



THE METAPHYSICS OF PROPERTIES AND RELATIONS

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Introduction

Bergamo's conference on the metaphysics of properties and relations was one of the most attractive conferences that recently took place in Italy. When we first looked at the program some nine months ago, few things if anything could have contained our enthusiasm: Not only did it confirm that properties and relations keep exerting large interest at all levels of the discipline, but it brought together some among the most reputed scholars and promised to bring about novel issues as well as thought-provoking proposals. We immediately set up a team of RIFAJ-editors whose competences could have most nearly approximate the covered topics.

Ilaria Canavotto considered Kevin Mulligan's defence of the thesis that connectives are more fundamental than predicates and his attempt to make a weak and a strong form of realism about the semantic value of connectives (which he calls 'connectors') compatible. She also outlined Fabrice Correia's proposal of exploiting the notion of generic identity in order to account for central metaphysical concepts, such as generic essence, generic subsumption, and generic ground. Fabio Ceravolo covered Peter Van Inwagen's partly meta-ontological defense of transcendent universals and Ralf Busse's attack on the alliance of dispositional essentialism and graph theory against the objection that the relational analysis of dispositions involves a vicious circularity. Maria Scarpati took care of Anna-Sofia Maurin's attempt to show that – contra some important objections – there are understandings of the nature of tropes that are coherent and suitable for the aims of trope theory, of Gonzalo Rodriguez-Pereyra's illustration of two theoretical roles that indiscernible universals could fulfill and of Andrea Bottani's outline of Locationist Nominalism – a new theory of properties according to which both determinables and determinates supervene together on individuals.

Taking an overall perspective on the conference, we noticed that a number of philosophical questions, each of its own interest, may be made to fit the single label “metaphysics of properties and relations”. As a matter of fact, contributions covered topics as apparently diverse as the rooted dispute on universals and the recent advancements in the metaphysics of science. Yet we were pleased to notice not just a merely proclaimed but insubstantial will of unification, but, rather, concrete and at times very successful integration attempts – as the present report repeatedly remarks.

A word of thanks on behalf of the community represented by this journal goes to the organisers Andrea Bottani, Barbara Malvestiti, Alfredo Tomasetta, Thomas Sattig, and to all the speakers. To Andrea we sincerely wish best of luck on his project for a renewed Bergamo department. Few are brave enough to challenge an entrenched auto-referential system by putting forward a proposal modeled on top-level international standards. *Grazie.*



Contents

1	<i>In Defence of Transcendent Universals</i>	
	Peter Van Inwagen (University of Notre Dame)	78
2	<i>Connectors vs Properties</i>	
	Kevin Mulligan (University of Geneva)	81
	2.1 Introduction	81
	2.2 Truth-connective vs Truth-property	82
	2.3 Which form of realism about connectors?	85
3	<i>On The Nature of Tropes</i>	
	Anna Sofia Maurin (University of Gothenburg)	88
4	<i>Graph Metaphysics Cannot Solve the Dispositional Essentialist's Circularity/Regress Problem</i>	
	Ralph Busse (Universität Mainz)	92
	4.1 The Circularity/Regress Objection (CRO)	93
	4.2 4.2 Graph-theory	94
	4.3 2.3 Graph theory and CRO	96
	4.4 2.4. Ways out?	97
5	<i>Outline of a Locationist Theory of Properties</i>	
	Andrea Bottani (Università degli Studi di Bergamo)	99
6	<i>Indiscernible Universals</i>	
	Gonzalo Rodriguez-Pereyra (University of Oxford)	102
7	<i>Attribute Identity</i>	
	Fabrice Correia (University of Neuchâtel)	105
	7.1 Introduction	105
	7.2 Elements of a Theory of Generic Identity	106
	7.3 How to Reduce Generic Essence, Subsumption and Ground	109

1 *In Defence of Transcendent Universals*

Peter Van Inwagen (University of Notre Dame)

Consider the following statement: as metaphysical theories explain our semantic attitudes and ordinary beliefs, addressing the question of the nature of universals is partly a matter of explanatory virtue. Many metaphysicians straightforwardly agree. For instance, the existence and nature of universals is *derived* by virtue of its being the best explanation of some relevant data, such as the internal unity of classes in natural and scientific language. This is also completely familiar to the contemporary reader, as metaphysics textbooks standardly introduce the dispute on universals by eliciting intuitions about collections of things under similarity. However, characteristically for Van Inwagen, the metaphysicians' task is more ambitiously construed: the existence of universals must be endorsed not merely as an explanatory basis for a semantic datum but as the result of genuinely *a priori* enquiry. For this and other reasons, a view such as Armstrong's, which does away with universals on purely explanatory grounds incurs in *foundational* problems.

In this respect, Van Inwagen initially suggests that inferences to the best explanation (IBE) will never decree a clear winner, but rather a winner modulo the balance of all relevant explanatory virtues. So, what is Van Inwagen's alternative to an IBE-based metaphysics? Most relevantly, he professes neo-Quineanism, according to which the ontological content of theories – both scientific and metaphysical – is contained in their quantificational structure. Thus, an argument for the existence of universals will not only “back up” the semantic and belief-related data, but rather produce existential claims, as in the following:

- (1) Any two female spiders share some anatomical characteristics.
- (2) Any spider and any insect share some anatomical characteristics.
- (3) Therefore, *there are* characteristics shared by female spiders and insects.

Whereby (3) contains a quantificational commitment to characteristics. Therefore, the difference in method boils down to the fact that Van Inwagen seeks theories that are descriptive in character – they trace out statements of existence of the target commitment and, if they explain semantic and belief-related data at all, they do not do so by solely postulating the commitments¹.

¹A worry that was later discussed is the following. Granted that (3) is a commitment to characteristics, it still seems to be a matter of best explaining some data that such characteristics are *ante rem* universals rather than some other appropriate metaphysical stand-in, *e.g.* in re universals or tropes. Say, it is because the explanation of attribution in terms of instantiation grants greater theoretical virtues than primitive bundling that the commitment to characteristics generated by (3) is a commitment to *ante rem* universals. In response, Van Inwagen conceded that he does not presently provide the full details of the *a priori* arguments in favour of *ante rem* universals.

Indeed, it is debatable whether the envisaged strategy counts as an explanation of anything, since it is a purely accidental fact that semantic and belief-related data on the unity of classes obtain jointly with true quantificational statements on characteristics like (3). If there is an explanatory link moving from the truth of the statements to the obtaining of the data, it may not be entailed at any stage of the previous argument. Aware of this remark, Van Inwagen “rests content” with his purpose not being one of “explaining anything at all”.

In the rest of the talk, Van Inwagen responded to some Armstrongian attacks on *transcendent realism* (TR). The latter is, broadly speaking, the Platonic *ante rem* conception of universals, according to which universals exist independently of particulars, they are not in any sense constituents of the latter, losing instances is a Cambridge change to a universal, and universals are instantiated by particulars by means of bearing an external relation to the latter. When a particular *y* instantiates a universal *Y*, we say that *y* “has” *Y*. The proposition thereby expressed can easily be expressed by ordinary sentences as: ‘Socrates has the virtue of righteousness’, or ‘Salomon has wisdom’. So much being widely known, less agreed upon is what must be said about the standard objection, “old as philosophy itself”, that ‘has’ denotes a relation between instantiator and universal, that such relation is itself a universal and thus that it will require a further relation between its instantiators, generating an obvious regress. For similar reasons, Armstrong says of TR that it has (unacceptably) “relational character”.

Attempting a reconstruction of Armstrong’s reasons to call the view “relational”, Van Inwagen notices that the main candidate can be derived from the use of truth-conditional biconditionals, *e.g.*

- (4) ‘Salomon is wise’ is true if, and only if, Salomon has the property of being wise

According to Van Inwagen, there is no special problem with TR entailing bi-conditionals of the kind of (4). What must be rather opposed is the claim that the bi-conditionals generate commitment to the constituents of the true propositions expressed by the right-hand side. In other words, even if ‘has’ expresses instantiation, there are objections to this entailing the relational character of TR. On the one hand, classes of terms and predicates involved must be at least restricted owing to worries related to Russell’s paradox, in such a way that, while instantiation may be counted out the list of genuine universals (to prevent paradox), still ‘*x* has the property *P*’ is true if, and only if, *x* instantiates *P*.

