Propositions: Individuation and Invirtuation

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Abstract: The pressure to individuate propositions more finely than intensionally – that is hyper-intensionally – has two distinct sources. One source is the philosophy of mind: one can believe a proposition without believing an intensionally equivalent proposition. The second source is metaphysics: there are intensionally equivalent propositions such that one proposition is true in virtue of the other but not vice-versa. I focus on what our theory of propositions should look like when it's guided by metaphysical concerns about what is true in virtue of what. In this paper I articulate and defend a metaphysical theory of the individuation of propositions, according to which two propositions are identical just in case they occupy the same nodes in a network of invirtuation relations. Invirtuation is here taken to be a primitive relation of metaphysical explanation exemplified by propositions that, in conjunction with truth, defines the notion of *true in virtue of*. After formulating the theory, I compare it with a view that individuates propositions by cognitive equivalence, and then defend the theory from objections.

1. Introduction

P entails Q just in case, necessarily, if P then Q.[1] Two propositions are intensionally equivalent just in case they are entailed by the same propositions and entail the same propositions. Propositions are *intensionally* individuated just in case intensionally equivalent propositions are identical. That propositions are intensionally individuated is elegant and is as clear as the notion of entailment.[2]

The pressure to individuate propositions more finely than intensionally – that is *hyper-intensionally* – has two distinct sources. One source is the philosophy of mind: one can believe a proposition without believing an intensionally equivalent proposition. Here's an example: the proposition that 2+2=4 is intensionally equivalent to the proposition that friendship is intrinsically good. Yet one can believe the former while failing to believe the latter. The second source is metaphysics: there are intensionally equivalent propositions such that one proposition is true *in virtue of* the other but not vice-versa. Suppose there's a God. Necessarily, God intrinsically approves of Joshua's friendship with Kris if and only if that friendship is intrinsically good. But God intrinsically approves of that friendship *because* it's intrinsically good. It's not that it's intrinsically good *in virtue of* God's intrinsically approving of it.

A potentially third source of pressure to hyper-intensionally individuate propositions stems from philosophy of language: in so far as we want some sort of correlation between distinctness of sentence

[1] This conditional is a material conditional.

[2] This view is defended by Stalnaker [1984: 24], and is a consequence of the view that propositions are sets of possible worlds, a view endorsed by Lewis [1986], albeit with qualification.

meaning and distinctness of propositions expressed, we will be motivated to individuate propositions hyper-intensionally. I'm unsure whether this sort of pressure is *distinct* from the first source or whether they share a common root. In any event, since my focus is on the second source, I'll set this source aside.

The first source of concern about the identity conditions of propositions has dominated the literature while the second has received comparatively little focus.[3] My goal here's to rectify this. Set aside concerns about attitude ascriptions and focus on what our theory of propositions should look like when it's guided by metaphysical concerns about what is true in virtue of what. I'll present and motivate a new theory according to which propositions are individuated by how they are related to other propositions in the network of in virtue of relations.

2. A Theory of Individuation

The theory to be propounded is the most conservative revision of the theory that propositions are individuated by how they are related in the network of entailment relations. If taking seriously a hyper-intensionsal *in virtue of* relation forces us to abandon this theory, we should strive to develop a theory that is as elegant and intelligible as its predecessor while accommodating this hyper-intensional relation.

Some preliminary assumptions: first, if Q is true in virtue of P, then P entails Q, although the converse is not guaranteed to be the case.[4] Second, *is true in virtue of* is not a *fundamental* relation.[5] The more fundamental relation was previously unnamed; I'll call it *invirtuation*. We analyse *true in virtue of* as follows: Q is true in virtue of P just in case P *invirtuates* Q and P is true.[6] Invirtuation structures the *entire* domain of propositions, not merely those which are true. In this respect invirtuation is like the entailment relation it induces: just as false propositions can entail false propositions, false propositions can also stand in the invirtuation relation.

[3] Rosen [2010: 124–6] argues for the distinctness of some propositions on the basis of concerns about grounding, but does not provide an account of individuation in general. Jenkins [2011] does discuss the question of how to individuate *states* of entities, which she takes to be the relata of a relation of dependence/grounding, and seriously entertains the thought that such states should be hyper-intensionally individuated. Her focus is not however on the individuation conditions of propositions. Briggs and Jago [2012] briefly allude to a theory on which metaphysically equivalent propositions are identified, but they do not state a criterion for metaphysical equivalence. Fine [2012: 47] notes that our views on the identity conditions of propositions will have impact on our views about grounding, but does not pursue this matter further, and instead opts to construe grounding talk in terms of an operator rather than a relation between facts or propositions.

