only for properties, no ‘mixed’ fusion of a property and a particular can determine anything. Any fusion of natures determines a definite number of things. Let  $F$  be such a fusion, determining  $a$ . Then  $F = A \oplus G$ ,  $A$  being the nature of  $a$ . Either  $A \Vdash G$  or not. In the first case,  $F = A$  and we are done. In the second case,  $G$  contains the nature  $B$  of something  $b \neq a$ . So  $G = B \oplus H$  and we iterate the procedure.<sup>20</sup>

Although there remains much to be done, I hope to have shown that the seemingly absurd thesis that exemplification is (a kind of) parthood has more to it than is visible at first sight. My aim was to show how a more general theory of exemplification could look like and what problems such a theory would have to address. A more modest aim was that David Lewis’ views on exemplification, who stand out for taking the mereological metaphors seriously, are in need of a more elaborate defense than he cares to give. Exemplification, after all, seems to be an issue quite near to the metaphysical bottom of things and that, after all, should be the place where philosophers fancy to be.

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<sup>19</sup>PROOF: Suppose  $a$  is determined by  $F$ .  $F$  must contain  $a$ 's nature, say  $A$ , so  $F = A \oplus G$ . From  $(A \oplus G)b$  for any  $b$  it follows that  $b = d \oplus c$ ,  $Ad$ , hence  $d \cong a$ , and  $Gc$ . If  $c$  is indiscernible from  $d$ , then  $G$  is part of  $d$ 's and thus of  $a$ 's nature. Otherwise,  $G$  determines  $c$ . For suppose it does not. Then there is a property  $B$  of  $c$  which is not entailed by  $G$ . As  $c$  is not  $A$ ,  $B$  cannot be entailed by  $A$  either. But then  $b$  has a property, namely *having a B part*, which is not entailed by  $F$ . So  $F$  does not determine  $b$ .

<sup>20</sup>In particular, fusions of the things determined by a fusion of natures  $A$  exemplify  $A$ , but they are not determined by  $A$ , for they have, by , more properties than the sum of the properties of their parts.