On the other hand, setting the Russellian response aside, Van Inwagen alleges that even if we assume *P* and *Q* to be metaphysically equivalent propositions, and *P* to be relational, it doesn’t thereby follow that *Q* is relational. He asks to compare TR to arithmetical realism (the belief in the existence of numbers). Arithmetical realism features bi-conditionals of the kind of (4), such as:

- (5) 'Salomon is bipedal' is true if, and only if, Salomon bears R to the number two.

for some external relation R isomorphic to instantiation. Yet few would assert that the character of arithmetical realism is relational in Armstrong's sense, as for the latter to follow a stronger premise is required. Namely, Armstrong should suppose that the relational character of a proposition is something more intimate than its co-extensiveness with the truth of the sentence on the left-hand side. For instance, the right-hand side of (4) should contain conjuncts of the sort: '... and what it is for Solomon to be wise is for him to ϕ ', with ϕ equivalently replaced by a clause like 'to instantiate wiseness'.

Van Inwagen lays the burden of the proof on Armstrongians in this respect, but he also thinks that their prospects of succeeding in the task are weak. For, he alleges, 'What is it for A and B both to be white?' has only two answers, none of which is metaphysical. The first is an *efficient causal* answer, which points at entities that cause both A and B white; the other is a *formal causal* answer, which points at the reason why both A and B are white. For Van Inwagen, neither answer bears a metaphysical content, to the effect that there is no metaphysical feature nor a causal agent underlying the 'joint' whiteness of A and B. This is unsurprising if we consider Armstrong's original formulation of the problem of universals, which asks *how it can be* that two or more individuals have the same properties. Recall that, for Van Inwagen, simply *postulating* universals as filling the role of an underlying metaphysical answer to the efficient causal and formal causal questions, is an *ad hoc* strategy.

In response, one may initially wonder whether the approach does not beg the question against Armstrong's formulation. For A and B being both white may just consist in the fact that they instantiate the same universal. In general, it is not clear why the existence of a unique *relatum* of instantiation for both A and B may *itself* not provide the sought answer. Perhaps Van Inwagen would insist that entities like universals do not have causal powers at all – as it is odd to think of a universal as *causing* the common whiteness of A and B in the same sense in which the coffee falling from my cup causes a stain to appear on my shirt. But this is controversial, insofar as causation is controversial. An *ante rem* universal is best conceived as an entity lacking causal powers. However, very often causation is treated as a relation between events, in which case the event of a universal being related to its instantiator causes the event of the instantiator bearing the property identified with the universal. Thus, there seems to be room for contesting the premise that the only answers to the above questions appeals to the causal powers of non-metaphysical entities.

Alternatively, Van Inwagen could allege not that the only answers appeal to non-metaphysical entities but that *the best* answers do. For instance, we tend to

favour biological or physical explanations over metaphysical explanations, in which case the latter would be trumped by the former. In response, however, it is not clear why the existence of biological or physical explanations would trump the existence of a metaphysical explanation, as opposed to both kinds of explanation qualifying as viable alternatives. In particular, often biological and physical explanations are not mutually exclusive, and so it could equally be with respect to metaphysical explanations²

Finally, as for Van Inwagen's claim that TR requires only the truth of a non-relational proposition, some commentators have wondered whether he also thinks there is nothing as an ontological analysis of instantiation. While all of Van Inwagen's arguments are against the explainability of the nature of properties (what whiteness is) in metaphysical terms, theories of universals have better have instantiation as an *explanandum*. On the other hand, his claim that TR requires only the truth of non-relational propositions arguably leaves us with no clue as to where to look for this *desideratum* to be satisfied.

2 *Connectors vs Properties*

Kevin Mulligan (University of Geneva)

2.1 Introduction

In a number of papers, Kevin Mulligan (2006a; 2006b; 2007) has argued that reality is constituted of three levels of increasing degree of fundamentality, namely the *logical level*, which includes propositions and concepts, the *logico-ontological level*, which includes objects, properties, relations and states of affairs, and the *ontological level*, which includes all familiar entities we encounter in everyday life, such as things, states, processes, events, and so on. In Mulligan's view, although not fundamental, the categories belonging to the logico-ontological level are central ontological categories which are not only essential to account for intentionality of knowledge³ but also intimately connected with the logico-grammatical categories of proper names, predicates, relational expressions and propositions. Still, in this talk, Mulligan suggests that a further ontological category, which has been neglected in the literature, should be added to the logico-ontological level, namely the category of connectors. Connectors are what Mulligan calls the semantic values of connectives. A connective is a functorial expression that takes at least one sentence to make a new sentence. Besides the familiar logical connectives, connectives also include expressions such as

(i) 'it is true that_';

²For instance, the idea that metaphysical explanations serve the purpose of idealising the complexity of physical models has been defended by Godfrey-Smith (2012) and Paul (2012).

³On this point see especially Mulligan (2007)

(ii) 'it is possible that_';

(iii) 'it is probable that_';

Importantly, these expressions should not be confused with the corresponding predicates

(i*) '_ is true';

(ii*) '_ is possible';

(iii*) '_ is probable';

Unlike connectives, predicates take nominal expressions like 'that p' or 'the proposition that p' to make a sentence. What is more, while the semantic value of a connective is a connector, the semantic value of a predicate is a property.

In light of this overall framework, Mulligan raises and addresses two main problematic issues in his talk. First, given a connective and the corresponding predicate, is one of the two more fundamental than the other? And, if so, which one? Second, supposing that there are indeed connectors, what sort of realism about connectors should we endorse?

Focusing on the truth-connective/truth-predicate pair, Mulligan answers to the first question by arguing that the truth-connective is more fundamental than the truth-predicate. In doing so, he defends his view against two objections recently advanced by Wolfgang Künne (2010; 2013), who upholds the opposite view that the truth-predicate is more fundamental than the truth-connective⁴ Turning then to the second issue, he distinguishes two forms of realism about connectors, which he calls 'strong' and 'weak' realism, and suggests that the two forms are not incompatible with one another. His proposal is based on two main ideas, namely (i) that each connector is associated with an operation or intentional attitude, and (ii) that there are different kinds of 'because', *i.e.* explanatory links. In what follows we will consider these points in more details.

2.2 Truth-connective vs Truth-property

Mulligan's view on the relation between the truth-connective and the truth-predicate, already presented in his *The Truth Predicate vs the Truth Connective* (2010), is the following (where <p> is an abbreviation for 'the proposition that p'):

(1) p

(2) It is true that p

(3) That p is true

(4) <p> is true

⁴See also Künne (2003).

- (5) (1) iff (2) iff (3) iff (4)
- (6) If (2) , then (2) because (1)
- (7) If (3) , then (3) because (1)
- (8) If (4) , then (4) because (1)
- (9) If (3) , then (3) because (2)
- (10) If (4), then (4) because (3)

Letting ' $<$ ' standing for the relation of being more fundamental than, from (6), (9), and (10) we can infer

$$(1) < (2) < (3) < (4).$$

That is, the truth-connective is more fundamental than the truth-predicate. As Kuünne (2010: 598) notes and Mulligan mentions in his talk, this view was already anticipated by Arthur Prior, who maintains that “the word ... ‘true’ in [its] primary use [is an] inseparable part of the adverbial phrase ... ‘it is true that’” (Prior, 1967: 229).