[4] See Rosen [2010], Correia and Schnieder [2012], Fine [2012], and Trogdon [2013], among others, for a defence of this assumption.

[5] I'll help myself in what follows to the idea that in-virtue-of talk will be regimented in terms of a relation between propositions rather than by way of a binary sentence operator. This is more for ease of exposition than for any substantive reason.

[6] If invirtuation can take plural arguments – I am inclined to accept that it can – then we need to amend the account of *true in virtue of* as follows: *Qs* are true in virtue of *Ps* just in case *Ps* invirtuate *Qs* and each of *Ps* and *Qs* is true.

Do not assimilate *invirtuation* to what Fine [2012: 48–50] calls *non-factive grounding*. Fine [2012: 49] defines non-factive grounding in terms of possible grounding: P non-factively grounds Q just in case it is possible that P grounds Q.[7] Instead, invirtuation is primitive. The proposition that Kit Fine is an eagle invirtuates the proposition that something is an eagle. And yet it's not metaphysically possible that Kit Fine be an eagle. Those with bizarre theories of de re modality are invited to consider another example!

Although invirtuation is not possible grounding, if P possibly grounds Q, then P invirtuates Q. I assume that if P invirtuates Q, then, necessarily, P invirtuates Q. From this, it follows (in a suitable modal logic) that possible grounding implies invirtuation. Suppose it is possible that P grounds Q. Then there is a world in which P invirtuates Q and P is true. Accordingly, at that world, every world is one in which P invirtuates Q. Given S5, P invirtuates Q at the actual world. It would be interesting to see whether this result could be derived from a weaker logic than S5, but I won't pursue this here. So thinking in terms of possible grounding will often be a good a guide to tracking patterns of invirtuation.

Moreover, we can extend some of the same structural principles governing *true in virtue of* to invirtuation more generally. In all cases, disjunctions are invirtuated by their disjuncts. Existential generalisations are invirtuated by their instances. In so far as intuitive principles of this sort helped us grasp the *true in virtue of relation*, parallel principles will help us grasp invirtuation. Attending to how *true in virtue of* is defined in terms of invirtuation will also help us grasp the relation. Suppose that P is true and Q is false. Each of P and Q invirtuates P or Q. But P or Q is true is in virtue of P but P or Q is not true in virtue of Q, which is exactly what the analysis of *true in virtue of* in terms of invirtuation tells us.

Positing invirtuation would not be unprecedented. Fans of the *is true in virtue of relation* believe that it is either identical with or induces an explanatory connection between propositions that is appropriately called 'metaphysical explanation'.[8] Relations of explanatory connection can relate false propositions to true propositions. First, consider so-called 'inference to the best explanation'. The best explanation for *P* needn't be the sole explanation for *P*: otherwise we would talk of inference to the sole explanation! The other explanations are explanations, but not good enough explanations to be taken to be the true one. So there can be false explanations of propositions.

Lipton [2003: 57–8] distinguishes between what he calls potential explanations and actual explanations, and argues that inference to the best explanation should be understood as inference to the best potential explanation. But a cautionary remark about how to understand the relevant notion of *potentiality* is in order. It should not be definitional that all potential explanations are metaphysically possibly true. Consider the debate over what explains the existence of a universe having what appear to be remarkably fine-tuned cosmological constants.[9] Even the most ardent of atheists probably will be willing to grant that a classical theistic explanation is a potential explanation for this fact, albeit not a

[7] Fine [2012: 48–50] notes that one can define factive grounding in terms of non-factive grounding in a way similar to how I propose to define *true in virtue of* in terms of invirtuation.
[8] See Dasgupta [forthcoming], Maurin [2013: 402–3], and Rosen [2010] for examples.
[9] See Leslie [1989] for a classical exposition of the argument.

terribly good one. But they won't be willing to grant this if by doing so they are thereby committed to the metaphysical possibility of a necessary being.

Similarly, we can distinguish between potential and actual metaphysical explanations. In the former case, the potential explainer merely invirtuates the (potential) explanandum. In the latter case, the explanandum is also true in virtue of the explainer. A potential metaphysical explanation might not be a metaphysically possible explanation.

