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# The Protestant Theory of Determinable Universals

In his 2000 paper, "Determinables are Universals", Ingvar Johansson defends a version of immanent realism according to which universals are either lowest determinates, or highest determinables – either maximally specific and exact features (like $Red_{27}$ or Perfectly Circular) or maximally general respects of similarity (like Colored or Voluminous). On Johansson 2000's view, there are no intermediate-level determinable universals between the highest and the lowest. Let me call this the *Protestant Theory of Determinable Universals*, because according to it the humble lowest determinates commune directly with the most high determinables. My question here shall be whether the Protestant theory is not too austere, and whether a more Catholic approach, with a richer hierarchy, is called for. I will be arguing that it may be: between $Red_{27}$ and Colored, we may need Cardinal Red to intervene. I will here develop several challenges to the Protestant view. Each challenge presents a task that determinable universals should perform if we are going to invoke them at all, but that turns out to be something they can only do if we countenance more of them than the austere Protestant allows. In section one I will consider the task of analyzing resemblance relations, in section two I will consider some tasks to do with causation

and the laws of nature, and in section three I will consider the task of making sense of the possibility of continuous change in gunky objects.

## ONE) RESEMBLANCE BETWEEN UNIVERSALS

Immanent realists hold that resemblances between particulars are grounded in strict, numerical identities of the universals those particulars instantiate. In contrast, trope theorists hold that resemblances between particulars are grounded in the resemblances of the tropes those particulars have, where resemblances between tropes simply flow from the nature of the tropes, in an unanalyseable way. Resemblance nominalists hold that resemblances between particulars are primitive.

One challenge for the immanent realist is to account for the resemblances between universals themselves. Immanent realism offers an *analysis* of resemblance: two particulars resemble in some real, non-gerrymandered respect iff there is some universal that they both instantiate.[1] In contrast, both trope theory and resemblance nominalism must appeal to unanalyzed resemblance, so the immanent realist appears to have an advantage. But if the analysis cannot be extended to real resemblances

[1"] Note that immanent realism is not just the claim that there *are* universals or that universals are the truthmakers of predicative truths. It does not follow from the claim that universals are the truthmakers of predicative truths, that universals give us an account of real resemblance. If there is a universal corresponding to every predicate, then mutual instantiation cannot ground real resemblance. For this reason (*inter alia*) immanent realists say that universals are *sparse*: they correspond to only a select few predicates. Of course this still does not settle the matter. Declaring universals to be sparse does not yet preclude that Grue is among them. Immanent realists must either say more, or declare that in such an eventuality Grue really would be a non-gerrymandered respect of similarity.

between universals, then the advantage is illusory and the immanent realist must appeal to unanalysed resemblance just like everyone else.

We need not insist on resemblance between universals to see the challenge. Consider three objects perfectly identical in all respects except for color (on a world where color is primitive). Suppose that S is scarlet, C is crimson, and T is turquoise. What makes it true that S is more similar to C than to T? The resemblance nominalist attributes this to resemblance structure which he has already conceded is unanalyzed. The trope theorist attributes this to the unanalyzed resemblance structure of the tropes had by S, C and T – tropes whose resemblance she has already admitted is unanalyzed. Only the immanent realist has a problem here. He must either identify some suitable structural commonalities between resembling universals,[2] invoke further universals to do the job, or concede that there are unanalyseable resemblance facts after all.

There are different ways that determinables might do the job. We might think of determinables as constituents – genuine mereological parts – of their determinates, or we might think of them as second-order universals instantiated by first order universals. I shall take no stand here, though I shall use terms like ‘Colored’ to refer to determinables, for stylistic reasons (which suggests the former view).[3] What is important

[2"] To ground the resemblances between complex universals Armstrong 1997 holds that complex universals are structural universals. Structural universals are universals with a non-mereological constituent structure. It is not clear whether Armstrong can give an account of all resemblance in these terms, but if he can then this is an alternative to an account in terms of determinables.

for the immanent realist pursuing this strategy is that somehow the resemblances between universals admit of analysis in terms of determinables.

However, if determinables are going to do the job there will have to be enough of them to do it. And there are not enough of them to do it on the Protestant view. $Red_{27}$ is more similar to $Red_{28}$ than to $Blue_{32}$. But all three of these determinate properties share the highest determinable Colored. We may claim that this resemblance fact is grounded in the nature of Colored, or in the nature of Colored and the relevant determinates taken together, but this is to abandon the aim of an analysis of the resemblance facts in terms of instantiation. Why not just say that the similarity facts flow from the natures of the relevant determinates taken together?