Mulligan’s main argument in favour of this claim is that combination or connection is a more basic operation than predication. Indeed, predication involves an operation of ascent or sentence nominalisation⁵, which is not required when we use connectives. With Mulligan’s words,

“[...] you should accept that it is the truth connective rather than predicative truth which wears the trousers. Instances of ‘It is true that p’ contain no nominalisations, they are not the result of any type of ‘ascent’. Instances of ‘that p is true’ contain nominalisations. Nominalisations are secondary with respect to what they are nominalisations of. Instances of ‘ $<p>$ is true’, unlike instances of ‘that p is true’ contain not only nominalisations but also refer by name to propositions”. (Mulligan, 2010:569)

Now, although Kuünne accepts some parts of Mulligan’s view – especially claims (5) to (8) and (10) – he rejects the central thesis. More specifically, according to him, ‘it is true that p’ is only a stylistic variant of ‘that p is true’, which, in turn, is a stylistic variant of ‘ $<p>$ is true’. In fact, so the argument goes, it is legitimate to analyse ‘it is true that p’ as an expression obtained from ‘that p is true’ by changing the order of the words and adding an expletive ‘it’ (cf. Künne, 2010: 602–603). But, if this is correct, then

⁵For more details on ascent operations see Mulligan (2006a)

My contention, as against Prior, is this: our understanding of (TC) [instances of (2)] is based upon our understanding of the truth-predicate and of the that-clause. (It is uncontroversial that our grasp of a genuine occurrence of a that-clause is in turn founded upon our understanding of the sentence to which the 'that' is prefixed and of the operation of this kind of sentence nominalization). (Künne, 2013: 164)

That is, 'that p is true' is more fundamental than 'it is true that p', even though it indeed involves an operation of semantic ascent.

To this challenge, Mulligan replies in two steps. First, he restates his fundamental point: in order to understand instances of (2) we only need to understand that 'it is true that' combines with 'p', whereas in order to understand instances of (3) we need also the ability to nominalise, which is more demanding than the ability to combine expressions. In line with this, he claims that "since a creature incapable of nominalisation can understand 'it is true that p' but not 'that p is true', our understanding of the former cannot be founded upon our understanding of the latter". Second, although different parsings of the same expression are often possible, we should not forget that there are also limits. In particular, no analysis which involves a change in grammatical categories is legitimate. For example, 'Sam loves Mary' can be analysed as 'p', 'aRb', 'Fa' or 'Gb' but not as a nominal expression. Analogously, Mulligan maintains that 'p' in 'it is true that p' cannot be analysed as a nominal expression. Hence, 'it is true that p' is not just a stylistic variant of 'that p is true'.

Still, Künne has a second and more threatening objection against Mulligan's view. That is, the truth-connective does not allow us to analyse 'inexpressive truth talk' like

(E1) 'everything the Pope says *ex cathedra* is true';

(E2) 'the dogma of papal infallibility is true';

(E3) 'her favourite hypothesis is true'

According to Künne, it is evident that the only possible parsing of E1-E3 is the predicative one. Hence, since an elucidation of truth talk must take into account both expressive and inexpressive truth talk, the truth-connective analysis cannot be the fundamental one⁶.

Mulligan agrees that a "truth-connective analysis" is not available in the cases considered by Künne. Nevertheless, he raises two doubts concerning the efficacy of his opponent's argument. First, is the truth-predicate used in (E1)-(E3) in the same way as in instances of 'that p is true'? It seems that, while in the latter the truth predicate is ineliminable (in the sense that no predicate other than 'is true'

⁶Cf. Künne (2010: 612-13).

will do), in the former it is possible to replace it with, say, ‘_is correct’. If this is the case, then (E1)–(E3) tell us nothing concerning the relation between instances of (2) and instances of (3). In addition, does not Künne confuse an epistemological claim with a claim about the structure of logical grammar? Of course, if I know only that my friend’s favourite hypothesis is true, then I do not know what her favourite hypothesis is. Still, from a logico-grammatical point of view, every reference to assertions, axioms, dogmas, hypotheses, etc. which are said to be true is indeed a reference to propositions which are said to be true. And, as we have seen, according to Mulligan, if any of these propositions is true, say $\langle p \rangle$, then $\langle p \rangle$ is true because it is true that p . Therefore, inexpressive truth talk does not represent a threat to Mulligan’s priority thesis neither.

So far for the truth-connective. Let us now go back to connectors.

2.3 Which form of realism about connectors?

In the last part of his talk, Mulligan investigates the question as to what kind of realism about connectors we should endorse. As mentioned in the introduction, in order to answer to this question, he introduces a distinction between a weak and a strong form of realism, which is based on the notions of correct operations and correct attitudes. In a nutshell, according to Mulligan, as names and predicates (i) refer to objects and properties and (ii) are associated with the operations of naming and predicating, connectives (i) refer to connectors and (ii) are associated with specific operations or attitudes. Some relevant examples are illustrated in the following table.

Table 1:

	Connectives	Operations/Attitudes
Basic connectives	_and_	conjoining (operation)
	or	disjoining (operation)
Connectives with Predicate Counterpart	it is probable that_	
	it is true that_	

Taking the cue from theories of intentionality based on correctness conditions⁷, Mulligan then defines correctness of the operations and attitudes listed above in this way:

- (1) it is correct to disjoin p, q iff p or q ;
- (2) it is correct to conjoin p, q iff p and q ;

⁷Theories of intentionality based on correctness conditions are associated with Husserl. Mulligan (2007) contrasts these theories of intentionality with Searlian theories, which are based on satisfaction conditions instead, and argues in favour of the former by means of what he calls the “argument from knowledge”.

- (3) it is correct to conjecture that p iff it is probable that p ;
- (4) it is correct to assert that p if and only if it is true that p .

At this point, the question naturally arises as to whether there is an explanatory relation between the left and the right hand sides of the biconditionals (1)-(4). In Mulligan's view, answering that there is such a relation is sufficient to endorse a realist position. Hence, we can distinguish two forms of realism: one according to which there is an explanatory link and the right hand side is explanatorily more fundamental than the left hand side, and the other one according to which there is an explanatory link and the left hand side is explanatorily more fundamental than the right hand side. Mulligan calls the former weak realism and the latter strong realism.

Weak Realism

- (W1) If p or q , then this is because it is correct to disjoin p , q .
- (W2) If p and q , then this is because it is correct to conjoin p , q .
- (W3) If it is probable that p , then this is because the conjecture that p is correct.
- (W4) If the proposition that p is true/the state of affairs that p obtains/it is true that p/p , then this is because the assertion that p is correct.

Strong Realism

- (S1) If it is correct to disjoin p , q , then this is correct because p or q .
- (S2) If it is correct to conjoin p , q , then this is correct because p and q .
- (S3) If the conjecture that p is correct, then this is correct because it is probable that p .
- (S4) If the assertion that p is correct, then this is correct because the proposition that p is true/the state of affairs that p obtains/it is true that p/p .

In other words, while weak realism is the view that connectors are less fundamental than the corresponding intentional operations or attitudes, strong realism is the opposite view that the former are more fundamental than the latter.

As Mulligan observes, weak and strong realism have almost always been contrasted in the history of philosophy – suffice it to recall Aristotle's oft-cited claim that "it is not because we are right in thinking that you are white that you are white; it is because you are white that we are right in thinking that you are white" (*Metaphysics*, IX 1051b7-9). But is it really the case that strong and weak realism are mutually exclusive? To conclude his talk, Mulligan sketches a way to provide a negative answer to this question. The first step is to distinguish two kinds of



'because', namely the normative and the essential 'because'⁸ By means of examples, Mulligan explains that, on the one hand, the normative 'because' is the explanatory link we find in sentences like 'this is intrinsically valuable because it is a state of pleasure'. On the other hand, the essential 'because' is the explanatory link we find in sentences like 'the proposition that it is raining is true because the state of affairs that it is raining is true'⁹. The essential 'because' is tightly connected with the 'because' of essence, which is the 'because' "followed by a sentence which mentions the essence(s), nature(s) or kind(s) of the object(s) mentioned in the sentence which precedes 'because'" (2006a: 39), as in 'if x endures/occurs/obtains/is alive/enjoys intentional existence..., then this is because of the essence of x' (*ibidem*). Mulligan's idea is then that weak and strong realism are claims involving different kinds of 'because', namely essential and normative 'because' respectively. As such, they are not mutually exclusive positions.