For a second precedent, consider that, just as deductive arguments can be valid even when they have false premises, inductive arguments can be inductively strong even when they have false premises and false conclusions. Consider the inductive argument whose premises are that nine billion donkeys have been observed to talk and no donkey has been observed to be silent and whose conclusion is that all donkeys talk. This is a bad inductive argument because its premises are false but not because its premises fail to inductively support its conclusion. Relations of *inductive support* can relate false propositions to false propositions. Relations of inductive support might not be strictly speaking explanatory relations, but they are sufficiently analogous to serve as a precedent.

For a third precedent, consider *unifying* explanations. David Lewis's [1986] justly celebrated and highly contentious case for *modal realism*, the doctrine that there's a plurality of possible worlds understood as concrete physical objects rests largely on whether modal realism is *serviceable*.[10] According to Lewis, given modal realism, there are plausible reductive accounts of a wide variety of concepts and entities that can all be cast in terms of very few primitive notions and independent assumptions.[11] In short, modal realism would be a highly unifying story of what previously looked to be very disparate phenomena.[12] But although most foes of modal realism recognise its unifying 'potential' they deny that it's even metaphysically possible.

Finally, consider how many fans of locutions like 'in virtue of' and 'grounding' are atheists – and yet for many their opening move to get sceptics of these locutions on board is to remind these sceptics of how compelling the Euthyphro puzzle is![13] This is a reasonable opening move if there's a relation of invirtuation to grasp. When you want your interlocutor to grasp a primitive property or relation, you can't give an analysis of it – it is primitive, after all! – but you can point to objects that instantiate it and objects that do not instantiate it and hope that your interlocutor latches on to the appropriate entity. It is not obviously helpful however to point to objects that were merely falsely believed to instantiate the primitive you hope your interlocutor will grasp. So if there is a relation of invirtuation, appealing to the Euthyphro case makes sense – if there is not, appealing to the Euthyphro case is methodologically dubious.

The entire domain of propositions is structured by various relations that induce explanatory structures. Some might not be comfortable with calling these relations 'explanations' when their relata

[10] See Lewis [1986: 3].
[11] Most famously, Lewis offered a reductive account of modality.
[12] Lewis [1986: 109] himself stresses the unifying power of modal realism.
[13] See, for example, Raven [2012].

are false.[14] For the reasons articulated above, I am comfortable, but I wish to be conciliatory when possible. So let's call relations that induce explanatory structures 'inplanations' to indicate that the relations in question obtain in virtue of how the domain of propositions is structured internally, independently of whether the propositions that stand in the relations are true. For our purposes, we can say that an explanation of a given type is a relation that links propositions just in case they are linked by an inplanation relation of that type and the propositions in play are true.[15] In short, explanations obtain not merely in virtue of *internal* facts about the domain of propositions but also in virtue of the *external* fact that those propositions relate to concrete reality in such a way as to be true. Invirtuation is the centrally important relation for metaphysical inplanation. When P invirtuates Q and P is true, then Q is true in virtue of P – and P metaphysically explains Q.

That said, I am willing to concede that certain kinds of explanatory relations between propositions require not merely the truth of the propositions related but also some further relations between 'worldly correlates' of the propositions. Perhaps causal explanatory relations are of this sort: perhaps P causally explains Q only if there are sets of events E1 and E2 appropriately related to P and Q respectively but also appropriately related to each other (e.g., E2 causally depends on E1).[16] Perhaps metaphysical explanation similarly requires not merely the truth of propositions related by invirtuation but also some 'worldly' correlative relation between non-propositional entities; putative candidates for being such relations include a distinct grounding relation obtaining between facts or a relation of ontological dependence or grounding obtaining between entities more generally.[17] I could accept that Q is true in virtue of P just in case the fact that P grounds the fact that Q. Accepting this is consistent with accepting the bi-conditional that I care about: Q is true in virtue of P just in case P invirtuates Q and P is true. Recognising a relation of invirtuation costs us no more than recognising *true in virtue of* but gains us a clear account of the identity conditions of propositions. However, I do not see what *further* theoretical benefit we get by *additionally* accepting a more 'worldly' correlate of invirtuation. (In general, I think of invirtuation as a kind of 'souped up' version of entailment, a relation for which we do not demand 'objective correlates', rather than a kind of 'metaphysical' causation.)