Barring some other method of analyzing imperfect resemblance, it is doubtful that the Protestant theory is up to the task. An analysis of property resemblance in terms of determinables is going to call for a great many determinables. This does not automatically refute the Protestant theory. One may concede that it cannot analyse property resemblance, but still hold that it retains advantages over other views. For example, Johansson has an argument against the trope theory which is independent of these considerations – it tells as much in favor of a lowest-determinates only version of immanent realism as it does in favor of the Protestant view.[4] And his chief argument for ontological determinables, if it succeeds, tells against the lowest-determinates-only

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[3] The constituency view differs from Armstrong's structural universals approach in at least one respect: with determinables we may think of the constituency relation in question as genuinely mereological.

view.[5] Against resemblance nominalism, we may argue that there is a clear advantage to views on which the resemblance facts are grounded in the natures of things. But the nominalist must say instead that they are primitive, at least in those cases where the facts of resemblance between particulars are contingent and non-essential.

Perhaps most importantly of all, the Protestant theory does have at least a *prima facie* advantage over a theory with enough determinable universals to provide an analysis of property resemblance: ontological parsimony. The immanent realist wants a sparse theory of universals. But to account for as many determinables as it would take to analyse every single resemblance fact, it appears necessary to countenance universals at every level of determinability, from $Red_{27}$ to Cardinal Red to Bright Red to Red to Reddish to Warmly Colored to Colored. This would seem to be an embarrassment of riches. On the other hand, it is hard to think of a non-arbitrary way of

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[4] Johansson 2000 (section two) argues against trope nominalism as follows: on that view, the counterfactual resemblance facts about a trope at a one-trope would only be *grounded* counterfactually (since resemblance relations are grounded *mutually* by their relata), but this is bad. Johansson also holds that universals may exist without being instantiated. Therefore he can say what the advantage is of an immanent realism countenancing only lowest determinates over a trope theory.

[5] Johansson 2000 (section four) argues that highest determinables are necessary to account for the difference between physical magnitudes that can be added (say, two determinate volumes) and magnitudes that cannot be added, but must instead be multiplied (such as a determinate volume and a determinate pressure). Johansson does not explicitly say why the lowest-determinates-only theorist cannot account for these things by appealing to the unanalyzed resemblance relations (that as we have seen Johansson also must countenance). If he can establish this, however, and also make it clear that only highest determinables are needed for the job, then he will have shown how the Protestant view has an advantage over other versions of immanent realism.

drawing the line. So in fairness, when we consider problems for the Protestant view we should bear its virtues in mind.

## TWO) CAUSE, LAWS AND PERCEPTION

There are other tasks that friends of determinables have suggested they might play. For example, some have suggested that determinable properties are causally efficacious (and that Causal Exclusion arguments only succeed by ignoring the existence of determinables).[6] Others have suggested that determinables are constituents of Laws of Nature.[7] Others still have suggested that determinables are objects of perceptual experiences. [8]

None of these are tasks that highest determinables carry out on their own. Sophie the pigeon is trained to peck at all and only red things. When she pecks at something red, if a determinable is causally efficacious here it is Red, not Colored. So too with laws on a DTA-style account. While some laws may be relations between highest determinables, others may not be. This is especially apparent with

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6" Shoemaker 2001, Yablo 1992, Kim 1992.

7" Armstrong 1997, 1988

8" Brewer 2007, Martin 2004, Hellie 2005, Stazicker forthcoming.

determinables that have different dimensions, such as Colored, which covers variation in hue, brightness and saturation. A law might govern brightness but not saturation.[9] And so too with perceptual content: if determinables are among the objects of our perceptual experience it will be because there are lower bounds on the exactitude of our perceptual capacity. But this means the determinables in question must be fairly low-level, since we can discriminate at least to some degree between things of different color.

The Protestant theorist cannot provide enough determinables to play these roles, and this is a problem for the Protestant Theory. However, as before, the objection here is not decisive. The Protestant Theorist may deny that determinables are required to play any of these roles. Here, the Protestant Theorist may join forces with those who deny the existence of determinable universals altogether.[10]

## THREE) GUNK AND CONTINUOUS VARIATION

A further challenge for the Protestant Theorist comes from the possibility of gunk. The possibility of gunk is, roughly speaking, the possibility of things that have no

[9"] Dretske 1989

[10"] For a treatment see Gillet and Rives 2005. Another role for determinables, suggested recently by Jessica Wilson, is that we might use them to make sense of what ontological vagueness might be: it might be what happens when determinables are instantiated without any determinates. But it is controversial whether ontological vagueness is possible, so the Protestant theorist arguably does not owe an alternate account.