Weak realism

- (W1) If p or q , then this is because it is correct to disjoin p , q .
- (W2) If p and q , then this is because it is correct to conjoin p , q .
- (W3) If it is probable that p , then this is because the conjecture that p is correct.
- (W4*) If the proposition that p is true/the state of affairs that p obtains/it is true that p/p , then this is because_{essential + essence} the assertion that p is correct.

Strong realism

- (S1) If it is correct to disjoin p , q , then this is correct because p or q .
- (S2) If it is correct to conjoin p , q , then this is correct because p and q .
- (S3) If the conjecture that p is correct, then this is correct because it is probable that p .
- (S4*) If the assertion that p is correct, then this is correct because_{normative} the proposition that p is true/the state of affairs that p obtains/it is true that p/p .

In light of this, we can conclude that Mulligan's answer to our initial question "provided that there are connectors, what sort of realism about these entities should we endorse?" is actually that we are not forced to make a choice: if there are connectors, we can be either strong or weak realists about them, but also consistently both.

⁸See also Mulligan (2006a: 40ff).

⁹Mulligan suggests that the essential because is related to what Künne (2003: 154) calls the conceptual because, which is the link that subsists between two expressions when the second elucidates the sense of the first. An instance of this kind of because is the one appearing in the sentence 'he is your first cousin because he is a child of a sibling of one of your parents'.

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3 *On The Nature of Tropes*

Anna Sofia Maurin (University of Gothenburg)

Anna-Sofia Maurin's talk addresses a family of long-standing objections against the notion of tropes. Such objections appeal to the alleged problems we face when trying to clearly delineate the very nature of tropes. The idea is that in doing so, we end up either with an untenable conception of tropes or with one that cannot play the theoretical role it was supposed to.

The structure of the paper is the following. First, the alleged theoretical merits of tropes are listed. If tropes indeed have such merits, then they can constitute the 'perfect compromise' we need in order to effectively account both for properties and for the material 'furniture' of the world in a one-category ontology. Second, two important objections to trope theory are presented in detail. In a nutshell, if the objections go through then we just cannot have that perfect compromise *and* a consistent notion of the nature of tropes. Finally, a complex counterargument is

advanced. Both objections are shown to require a particular notion of the distinction between object-like entities and property-like entities.

But – so the thought goes – we cannot make much sense of that distinction in the way that is needed in order for the objection to go through. Also, we have an alternative way to understand that distinction – one that, if accepted, does *not* rule out the idea that tropes provide the perfect compromise they are supposed to.

As for the first point, a theory that takes tropes to be the (only) entities out of which everything is made up seems to have merits that other one-category ontologies cannot afford. For a realist who takes universals as the only category of existents faces problems in justifying the evidence that the world consists (at least in part) of concrete objects. The concrete individual objects that solely exist according to the austere nominalist, on the other hand, look unsuited when we aim to account for the qualitative character of the world and for resemblance relations between objects. Nothing like this, it seems, threatens the trope theorist. In effect, by being qualitative (or 'property-like') tropes can provide an account of the qualitative features of the world and of the resemblance relations between objects. Also, by being particular and concrete (or 'object-like') tropes can qualify as that out of which everything else is made up. The result is a strictly parsimonious ontology, which accommodates a non-regressive theory of resemblance and need not embed the bizarre spatiotemporal behaviour that is usually ascribed to universals.

Unfortunately though, the very idea that tropes can occupy that intermediate metaphysical position between objects and properties gives rise to some important objections. The overall impact of such objections is recollected as follows.

- (1) Whatever trope theorists claim they do, what they actually do is introduce tropes either as a kind-of-property or as a kind-of-object.
- (2) The difference between being-a-kind-of-property and being-a-kind-of-object is so significant that tropes must be understood as either.
- (3) Therefore: Tropes do not provide the perfect compromise they are supposed to.
- (4) Attempts to distinguish tropes-as-properties from tropes-as-objects reveals that none of these conceptions is a way that tropes can (or should) be.
- (5) Therefore: trope theory should be abandoned.

Claim 1. seems to be quite indisputable. As a matter of fact, trope theorists divide when it comes to describe the nature of tropes. Those who can be said to conceive tropes as kind-of-objects see them as the world's 'building blocks', and downplay their role as 'way things are'; they hold that tropes exist as independent beings, not essentially dependent on the objects they 'build' and, therefore, transferable – some go as far as to accept the possibility of object-free or 'free floating'

tropes. Finally, they refer to tropes with bare demonstratives or proper names. By contrast, those who favour a kind-of-property conception take tropes to be essential 'characterizers' of objects; they downgrade or openly deny the idea that tropes can be parts of the concrete particulars they make up, and understand concrete particulars along substrate-attribute lines. They claim that tropes are existentially dependent or non-sufficient – hence strongly non-transferable, and refer to them only via nominalizations.

Claim 2. is not questioned during Maurin's talk either. Her aim is rather to reject 3., 4., and 5. To this aim, she focuses on two ways the whole objection was advanced in the literature.

The first one was developed by Arkadiusz Chrudzimski. According to Chrudzimski, if tropes are a kind-of-property then they must be bearer-specific, in which case they must have a propositional structure. On the other hand, if tropes are a kind-of-object then they must not be bearer-specific: they must be simple and unstructured. Obviously tropes cannot be both structured and unstructured; hence, they must be conceptualized as either a kind-of-property or a kind-of-object. However, if tropes are propositionally structured then trope theory collapse into state-of-affairs theory and becomes thereby metaphysically uninteresting. And if tropes are simple, trope theory is unable to provide truthmakers for most cases – for instance, we could not appeal to them in order to explain what makes it the case that two individual properties of distinct objects resemble each other in a given respect as opposed to another. Chrudzimski draw the inference that trope theory must be rejected.

Second, according to Robert Garcia a similar problem arises when we try to clarify how tropes are supposed to ground the character of concrete particulars. If tropes are a kind-of-object, he says, then concrete particulars have their character grounded in them because the tropes have the character they do; hence, tropes must be self-exemplifying. If tropes are a kind-of-property, instead, concrete particulars have their character grounded in them because tropes make concrete particulars have the character they have; in this case, tropes must be non-self-exemplifying. Therefore, once again, tropes must be either a kind-of-property or a kind-of-object. For nothing can both self-exemplify and not self-exemplify. Unluckily though, either way to characterize tropes would make the theory unpalatable: if tropes are not self-exemplifying then we need to accept bare particulars. And if they are self-exemplifying (i.e., if tropes are a kind-of-objects) then the theory ends up with an embarrassing amount of objects and with the same Goodmanesque problems that the austere nominalist faces. So Garcia infers that trope theory must be rejected as well.

Now, according to Maurin, both objections depend on the acceptance of:

- (i) a certain understanding of what being-a-kind-of-property and being-a-kind-of-object entails;

- (ii) ii. the idea that if (i) is granted then some consequences follow as concerns the nature of tropes.

Maurin then proceeds to question both points.

As for (i), she argues, according to tropes' critics to be a property is to be some way that cannot be there without the object the property pertains to; it is a condition in which objects are; it is to be bearer specific and essentially 'charactering'. To be an object, on the other hand, is conceived as to not be a property. Their main point, she suggests, is to show that tropes-as-properties, as opposed to tropes-as-objects, are ways things are. However, such a distinction cannot be justified in any of the ways that trope critics have suggested. It is not the case that *only* tropes-as-properties are character-grounders, for:

- tropes-as-objects make concrete particulars have the character they have as well;
- it may be that both thick and thin parts of an object make it have the character it has (the latter role can well be played by tropes-as-objects, the latter by tropes-as-properties);
- it is not utterly clear what 'grounding the nature of' is supposed to mean.

Moreover, it is not the case (as the opponent may be tempted to argue) that only tropes-as-objects can have properties. A distinction in terms of self-exemplification does not clarify the point either. In effect, suppose a given trope exemplifies itself. Then either:

- (a) it is complexly structured, or
- (b) it exemplifies a second-order trope, or
- (c) it exists, being primitively what it is.

If (a), the trope must be either infinitely complex or in part constituted by a non-self-exemplified trope – or, otherwise, trope theory must be combined with universal realism.