It is invirtuation rather than *true in virtue of* that is in play in the account of the identity conditions of all propositions, since the true in virtue of relation relates only true propositions to true propositions. Say that two propositions are IVO equivalent just in case they invirtuate the same propositions and are invirtuated by the same propositions. Propositions are IVO individuated just in case IVO equivalent propositions are identical. Call the view that propositions are individuated on the basis of IVO equivalence *IVOC.*[18]

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[14] See Bird [2005: 90] for discussion of this.

[15] Lipton [2003: 58–9] worries that this model of the relation between inplanation and explanation is not quite right. I think his worries can be addressed, but this is not the place to address them.

[16] This seems to be the picture of Kim [1994].

[17] For a defence of a primitive relation of grounding that can relate entities of all categories, see Schaffer [2009]. For qualms against taking such a relation as primitive, see McDaniel [2013] and Wilson [2014], the latter of which also provides a case against taking a grounding relation between facts as primitive.

[18] Bader [2013] defends a theory of the individuation conditions of properties in which they are hyper-intensionally individuated and his criterion of property identity also appeals to 'true in virtue of' relation.

IVOC individuates propositions by directly appealing to one of the two reasons we have discussed to not individuate propositions merely intensionally. Any coarser-grained condition will fail to distinguish propositions that stand asymmetrically in the invirtuation relation. But individuating propositions more finely than IVOC is not motivated by concerns about the in virtue of relation. So IVOC is the most conservative modification of the view that propositions are intensionally individuated that takes metaphysical concerns to be central.

Of course, applying IVOC will sometimes be tricky. Partly this is because it's sometimes unclear whether one proposition invirtuates another – reflect on how versions of the Euthyphro puzzle are still with us today, along with a host of other troublesome cases. But, in addition, the formal features of the invirtuation relation are contestable. It's not symmetric – otherwise its postulation would serve no purpose. There can't be more than one proposition that fails to stand in the invirtuation relation to anything given IVOC. But this constraint is almost certainly true if there's an invirtuation relation at all.

Probably invirtuation can take pluralities among its relata. If a conjunctive proposition is true in virtue of its conjuncts, then we must say that invirtuation can relate a plurality of propositions to a single proposition. In this case, this plurality doesn't distributively invirtuate Q (that is, it's not the case each member of this plurality invirtuates Q) but rather the plurality does so collectively.[19] Accordingly, we will need to be careful about how we state the IVO individuation criterion. Say that P partially invirtuates Q just in case P is among those propositions that collectively invirtuate Q. Say that two propositions are IVO-equivalent just in case they (i) invirtuate the same propositions, (ii) are invirtuated by the same propositions, (iii) partially invirtuate the same propositions, and (iv) are partially invirtuated by the same propositions. As before, say that propositions are IVO-individuated just in case IVO-equivalent propositions are identical.

Plausibly invirtuation is a transitive relation.[20] Both its asymmetry and its irreflexivity could be challenged.[21] Getting this stuff straight is an important task – but it's one for another place. We can accept IVOC while granting that applying it requires addressing questions about the logic of invirtuation. In this respect, IVOC is less clear than the claim that propositions are intensionally individuated, since the logical features of the entailment relation are well-understood and non-controversial.

3. Metaphysical Equivalence and Cognitive Equivalence

Let's compare IVOC to the *cognitive equivalence condition*, which is the view most motivated by the first pressure for individuating propositions more finely than intensionally. Propositions P and Q are *cognitively equivalent* just in case, necessarily, for any conscious being B and mental state S had by B of

[19] See Fine [2012] for this example and further discussion of plural grounding. See McKay [2007] for more on the distinction between distributive and collective predication. See also Correia and Schnieder [2012: 7–8] for further discussion.

[20] But see Schaffer [2012] for arguments against transitivity, and see Javier-Castellanos [2014) for a rejoinder.