ultimate proper parts. Gunky entities are entities such that each of their parts have proper parts. Usually those who countenance gunk countenance *pointless gunk* – entities that are gunk and do not have any point-sized parts. I will leave the qualification implicit that the gunk I speak of below is pointless gunk.[11]

The challenge is that there might be gunky entities that continuously vary over some parameter like color. The problem comes in both spatial and temporal versions. First, consider a rainbow, continuously varying in color so that none of its regions of positive measure are a single lowest determinate shade throughout. Second, consider an apple turning from red to brown as it ages. If the rainbow is spatially gunky then it will not ultimately consist of point-sized regions of lowest determinate color. If the apple is temporally gunky then it cannot ultimately be thought of as instantiating lowest determinate colors at instants of time. [12]

To appreciate the problem it helps to first think about what it takes in general for composite entities to be colored. Consider a Rothko painting that is partially $red_{27}$ and

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[11] There are a number of fine-grained distinctions here that I will pass over. For example, we may distinguish between the requirement that a piece of gunk have no point-sized parts, from the requirement that all of its parts be of positive measure (in whatever space is relevant). But nothing I say here will hinge on such distinctions. For discussion of related matters see Forrest 1995, Arntzenius 1997, Arntzenius and Hawthorne 1995, Hawthorne and Weatherson 2004, Russell 2008.

[12] What it is to be temporally gunky depends on what it is to persist through time. An endurant is gunky if it only instantiates properties relative to extended temporal intervals (but it instantiates properties at arbitrarily small but finite temporal intervals). A perdurant is gunky if it only has temporally extended temporal parts (but has temporal parts of arbitrarily small though finite temporal extent). We might also speak of spatiotemporally gunky entities: entities all of whose parts have parts, none of whom are spatiotemporally point-sized

partially $red_{28}$. This canvas is red all over, but is no particular shade of red all over. It does not instantiate any lowest color determinate, though it has parts that do.

We neither must nor should introduce the intermediate-level determinable universal Red just to countenance the color of this canvas. Consider a different Rothko painting, one which is $red_{27}$ in one region and $blue_{32}$ in another. In this case there is no determinable that precisely captures the general color of the canvas. Also, appealing to determinables here would ignore important detail: the canvas is $red_{27}$ in the middle and $red_{28}$ along the border, and not conversely. The color facts about a canvas like this are not grounded in its instantiation of determinable colors without any according determinates. Rather, the color facts about the canvas are grounded in the color facts about the regions of canvas that are its parts. Or, invoking Armstrong's theory of structural universals, we may say that the color facts about the canvas are grounded in a structural universal specifying a pattern of the lowest determinate colors that the parts of the canvas realize (here that universal would involve both $Red_{27}$ and $Red_{28}$ as constituents).

It is here that gunky objects that vary continuously make trouble for the Protestant theory. Our gunky rainbow is colored, even though neither it nor any of its parts instantiate any lowest determinate colors. What properties does it instantiate in virtue of which it is colored? We cannot say that the facts about its color are grounded in the facts about the color of its parts, if we embrace the Protestant theory, since no single one of its parts instantiates any of the lowest color determinates. But those are the only universals of color, apart from the highest determinable Colored, that the Protestant theory countenances! For the very same reason, an appeal to structural

universals is out of place here. Structural universals have other universals – the ones instantiated by the parts of the structural entity – as constituents. But none of the parts of our continuously varying rainbow instantiate a lowest determinate color, so there are no universals to be constituents of the relevant structural universal if the Protestant theory is true.[13]

To be sure, there are options besides countenancing mid-level determinable universals. Instead, the Protestant theorist might simply appeal to the possibility that the properties we think of as the lowest determinate colors – points on the color spindle like $Red_{27}$ and $Blue_{32}$ – are not the true determinate universals of color, or are not the *only* such determinates. It is helpful here to consider the case of spatial properties themselves. You might hold that spatial properties all reduce to distance relations between point sized entities. But the possibility of gunk makes trouble for this view. To countenance the spatial properties of gunky entities, we need to introduce gestalt shape properties that are not grounded in distance relations between points. A natural way of doing this is to consider such properties to be lowest determinate universals, in addition to, or in place of, distance relations between points.

There are a variety of proposals on the table for how exactly we might expand the realm of lowest determinate universals relevant to color. Arntzenius and Hawthorne

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[13"] It is worth noting that the challenge here may be independent of the possibility of gunk. For it is taken by many to be *a priori* that all colored things have some positive extent. If this is so then point-sized objects cannot be colored, even if they may exist and be the parts of voluminous things. But then we get the problem when we consider any object that varies spatially continuously in color. One might perhaps reply that this example merely shows that color properties cannot in fact be fundamental. I am unsympathetic with this reply, but it is beyond my scope to fully consider the matter here.