If (b), either when the trope exists an infinitely complex state of affairs exist as well, or it exemplifies itself by having its nature given to it by a non-self-exemplifying trope – or, otherwise, trope theory must be combined with universal realism.

If (c), then it is not at all clear what the difference between tropes-as-properties and tropes-as-objects amounts to.

On the other hand, if we suppose that a trope does not exemplify itself, then either it has no nature in itself, or it has some nature, but such nature is one that it does not impart on its bearer. And of neither option much sense can be made.

However, Maurin argues, we have an alternative: we can conceive of the distinction between object-like entities and property-like entities in terms of *dependence*.

In this sense, we could say that tropes-as-properties depend on the object they pertain to, while tropes-as-objects do not. If we go this way, we can capture the relevant intuition without imparting tropes with a propositional structure or leaving them without a nature of their own. Therefore, this is *not* an account from which it follows that tropes cannot be characterized as either a kind-of-properties or a kind-of-objects. In conclusion, claims (3), (4), and (5) of the objection addressed do not go through. For, even if (2) is granted – that is, even if tropes must indeed be characterized as *either* a-kind-of-properties or a-kind-of-objects – an account of that distinction is available such that tropes *can* be characterized in either of those ways. Also, such an account seems to prove more coherent and explicative than the ones that tropes' critics would need to assume. In conclusion, there seems to be no sufficient reason to think that tropes cannot provide the perfect compromise they were supposed to.

4 *Graph Metaphysics Cannot Solve the Dispositional Essentialist's Circularity/Regress Problem*

Ralph Busse (Universität Mainz)

Ralph Busse is a Lewisian attentive to the metaphysics of graph theory, which is so unusual to begin with as to generate the suspect that he is up to some espionage tactic in the non-Lewisians' camp. As is well-known, the name of Lewis is associated to the thesis of Humean supervenience, the contingency of all property connections. On the other hand, appeals to graph-theoretic considerations are normally taken to justify necessary connections that exist from the word go. Usually the argument for the existence of necessary connections is a simple appeal to current mainstream physics endorsing modally laden laws of nature as opposed to metaphysically contingent regularities – but the matter is quite controversial (see Esfeld 2008, Ladyman 2010). Also, being the anti-Lewisian camp populated by a variety of stand-ins for modally laden connections, a Lewisian can but focus on a small corner to express his critical aims. In this respect, Busse's focus is on Alexander Bird's (2009) dispositional essentialism (DE), the non-Lewisian thesis that every fundamental property is essentially dispositional and that dispositional properties are analysed via their being necessarily *manifested* under appropriate stimuli. A popular objection to DE holds that an analysis of fundamental properties given in fully relational terms is viciously circular. According to Busse, some graph-theoretic attempts envisaged to bypass the circularity are ineffective. Thus, the initial suspect was well-placed: Busse is an infiltrator of the non-Lewisian camp. He will be charitable toward non-Lewisians on properties and laws, and eventually stab them by showing that their envisaged strategy against the circularity objection turn brings to a dead end.

In Bird's view, a particle's mass and charge will respectively be a tendency to

gravitationally attract particles at a certain distance with a force proportional to that distance squared and to attract or repel other charged particles at the same distance with a force that is once again proportional to that distance squared. Moreover, Bird's properties are said to *consist in* the relation between stimulus and manifestation. Busse distinguishes this conception from that of Lowe's (2009), in which stimuli and manifestation individuate a disposition in that they answer the question "why is this disposition this disposition rather than another?", but do not constitute its essence (analogously to how the elements of a set individuate a set by answering the question "why is this set this set rather than another", but they do not constitute its essence).

Even though DE constitutes a small corner of the non-Lewisian camp, an abstraction from DE's main thesis applies to a larger bunch of views (at least to all those that aim at characterising connections between distinct properties, *e.g.*, between charge and attraction/repulsion, non-contingently):

SDM: essences of properties are not primitive, not determined by *haecceitates* and not determined monadically. Therefore they must be determined in a relational way.

Consider the normally accepted implication that if F is in the essence of x , then x is necessarily F (*i.e.*, F in every world where it exists). In the light of this implication, the non-Lewisian character of SDM is evident: no world can host a property x without hosting its relational essence F . A bunch of commonly repeated examples populate the literature: charge and mass bear their causal (or dispositional) role essentially, whereby inverted scenarios where charge bears the mass-role and *vice versa* is made impossible.

4.1 The Circularity/Regress Objection (CRO)

How can physical properties be constitutively analysed by other properties? Suppose there is a fundamental domain of just three properties $D = \{X, Y, Z\}$. If each of these properties' essences is dispositional, then each of X, Y, Z will be grounded in its stimuli and manifestation $X', X'', Y', Y'', Z', Z''$ ¹⁰. However, in a world that realises necessary connections only within the elements of D , the essences of X, Y, Z will be mutually defined – for, in such worlds, nothing but the stimuli and manifestation of X, Y, Z constitute the essence of X, Y, Z . Therefore, it cannot be true of all fundamental properties that the only option for determining their identities is relational. The circularity objection dates back to the problems of functionalism in the philosophy

¹⁰An proper remark at this stage is that the analysis of dispositional properties into instantiation of stimuli and manifestation is misguided. Many have backed this concern, and especially Mumford (1998), Mumford and Anjum (2011). However, Busse's talk is explicitly concerned with Bird's dispositional essentialism, which admittedly endorses a variant of the stimulus/manifestation analysis.

of mind of the early 80s (Kim (1996: ch. 5)). Lowe (2006) expresses the worry in his identification-based jargon, but suffice it to replace 'identity' by 'essence' (see above) to obtain Busse's target of enquiry: "no property can get its identity fixed, because each property owes its identity to another, which in turn owes its identity to yet another – and so on and on, in a way that, very plausibly, generates either a vicious infinite regress or a vicious circle".

4.2 Graph-theory

Graph-theory lies on a set-theoretic bedrock, which we will briefly recall. Graphs are constituted by vertexes and edges (the *relata* of relations), both of which are represented by ordered sets. Assume therefore a theory as strong as Zermelo-Frenkel with urelements (ZFU), and define:

Graph: $G = \{v_1, \dots, v_n | E(v_1, \dots, v_n)\}$; v_1, \dots, v_n are the the domain of the graph.

Vertexes: v is a vertex if there is some G such that $v \in G$ and v is a urelement.

Edges: $E = \{v_1, v_2, \dots | E(v_1, v_2)\}$.

Non-trivial automorphism: $f(G)$ is a non-trivial automorphism of G if, and only if, there is a one-one mapping f of all vertexes x, y of G such that $E(x, y)$ if, and only if, $E(f(x), f(y))$ and f is not the identity mapping.

Asymmetric graphs: a graph is a-symmetric if it has no non-trivial auto- morphism.

We will make a minimal use of graph-theoretic principles. Busse himself presented them in a fruitful but informal way and only little more precision has been pursued for present purposes.

In the dispositional-essentialist rendition, the elements of graphs are interpreted as representing elements of the dispositional ontology. Vertexes represent the stimuli triggers and the manifestations of fundamental properties X, Y, Z , edges represent the activation relation between triggers and manifestations. The graph itself represents a dispositional net. The various elements appearing in the net may or may not be interconnected, depending on the activation condition bearing as *relata* triggers or manifestations that belong to the relational analysis of more than one disposition.

In parallel to its set-theoretic background, graph-theory can be formulated in a simple first-order language without identity. Call a relational form (RF) a first-order formula that "reads off" an asymmetric graph's set-theoretic structure by assigning variables to vertexes and by having in its vocabulary a relational predicate E isomorphic to the *asymmetric graphs'* edges. Relational forms are also maximal, in that for every pair of vertexes x, y in a graph, the RF of the graph contains E_{xy} or its

negation $\neg Exy$. RFs are far from being complex – they just are very lengthy conjunctions, which in the dispositionalist interpretation list all activations that obtain and do not obtain between a set of stimuli and manifestation *relata*.