[21] See Wieland and Weber [2010], Jenkins [2011], and Wilson [2014]. Barnes [manuscript] argues that *dependence* is non-symmetric and hence shouldn't be analysed in terms of the in virtue of relation. However, one persuaded by her argument but who wishes to analyse dependence in terms of the in virtue of relation could give up instead the asymmetry of the in virtue of relation.

type T, B's state S has P as its content if and only if B has a state S' of type T that has Q as its content. If P and Q are cognitively equivalent, one cannot believe P without believing Q, one cannot desire Q without desiring P, and so on. In general, for any propositional attitude A, one cannot simply bear A to exactly one of a many-membered class of cognitively equivalent propositions, but rather one must bear A to none or all of them. Say that propositions are individuated by cognitive equivalence just in case cognitively equivalent propositions are numerically identical. The *cognitive equivalence condition* is the view that propositions are individuated on the basis of cognitive equivalence. If the cognitive equivalence condition is true, then each class of cognitively equivalent propositions has exactly one member.[22]

With respect to some necessarily equivalent propositions, we do have strong intuitions of cognitive non-equivalence: the proposition expressed by '2+5=7' is not cognitively equivalent to the proposition expressed by 'Everything is self-identical'. Other cases are puzzling. Suppose that Joe has two names, 'Joe' and 'Robert'. Is the proposition that Joe is hungry identical with the proposition that Robert is hungry? If we can truly say that someone, e.g., Hille, believes that Joe is hungry but doesn't believe that Robert is hungry, and the truth of these belief reports gives us reliable information about the contents of Hille's mental states, then this information in conjunction with the cognitive equivalence condition yields us two distinct propositions.[23] The antecedent of this conditional is controversial!

I won't try to settle this controversy.[24] Instead, I'll pursue the question of whether the IVOC is in tension with the cognitive equivalence condition. Does IVOC imply that the proposition that Joe is hungry is identical with the proposition that Robert is hungry? A natural thought is that it does, since whatever 'one' of these propositions invirtuates or is invirtuated by, the same holds for the other. If this is the case, then IVOC will end up making similar judgements about when propositions are identical as so-called Russellian views about propositions, but without making any explicit commitment about the internal structure of these propositions. If this is the case, then metaphysical considerations settle the prolonged and perhaps otherwise intractable debate between 'Russellians' and 'Fregeans' on the identity conditions of propositions.

[22] See Schellenberg [2012] for a discussion of various versions of individuation conditions for propositions, including a version of the cognitive condition.

[23] A complete theory that individuates propositions on the basis of cognitive equivalence must also have something sensible to say about so-called 'simple sentences', such as 'Clark Kent entered the phone booth and Superman flew out of the phone booth.' Does this sentence express the same proposition as 'Clark Kent entered the phone booth and Clark Kent flew out of the phone booth.'? For extensive discussion, see Saul [2007].

[24] In general, it is not clear how fine-grained the fan of a cognitive equivalence criterion should take propositions to be. If two sentences differ only in the order of the conjuncts appearing in them, do they express the same proposition? As an anonymous referee has pointed out to me, there might be possible cognitive agents incapable of commutative transformations of this sort. However, since my goal here is not to defend the cognitive equivalence condition but rather to assess whether it must diverge from IVOC, I won't pursue this question here. It is worth thinking about whether cases like this generate additional tensions between the cognitive equivalence condition and IVOC beyond the case just discussed.

However, this line of thought is too quick.[25] The 'Fregean' could respond that Hille could know that Joe is hungry without knowing that Robert is hungry. In general, whenever one knows that P, one knows that P partially in virtue of P – that is, P is among the grounds for one's knowledge that P. So the proposition that Joe is hungry is among those which invirtuate Hille's knowledge that Joe is hungry, but the proposition that Robert is hungry is not among that which invirtuates Hille's knowledge that Joe is hungry. Since these two propositions occupy distinct positions in the web of invirtuation relations, the IVOC thereby implies that they are distinct propositions.

This suggests that IVOC is compatible with the cognitive equivalence condition regardless of whether the Russellian or Fregean wins the day. This is nice if true, since there are two distinct sources of pressure to finely individuate propositions, and it would be unfortunate if they pulled us in separate directions. What if the two conditions were to conflict? My inclination would be to first assess whether we should view propositions as something akin to pleonastic projections of our practices of attitude ascriptions to conscious beings and content ascriptions to systems of linguistic and symbolic representation (as in, e.g., [Schiffer 2003]) or rather view propositions as genuine metaphysical entities in their own right. If the former, prefer the cognitive equivalence condition. If the latter, prefer IVOC.