2005 consider a variety of options. One is to countenance Distributional Properties, another to countenance Average or Integral properties, while yet another is to countenance a special sort of mapping from color space to real space.

But there are reasons to want determinables to do the job instead. Gunk presents problems for the view that the small metaphysically explains (grounds) the large. Unless we are comfortable with infinitely descending chains of metaphysical explanation it is difficult to maintain that wholes are always grounded by their parts in a gunky world. However, there is still a question of whether anything may be salvaged in a gunky world of the intuition that the small determines the large. Also, for those who countenance both gunky and non-gunky entities, there is a question of how the two might be related.

These considerations give us reasons to appeal to mid-level determinables. For the determinate-determinable distinction carries with it the idea that determinables are determined by their determinates. The advocate of determinable universals will not say that determinables are fully grounded in their determinates. If so there would be no call for them to be distinct universals. But in drawing the distinction we invoke the determination relation. It may be most perspicuous to think of this relation and the grounding relation as themselves two examples (determinates) of a common genus (determinable): the metaphysical explanation relation. On this picture, when we say that there are determinable universals we say that these two types of metaphysical explanation do not always go together: determinates determine determinables but do not ground them.

If this is correct then the friend of mid-level determinables is in a position to retain the idea that parts determine their wholes at gunky worlds even if they do not ground them. The rainbow instantiates the determinable Colored, its parts instantiate more determinate determinables, and we may say that the determinable property of the rainbow is determined by these more determinate properties of its parts. Alternatively we might think of the rainbow as instantiating a number of different structural universals, each specifying increasingly specific determinable color properties of the rainbow's increasingly small parts, and we may say that the more specific such universals determine the less specific ones.

This solution has the further advantage of allowing its proponent to say that entities such as continuously colored rainbows instantiate the same sorts of universals whether or not they are gunky: they instantiate determinables like Colored, and their increasingly small parts instantiate increasingly specific determinables. Whether gunky or not, the rainbow may be taken to instantiate structural universals that involve the universals instantiated by the rainbow's parts. The difference remains that with non-gunky rainbows these structural universals bottom out at some maximally specific layer. But this does not affect the order of determination relations, and it allows a great deal of overlap between the universals that gunky rainbows and non-gunky rainbows may instantiate.

Whether this solution is ultimately attractive depends on one's further background theory. For example, one might take it to be important that the direction of grounding matches the direction of determination when possible, and one might think that both should move downward from the One to the Many. If so, one may think of

holistic world-states as determinates and states of individual components of the world to be determinable-like abstractions, determined by the holistic world states.[14] This renders the determinables solution relatively unattractive.

Another background position that renders the determinables solution unnatractive is the view that extended simples with structurally complex properties are possible: for example a version of the Rothko painting we considered before but one that has no proper parts. [15] On yet another background position that renders the determinables solution unattractive, one might countenance the possibility of gunky objects that are not one single color over any colored region, but are such that they contain patches of every single color in every single subregion, all the way down.

If we countenance any of these possibilities then we will likely need to invoke something like complex structured ultimate determinates, which will probably also handle the case of the gunky rainbow without any call for mid-level determinables. But if we do not countenance these possibilities, as we may well not, then gunky rainbows give us a good reason to countenance mid-level determinables, especially if, like defenders of the Protestant theory, we already accept that there are determinable universals.[16]

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[14"] Schaffer 2010.

[15"] McDaniel 2007.

## CONCLUSION

I have considered some problems for the Protestant view of determinable universals. On this view, only lowest determinate universals and highest determinable universals exist. One problem for this view is that it does not have the resources to give us an analysis of property resemblance facts in terms of shared determinables. Another problem is that it does not have the resources to use determinable properties to reply to worries about causal exclusion, laws of nature and perception, and a final worry is that it does not have the resources to provide what would seem to be a very natural account, especially for those who countenance determinables already, of what it is for a gunky entity to be continuously varied in some value like color. None of these problems are obviously intractable. But together they suggest that the Protestant view may be too austere. Lowest determinates may need intermediaries to help them connect with highest determinables.

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[16] Sorenson 2010 merits mention here. Sorenson argues that we should accept the possibility that the quality space of e.g. color *itself* is gunky – meaning that there are increasingly low determinables, but no lowest determinates. One might initially be inclined to dismiss such a possibility (even if one countenances gunk. See the discussion of this possibility in Arntzenius and Hawthorne 2005). But if one countenances it then this is a clear reason, complementary to the ones I have mentioned, to countenance mid-level determinables.

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