The next step is to address the non-Lewisian interpretation of GT. For Bird, GT interpreted through relational structure exhibits a supervenience thesis (ST), according to which, in a-symmetric graphs, identity- and difference statements about vertexes are determined exclusively by the structural properties of the graph, *i.e.*, by the properties of the structure-making relation E . Supervenience is a relation between properties, but here we will be a bit careless in defining it as logical implication from identity and distinctness statements between graphs to RF to relational forms. Therefore:

(ST): For all vertexes g_i, d_j of any two asymmetric graphs, $g_i = d_j$ only if $RF(G1) \equiv RF(G2)$.

Busse sketches the proof in the following way. Since the considered graphs are a-symmetric, the permutation of any two vertexes yields a different graph (this holds by the fact that permuting vertexes in a-symmetric graphs changes the obtaining or non-obtaining of E with respect to some vertexes). Following, for any two variables x, y assigned to the *relata* of permutation, there is a conjunct in the permuted graph's relational form which contains either x or y and such that permuting x for y or y for x yields a formula that is not a conjunct of the graph's relational form. For instance, if a target graph is asymmetric, it has some vertexes x, y, z and $\neg Exz$ holds in its RF, then $\neg Eyz$ does not hold in its RF. Since RF is a maximal sentence, it must contain the negation of each conjunct that it doesn't contain. Hence it must contain Eyz . Finally, since RF contains $\neg Rxz$ (by assumption) and Ryz (as shown), it follows by Leibniz' Law that $y \neq x$. Generalising:

(ST') Any two asymmetric structures that differ in their number of objects also differ with respect to which form description they satisfy.

At the level of form description, (ST)' is the thesis that, for some graph G_1 with relational form $RF(G_1)$, there is a graph G_2 with relational form $RF(G_2)$ such that $G_1 \neq G_2$ if, and only if, by exchanging two variables or constants or by inserting new variables or constants in a conjunct of $RF(G_1)$ a sentence σ is generated such that is a conjunct of $RF(G_2)$ but not a conjunct of $RF(G_1)$. Busse stresses that the point is informative and non-trivial, as the relational forms only contain the logical vocabulary of first-order logic without identity and the two-place predicate E . Moreover, E bears no initial formal constraints. What this result supposedly suggests, aside from the truth of Bird's supervenience thesis is that graph-theory really provides a sense for properties' essences to be grounded in relational structure. Most of all, it is very compelling at this stage to associate the essence of properties represented by the identity of the vertexes with the relational structure represented



by the relational form. Consequently, Bird's requirement for properties' essences to be determined by relational structure will be represented by the graph-theoretic supervenience thesis. "Victory!", claims the dispositional essentialist.

4.3 2.3 Graph theory and CRO

"Not so fast!", claims Busse. The graph-theoretic response has at least as many problems as non graph-theoretic DE. To begin with, Busse thinks that the sole appeal to relational form does not suffice for representing *determination* of properties' essences. For a graph's relational form only picks out unique relational roles that are *actually* played by objects. The properties represented by vertexes are attributed no *de re* profile in the relational form, whereby singling out a *de re* profile is a necessary condition for determining some thing's essence. A possible defense appeals to the fact that (ST)' is a supervenience thesis and that *supervenience* relations are inherently modal. While considering this response, Busse eventually dismisses it on the grounds that relational forms are silent on trans-world relations between vertexes and, in particular it does not rule out a scenario where two *different* vertexes inhabit two structurally equal a-symmetric graphs in two different possible worlds. Now, as far as I see, this equals the claim that (ST)' commits merely to a form of *local* supervenience, according to which (Kim 1971) A supervenes on B if, at least one A-world (relevantly: the actual world) is a B-world. Local supervenience is weaker than global supervenience in that it is satisfied granted that supervenience is at least actually or contingently true. I wish to focus on this point before proceeding.

Busse's response could be incorrect in that it states that the variable-to-vertexes assignment performed in constructing relational forms must be performed in a first-order language *without identity*. This premise seemed important in the determination of vertex identity by purely relational means. But if the relational form representation cannot state that variables assigned to vertexes are different or identical, then a case such as the one just pictured (in which two different vertexes have equal functional role) cannot be consistent with the relational form representation.

Alternatively, the response could be question-begging in that it asks too much of a non-Humean to find *an argument* for the relational form representation to be *de re*. Even prior to their subscription to the ontology of dispositions, dispositional essentialists hold non-Humean beliefs on natural laws: *i.e.*, they do not recognize that alternative laws constitute genuine possibilities. And it is exactly because they hold these beliefs that they engage in the project of supplying them with a property-ontology, rather than the other way round. This considerations should guide the choice of a non-local supervenience, so that possibilities such as those accounted for above turn out to be no genuine possibilities at all. More generally, local supervenience escapes the most basic metaphysical convictions of non-Humeans to begin with. It is queer, if not question-begging, to insist that the choice of a

supervenience notion is determined by the non-existence of necessary connections, when the anti-Lewisians (and the dispositional essentialists among them) admit necessary connections from the outset. In general, even if DE gives a queer analysis of such connections or utterly fails to analyse them, it cannot be simply assumed that they do not exist.

Moving on, not only does relational form representation fail to entail de re truths on vertexes, but, according to Busse, supervenience relations fail to represent determination relations. By far, the latter is a less controversial point. Identity and difference of vertexes supervene on the relational properties of graphs, but the fact that the latter are merely a sufficient condition for the former should make one suspicious that the established connection represents a case of determination. In general, logical consequences hardly represent determination, and rather seem to run in a direction opposite to the latter. As a well-known example, consider that while the fact that $p \ \& \ q$ logically entails the fact that p , it is rather the fact that p to determine the fact that $p \ \& \ q$. Concluding, if any of the latter remarks is well-placed, then the path to graph-theory to DE (through the supervenience thesis) is not as immediate as it seemed to be at the end of the last section.

4.4 2.4. Ways out?

Busse attempts a final rescue for graph-theoretic supervenience along the following lines. Perhaps the underlying thought has never been that of establishing that essences of properties are determined relationally, but only that relational determination is no more problematic than monadic determination, and the claim of supervenience only represents an intermediary step in the process. As an analogy, Busse borrows the bundling operation from bundle theory and suggests that, just as, in the latter, individuals are identified entirely by the elements of their bundles, in graph theory, fundamental entities are identified by the properties and extension of the structure-making operation E . For Busse, the structure-making operation must take as input the role properties expressed by $\exists y \exists z \dots S(v, y, z, \dots)$, a "property role" attributed to the vertex v ¹¹. However, well-known criticisms insist that these sentences only express determinate properties when the range of their variables is fixed (cf. The Newman problem, Demopoulos and Friedman (1980)) – to the effect

¹¹This argument correctly assumes that bundles obtained by the properties of E should contain no monadic properties of the *relata* of E . However, it more controversially assumes that the latter can be translated into the property 'being such that there is something x such that Sx '. In response to the problem that similar quantified statements can be realised by any domain whatsoever, modulo having the same cardinality of the domain of bound variables (the Newman problem, see Demopoulos and Friedman 1980, Votsis and Frigg 2011), some authors have sought to distinguish between abstract and concrete relations (Shapiro 1998, see Psillos 2006 for criticism). The former have, as it were, a multiply realisable nature, and are best expressed by quantified statements as Ramsey-sentences and Busse's property roles. The latter are sensitive to the nature of their *relata* (so, loving is a relation between persons, the loving of Romeo and Juliet is a relation between Romeo and Juliet, and so on), and are not best expressed by simple bound variables.

that *relata* must be presupposed by the holding of relations, and so they cannot be dependent or determined by the latter.

Some authors have attempted to enhance bundle-theories in such a way as to do justice to bundles of sole relations. Busse turns his focus to these attempts in conclusion. Dasgupta (2009) argues that monadic universals F, G can be bounded along with relational universals R into patterns by means of functor, for instance F -in- R -to- G . Further, facts of obtaining ($\text{obtain}(F\text{-in-}R\text{-to-}G)$) and non-obtaining ($\neg\text{obtain}(F\text{-in-}R\text{-to-}G)$) of patterns are included in the expressive resources of the functor language.