Here's a more speculative hypothesis: IVOC will always individuate propositions at least as finely as any other well-motivated identity condition for propositions. Here's why I find this hypothesis plausible. If an alternative condition individuates propositions more finely than IVOC, then there are differences that make no difference to the grounding structure of the space of possibilities. But what then could motivate positing ungrounded differences? Remember that the non-identities posited by the cognitive equivalence condition generate corresponding differences in how propositions about epistemic states are grounded. Different conditions of individuation should be assumed to track corresponding differences in the grounding structure – which would then make the alternative condition compatible with IVOC. This is by no means a proof that IVOC will face no such conflict, but it's somewhat reassuring.

IVOC by itself is silent on whether propositions have an internal structure. From the perspective of IVOC, propositions might be structured, but they also might be nothing more than nodes in the web of invirtuation relations. Do we have insight into the structure of this web? If propositions are intensionally individuated, there are two terminal nodes in the web of entailment relations: there's the proposition that entails everything, and there's the proposition that is entailed by everything. But I doubt that there are unique nodes given IVOC: is there a unique proposition that invirtuates every other proposition and a unique proposition that is invirtuated by every other proposition? One could postulate that this is the case, but it's not clear to me how to defend this.[26]

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[25] Thanks to Joshua Spencer here for very helpful discussion. I had originally hoped that IVOC would settle the issue in favour of a 'Russellian' view of propositions, but he convinced me that things were not so simple.

[26] An anonymous referee has suggested one candidate for being the occupant of the 'topmost' node: the proposition that some proposition is true. Arguably every proposition invirtuates this proposition since (i) for any proposition P, P invirtuates the proposition that P is true, and (ii) the proposition that P is true invirtuates the proposition that some proposition is true.

4. Objections to the Theory

One might worry that, although IVOC provides us the identity conditions for propositions, for any given proposition, it doesn't tell us which proposition that proposition is. Suppose you are presented with a graph, the points of which represent propositions and the lines of which represent invirtuation relations. Which point on the graph corresponds to the proposition that a donkey talks?

IVOC doesn't answer this question, but it shouldn't have to. We should separate an account of the identity conditions for a type of entity from an explanation of how to identify specific entities that are instances of this type. Note that, if propositions are individuated by intensional equivalence, with the exception of the necessary truth and the necessary falsehood, we are left equally (and unobjectionably) in the dark if the identity condition offered is our only light.

Of course, many (but not all) of those who accept the claim that propositions are individuated by intensional equivalence accept a *further* claim about the nature of propositions, specifically, that they are sets of possible worlds.[27] The identification of propositions with possible worlds implies that propositions are intensionally individuated, and seems to provide a further way to identify propositions. Thus it can seem like an attractive package.[28] Let's assess whether this is so.

The two prominent defenders of this package of views are Lewis [1986] and Stalnaker [1976, 1984]. On Lewis's [1986] view, possible worlds are physical universes, some of which have people, donkeys, and other paradigmatic concrete individuals as parts. Consider the proposition that a donkey talks. This proposition is a node in a network of entailment relations; it is also a set of worlds, namely the set of all and only those worlds that have a talking donkey as a part. Given Lewis's reductive account of possible worlds as maximal mereological sums of spatiotemporally related objects, one can go beyond the network of entailment relations and, at least in principle, identify which proposition is which. That is a nice feature of Lewis's view, but it is the judgement of the philosophical community that the costs of Lewis's view of possible worlds are, on the whole, too high to pay.

On Stalnaker's [1976: 75] view, possible worlds are primitive irreducible entities. Stalnaker's account of possible worlds might be saner than Lewis's. But it also seems to not be as explanatory. Which proposition is the set of worlds at which a donkey talks? In order to identify this set, we'd need to have a way of identifying which abstract world is a world at which a donkey talks. But that's primitive – the worlds at which a donkey talks are just the worlds at which a donkey talks, and nothing more illuminating can be said. Possible worlds stand in various internal relations to one another, and to actual objects: worlds agree with each other on what they do or do not represent as being the case. But we can't characterise what those internal relations are without appealing to the entailment relations between the sets of worlds that they generate. For this reason, Stalnaker's version of the view that propositions are sets of worlds is not better off than IVOC with respect to its capacity for identifying

[27] Stalnaker [1976: 72–3] claims that individuating propositions intensionally is defensible independently of whether propositions are sets of possible worlds; Stalnaker [1984, chapter one] presents an argument for this conclusion.

[28] I thank an anonymous referee for pressing me on this point.

which proposition in the web of entailment relations is the proposition that a donkey talks. It is telling that Stalnaker [1976: 73] thinks that his combined theory of possible worlds and propositions is merely a notational variant of a theory of possible worlds as sets of propositions that are individuated by necessary equivalence.[29] (Note also that Stalnaker [1976: 74] recognises that even if propositions are some way 'the primitive entities', for each possible world, there is a 'maximal contingent' proposition that is true at exactly just that world, and accordingly all other propositions could be understood as truth-functional constructions built out of, i.e., sets of, these maximal contingent propositions.)

The view that propositions are sets of worlds appears to couple nicely with the view that propositions are intensionally individuated. So naturally one will wonder what theory of the nature of propositions we should couple with the IVOC. An option that I find attractive, and will articulate here, is that propositions are analogous to spacetime points. Spacetime points are individuated by relations of spacetime distance to other spacetime points. These relations of spacetime distance both structure the set of spacetime points and determine their identity conditions. Note that the identity condition of spacetime points doesn't tell us which spacetime point a specific spacetime point is. If we want not merely identity conditions but also an identification of this sort, we must tie the web of spatiotemporally-related spacetime points to further entities. With respect to spacetime points, we can say which one a given one is by determining how it is related to a thing *in* it: *this* spacetime point is one in which there's *this* temporal slice of an electron, for example. It's the *occupation* relation that is called in to play here. With propositions, the machinery of possible and impossible worlds might be similarly helpful: we might identify in the relevant sense which proposition is the proposition that the sky is blue by pointing at which worlds that proposition is *true at*. The *is true at* relation could play the same role as *occupation*. Of course one might wish to construct possible and impossible worlds out of propositions – but similarly, one might wish to identify material objects with selected regions of spacetime. In neither case is the theory of their identity conditions under serious threat.

One might worry that this view about the nature of propositions generates a Benacerraf-style problem: couldn't very different kinds of entities occupy the invirtuation structure?[30] What in the nature of the invirtuation structure determines the kinds of things that can be nodes of that structure? If many different kinds of things could potentially occupy this structure, then there would be no fact of the matter as to which kinds of entities were genuinely the propositions, and many would find this objectionable.[31] But on my preferred way of developing the IVOC, such a worry cannot arise. On this view of propositions, there is nothing more to being a proposition than bearing the invirtuation relation to other propositions, and bearing the *is true at* (or *is false at*) relation to some world: the propositions just are those unique things that stand in these relations and whose natures are exhausted by their

[29] Provided that propositions also satisfy what Stalnaker [1976: 72] calls condition (C): for every set of propositions, there is a proposition that, as a matter of necessity, is true if and only if all members of that set are true. I agree with Stalnaker [1976: 73] that (C) should be relatively non-controversial.
[30] Inspired by Benacerraf's [1965] classic discussion.
[31] I thank an anonymous referee for pressing me on this worry.

standing in those relations.[32] Once again, the analogy with spacetime points is fruitful: no Benacerraf-style objection arises for the view that there is nothing more to being a spacetime point than being spatiotemporally related to other spacetime points, and to standing in the *occupied by* relation to material objects. Spacetime points just are the unique entities that stand in those relations, and whose natures are exhausted by standing in those relations. If a Benacerraf-style worry arises for my preferred way of fleshing out the IVOC, then it is problem for many more views than we might have thought![33]

Although this view about the nature of propositions forms a nice package with IVOC, the friend of IVOC is not per se required to endorse the package. Some philosophers found the claim that propositions are individuated intensionally attractive prior to the development of the view that propositions are sets of worlds.[34] IVOC is an attractive theory of the identity conditions of propositions even when considered in isolation of other theories about the nature of propositions. It is also attractive enough to serve as a constraint on the development of future theories about the nature of propositions.[35]

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REFERENCES

Bader, Ralf 2013. Towards a Hyperintensional Theory of Intrinsicality, *Journal of Philosophy* 110/10: 525–63.

Barnes, Elizabeth (Manuscript). Symmetric Dependence.

Benacerraf, Paul 1965. What Numbers Could Not Be, *the Philosophical Review* 74/1: 47–73.

Bird, Alexander 2005. Explanation and Metaphysics, *Synthese* 143/1–2: 89–107.

Briggs, Rachel and Mark Jago 2012. Propositions and Same-Saying: Introduction, *Synthese* 189/1: 1–10.