Busse makes only brief comments about this alternative, but he refers to its alleged problems as being “extreme”. First, pattern-formation specifies a direction of ontological priority that is not the same as that specified by the part-whole relation – just as in Schaffer’s (2010) priority monism. In turn, the view will need to clarify how exactly a logically simple property (a part) can undergo metaphysical determination if not by displaying an extreme holism. In this respect, it was pointed out by a commentator that holism cannot simply be listed as a problem of the functor rescue plan for DE. In a sense, holism is contained in DE from the word go (I take my remark above on Busse’s claim that modal de re profiles are not derivable from relational forms to share a similar spirit)¹². Busse’s point seemed to concern the fact that whole-to-part metaphysical determination is inappropriate for the specific case of complex properties, presumably assuming that property-composition is determined by logical relations among simple properties (conjunction and disjunction)¹³.

Possibly, the issue deserves more attention. But be it as it may, Busse believes that functor-based solutions are yet far remote and that they utterly radicalise the idea that essences of properties are determined by a purely relational basis. Consequently, he concludes that the graph-theoretic thesis (see Dipert 1997: 349) that “distinct *relata* ... can be distinct and that this distinction can arise through relations alone” loses much of its credibility. A mathematical distinction of asymmetric structures (such as the one introduced by graph-theory) cannot show that numerical distinctness and identity of objects can arise from- or be metaphysically determined by a purely relational basis.

¹²See also Esfeld (1998: 369), for whom structures of properties are holistic to begin with in that they adopt symmetric ontological dependence: “Applied to the parts of a holistic system, (...) ontological dependency is symmetric. It is not only necessary that if there is an x which is F there is some other individual y which is G ; but it is also necessary that if there is a y that is G , there is some other individual x that is F . What we are looking for is the sort of dependence that captures the way in which parts of a holistic system are dependent on *each other*”.

¹³McDaniel (2006) makes a similar point against mereological disjunctivism, a form of mereological monism according to which there is a single composition relation that is a mere disjunction of all specific instances of composition. If complex properties are determined by logical operations among properties and disjunctions are less fundamental than their disjuncts, it follows that complex properties cannot be more fundamental than their components (and *a fortiori* that priority monism cannot apply to properties).

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5 *Outline of a Locationist Theory of Properties*

Andrea Bottani (Università degli Studi di Bergamo)

Andrea Bottani's talk outlines a new theory of properties he calls "Locationist Nominalism". The basic idea is that properties supervene on the qualitative distances between individuals just as points and lines of space supervene on the spatial distances between material bodies in Leibniz's relationism.

According to Bottani, Locationist Nominalism proves better than the other theories of properties that have been advanced so far when it comes to account for determination – i.e., for the relation between determinable and determinate properties. In particular, it can provide a theory of what grounds both determinables

and determinates that explains why it seems unavoidable to posit a circular ontological dependence between a determinable and its determinates. The latter fact is commonly (and suspiciously?) left unexplained.

Bottani invites us to consider an analogy between lines and points, on one side, and determinables and determinates, on the other. Lines can be seen as ordered sets of points; similarly, determinables can be seen as ordered sets of determinates. For something to be on a line is for it to be on one of its points; similarly, we may say, for something to instantiate a determinable is for it to instantiate one of its determinates. Nothing can be situated on more than one point on a line except by having parts that occupy different points; similarly, nothing can instantiate more than one determinate of a given determinable (again, unless it has parts that instantiate different determinates). Different points on a line can be told apart by considering their order relations; similarly for different determinates of a given determinable. Points on a line can be more or less far from each other; the same holds for a given determinable's determinates. And, significantly, lines and points ontologically depend on each other, just as determinables and determinates do.

Now, in Leibniz's relationist theory of space, lines and points in space supervene together on the spatial distances that occur between material bodies – ultimately, on material bodies themselves. The mutual dependence between lines and points is thus explained (they supervene together on spatial relations between material bodies) and solved: both lines and points are ultimately grounded in particular material bodies.

Bottani suggests that a similar treatment can be employed in the case of determinables and determinates. Here, too, this solution would solve the circularity. If Bottani is right, then determinables and determinates supervene together on individuals, and both are ultimately grounded in individuals themselves.

The idea is that particulars are qualitatively distant from one another to some degree – just as they are spatially distant from one another to some degree. A qualitative distance between two individuals is, so the thought goes, an inexact resemblance between those individuals. Inexact resemblance is taken as primitive. Given two (or more) individuals, the qualitative distances between them come, so to say, 'for free'. This saves a quite plausible 'locality intuition': given n individuals, the inexact resemblances between them depend solely on them. Now, consider all the existing individuals. Given them we have, by the same token, all of the qualitative distances those individuals stand from one another. Of course each one of such qualitative distances is a way the individuals imperfectly resemble one another in a given respect – and, we may say, the relevant respect is a determinable. In other words, if we think of a determinable as a line and of its determinates as points on that line, a particular qualitative distance between two individuals with respect to the determinable considered can be seen as a segment on the line that the determinable 'is'. According to Locationist Nominalism, given the qualitative distances between

particulars all of the determinables with respect to which the individuals imperfectly resemble one another come for free – and so do their determinates. And – as we said – the qualitative distances between particulars come for free once the particulars are given. Hence, determinables and determinates are ultimately grounded – together – on individuals.

According to Bottani's view, properties exist. Still, the theory is a form of nominalism. In effect, neither universals nor tropes need be posited; properties are nothing over and above individuals – they are, so to say, abstract 'positions' in the qualitative space that completely supervenes on individuals. In this sense, the theory is locationist: properties are 'places' in the qualitative space. And for an individual to instantiate a property is for it to be located at a given place in the qualitative space. This is the only understanding of what it is for an individual to have a property that we need: in particular, there is no compositional relation between an individual and its properties whatsoever. Some of the positions in the qualitative space are occupied – that is, some of those points stand for a property that is instantiated by some individual – and some of them (arguably, most of them) are not. Thus, there can be – there are – uninstantiated properties, but no uninstantiated determinable. For no determinable 'arises' unless at least two of its determinables are instantiated – just as we cannot have a line unless at least two of its points are given.

The qualitative space, Bottani says, does not vary across possible worlds, and it is out of it that all possible worlds are made up. Locationist Nominalism is then immune to a foreseeable objection that can be summed up as follows: there may be worlds where no particular differ from any other with respect to mass, and still we would want to say that in such a world there are things having mass – hence, that there 'is' the determinable *mass*.

Bottani provides detailed answers to two main questions that may be raised:

- (1) Since two objects may differ with regards to colour as well as with regards to temperature and in several other respects, how can a determinable in particular (for instance, colour) 'arise' from their – so to say – 'manifold' qualitative distance?
- (2) 2. How can the whole 'structure' of a determinable supervene on a specific inexact resemblance between two particulars?

Without getting into technical details here, the answer to 2. appeals to the locationist approach of the view: given two individuals that stand a given qualitative distance from each other, the determinable can be seen as a line produced by the points that the individuals' reciprocal positions 'are'.

As for 1. the idea is the following (and it is, again, an oversimplification of the sophisticated account provided by Bottani). Given two individuals, *a* and *b*, we can

think of their overall qualitative distance as a segment on a line that passes through them. By considering other individuals, we have it that other lines pass through either a or b (or both) and connect – or, better, separate each one of them from other individuals too. So for instance, a line will be given between a and b and c , all of which imperfectly resemble one another with respect to colour; a different one will cross a and c , which imperfectly resemble with respect to mass; still another will cross b and c , which imperfectly resemble with respect to temperature, and so on. The first line we considered thus ‘organizes’ in several different determinables.

6 *Indiscernible Universals*

Gonzalo Rodriguez-Pereyra (University of Oxford)

Gonzalo Rodriguez-Pereyra’s paper advances the hypothesis that there may be indiscernible immanent universals. It is interesting to note that such a notion has not been considered in the literature yet. The idea that numerically different entities can be indiscernible is envisaged by many – and has raised an immense amount of discussion. But there seems to be a unanimous, yet unjustified presumption that such cases can only involve individuals. However, there is no incoherence in the notion of indiscernible immanent universals. Rodriguez-Pereyra starts by advancing this thesis. He then presents two theoretical roles that indiscernible immanent universals can be employed for, and provides answers to some foreseeable objections.