Correia, Fabrice and Benjamin Schneider 2012. Grounding: an Opinionated Introduction, in *Metaphysical Grounding: Understanding the Structure of Reality*, eds. Fabrice Correia and Benjamin Schneider, New York: Cambridge University Press: 1–36.

Dasgupta, Shamik (Forthcoming). The Possibility of Physicalism, *Journal of Philosophy*.

[32] It would be interesting to assess the extent to which this kind of structuralism about propositions dovetails with a structuralist view about grounding and the grounds of non-fundamental facts. The latter is defended in Kang [manuscript].

[33] A second analogy worth considering is with the view that events are individuated by their place in the network of causal relations. See Davidson [1969] for a defence of this view.

[34] For example, Wittgenstein suggests this view in the *Tractatus* (at 5.1.4).

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Davidson, Donald 1969. The Individuation of Events, in *Essays in Honor of Carl G. Hempel: a Tribute on the Occasion of his Sixty-Fifth Birthday*, edited by Nicholas Rescher, Dordrecht: D. Reidel publishing: 216–34.

Fine, Kit 2012. Guide to Ground, in *Metaphysical Grounding: Understanding the Structure of Reality*, eds. Fabrice Correia and Benjamin Schnieder, New York: Cambridge University Press: 37–80.

Javier-Castellanos, Amir A. 2014. Some Challenges to a Contrastive Treatment of Grounding, *Thought: a Journal of Philosophy* 3/3: 184–92.

Jenkins, Carrie 2011. Is Metaphysical Grounding Irreflexive?, *the Monist* 94/2: 267–76.

Kang, Li (Manuscript). Hey Grounding, Meet Structuralism.

Kim, Jaegwon 1994. Explanatory Knowledge and Metaphysical Dependence, *Philosophical Issues* 5: 51–69.

Leslie, John 1989. *Universes,* New York: Routledge Publishing.

Lewis, David 1986. *On the Plurality of Worlds*, Basil: Blackwell.

Lipton, Peter 2003. *Inference to the Best Explanation*, New York: Routledge Publishing.

Maurin, Anna-Sofia 2013. Exemplification as Explanation, *Axiomathes* 23/2: 401–17.

McDaniel, Kris 2013. Degrees of Being, *Philosophers Imprint* 13/19: 1–18.

McKay, Thomas 2006. *Plural Predication*, New York: Oxford University Press.

Raven, Michael 2012. In Defence of Ground, *Australasian Journal of Philosophy* 90/4: 687–701.

Rosen, Gideon 2010. Metaphysical Dependence: Grounding and Reduction, in *Modality: Metaphysics, Logic, and Epistemology*, eds. Ben Hale and Aviv Hoffman, New York: Oxford University Press: 109–36.

Saul, Jennifer 2007. *Simple Sentences, Substitution, and Intuitions*, New York: Oxford University Press.

Schaffer, Jonathan 2009. On What Grounds What, in *Metametaphysics: New Essays on the Foundations of Ontology*, eds. David Chalmers, David Manley, and Ryan Wasserman, New York: Oxford University Press: 347–83.

Schaffer, Jonathan 2012. Grounding, Transitivity, and Constrastivity, in *Metaphysical Grounding: Understanding the Structure of Reality*, eds. Fabrice Correia and Benjamin Schneider, New York: Cambridge University Press: 122–38.

Schellenberg, Susanna 2012. Sameness of Fregean Sense, *Synthese* 189/1: 163–75.

Schiffer, Stephen 2003. *The Things We Mean*, New York: Oxford University Press.

Stalnaker, Robert 1976. Possible Worlds, *Nous* 10/1: 65–75.

Stalnaker, Robert 1984. *Inquiry*, Cambridge, MA: The MIT Press.

Trogdon, Kelly 2013. Grounding: Necessary or Contingent?, *Pacific Philosophical Quarterly* 94/4: 465–85.

Wieland, Jan and Erik Weber 2010. Metaphysical Explanatory Asymmetries, *Logique & Analyse* 53/211: 345–65.

Wilson, Jessica 2014. No Work for a Theory of Grounding, *Inquiry* 57/5–6: 535–79.

Wittgenstein, Ludwig 1922/2001. *Tractatus Logico-Philosophicus*, translated by C.K. Ogden, New York: Routledge Publishing.