Indiscernible universals are perfectly similar universals. Two universals are perfectly similar when they confer perfect similarity in a respect to the particulars that instantiate them. Consider two universals U and U^* and two particulars a and b . Suppose a and b are perfectly similar in blueness, and instantiating U is what makes a blue while instantiating U^* is what makes b blue. Then U and U^* are indiscernible universals – in particular, indiscernible bluenesses.

According to Rodriguez-Pereyra, the first job indiscernible universals can do is to allow us to defend the Bundle Theory of Universals without committing to the Identity of Indiscernibles. The idea is the following. Consider two indiscernible particulars a and b . Suppose a bundle theorist accepts indiscernible universals while denying that the universals that two perfectly similar particulars instantiate must be identical. She then can make perfect sense of the situation without inferring that a and b are numerically identical. For she is not committed to the claim that a is constituted by the same universals that constitute b . She can hold that a is constituted by universals that are indiscernible from those that constitute b instead. Hence, she can hold that a and b are indiscernible but numerically different: for instance, a may be constituted by the universals $U, V, W \dots$ and b by the universals $U^*, V, W \dots$ – where U and U^* are numerically different but indiscernible.

Second, indiscernible universals can provide us with an account of the resemblance between quantitative universals that proves better than the most credited one we have to this day – *i.e.*, Armstrong's theory. According to the latter view, every two resembling universals are partially identical, and every two masses are partially identical. Hence, given any two masses, one will contain the other as a part. And, still according to Armstrong, what is meant by saying that a universal is part of another is that whenever a particular instantiates the latter, a part of the particular instantiates a part of the former.

Now, Armstrong's account faces three problems to which, Rodriguez-Pereyra argues, a theory that embeds indiscernible universals is immune:

- (a) point-sized particles
- (b) extended simples
- (c) intensive quantities

As concerns (a), note that point-sized particles have mass. It follows from Armstrong's view that if something instantiates a mass, then it has parts that instantiate the mass' parts. But point-sized particles have no parts – hence, they have no parts that instantiate their mass' parts. A similar reasoning goes for other simples (see (b)). As for (c), consider a particular that instantiates an intensive quantity – for instance, a given hardness. It is simply not the case that each part of that particular must instantiate only a part of the universal corresponding to that given degree of hardness – that is, a smaller degree of hardness. There can be cases, it seems, such that a particular uniformly instantiates a certain hardness – *i.e.*, that all its parts are hard to the same degree. Hence, they all instantiate the same universal that is instantiated by the whole.

At this point, Rodriguez-Pereyra outlines an account of the resemblance between quantitative universals that appeals to indiscernible universals and show that it does not face those difficulties. Such a view dissociates the idea that universals have parts from the idea that the parts of a particular that instantiates a universal instantiate its parts. The parts of an extensive quantity are thought to be the universals that would be instantiated by the parts of a particular that instantiates the universal (*i.e.*, the extensive quantity we are considering), if it had parts and all its parts had parts. The universal that a given particular instantiates will be composed by as many universals of a kind as there can be parts instantiating universals of that kind in any partition of that particular. A similar reasoning applies in the case of intensive quantities. The universal that corresponds to a given intensive quantity will be composed by the universals that would be instantiated by the parts of a particular that instantiates the universal if the quantity considered were an extensive one.

The main tenet of this view is that a particular that instantiates a universal instantiates its parts as well. A potential difficulty is considered: in such a view,

for a particular to instantiate F-ness is not sufficient for it to be F. For instance, a particular that weighs 15 kilos instantiates (among others) the universal that corresponds to the quantity 14-kilos, but is not itself 14 kilos weighty. According to Rodriguez-Pereyra, this is not a major drawback of the theory he is advancing. For the theory can still hold that a particular is F if it instantiates F-ness and it instantiates no universal G-ness such that: (i) G-ness is a determinate of the same determinable as F-ness, and (ii) F-ness is a part of G-ness.

Now, in this view, contrary to Armstrong's, resemblance between universals is not accounted for as partial identity. That is, we cannot claim, as Armstrong does, that given two resembling universals, one must be part of the other, because indiscernible universals are an exception to this. On the other hand, we can account for imperfect resemblance between universals by appeal to partial identity. In this sense, two universals imperfectly resemble each other whenever it is the case that either one of them is part of the other, or one of them is indiscernible from a part of the other. As for perfect resemblance between universals, in turn, we cannot claim that "two" universals that perfectly resemble each other are numerically identical. For, again, indiscernible universals are a counterexample. Hence, in this view two universals are perfectly similar if and only if they are *either* numerically identical *or* indiscernible.

Rodriguez-Pereyra then shows that the account just outlined is immune to the problems that vex Armstrong's view.

As concerns the case of simples, consider a point-sized particle whose mass is m . Even if the particle has no parts, we can make perfectly sense of the fact that m resembles smaller masses. In effect, we can claim that it does because either the smaller masses are part of m or they are indiscernible from parts of m . And since in this view a particular that instantiates a universal instantiates its parts as well, we are not committed to the idea that parts of the electron instantiate those smaller masses – *i.e.*, the parts of m . The electron itself does instantiate them. The same reasoning is supposed to hold for all kinds of simple.

As for intensive quantities, here is the case proposed by Rodriguez-Pereyra: consider two particulars such that one instantiates the intensive quantity q , and the other instantiates a smaller intensive quantity q^* . Again, we can easily account for the resemblance between q and q^* without committing to the idea that parts of the particular that instantiate q instantiate q^* . q and q^* will be said to resemble each other because either q^* is a part of q or q^* is indiscernible from a part of q .

Finally, Rodriguez-Pereyra considers four potential objections to indiscernible universals and answers them. According to the first objection, we do not need indiscernible universals in order to account for the resemblance between particulars. That role – so the thought goes – is exhaustively accomplished by the claim that the particular that instantiates a universal instantiates its parts. Hence, there is no need to hold that the universal has indiscernible universals as parts. Rodriguez-

Pereyra counters by showing that, if three quite plausible assumptions are granted, it follows that, if larger quantities have smaller quantities as parts, then they have some indiscernible quantities as parts. Hence, if quantities are universals, it follows that some universals have indiscernible universals as parts. The three assumptions are the weak supplementation principle, the transitivity of parthood, and the claim that distinct quantities of the same value are indiscernible.

The second objection has it that accepting indiscernible universals would frustrate the only advantage that realism about universals has over trope theory – *i.e.*, the chance to do without primitive similarity. Rodriguez-Pereyra cast doubts, though, on the idea that the only advantage of universals over tropes is the one just mentioned. As a matter of fact, he suggests, it may be that realism about universals proves better than trope theories when it comes to accounting for laws of nature or to providing truth-makers for certain truths.

As for the third objection, the idea is that, in a theory of indiscernible universals, universals collapse into tropes. The answer in this case is that indiscernible universals can be instantiated by different particulars: they can be identical through their instances. And even if this is never actually the case – *i.e.*, even if all indiscernible universals were instantiated only once, it would still be true that they could have been instantiated by different particulars. Since tropes, to the contrary, are specific to bearer-specific so that no trope could have been instantiated by a different particular from the one that happens to instantiate it, the distinction between universals and tropes stand still.

Fourth and final objection: the fact that universals, as opposed to particulars, cannot be indiscernible is just what distinguishes universals from particulars. Rodriguez-Pereyra shows that there seem to be counterexamples to that principle: concepts and numbers are, presumably, particulars, but they cannot be indiscernible without being numerically identical. The principle does not even seem to capture the specificity of concrete individuals: in effect, it seems that God must be concrete and that nothing can be indiscernible from God.

7 *Attribute Identity*

Fabrice Correia (University of Neuchâtel)

7.1 Introduction

When thinking about the notion of identity, we typically consider claims of the form 'a is b' or 'a = b', such as '2 is the positive square root of 4' and 'Hesperus is Phosphorus', which concern what can be called "objectual identity". Objectual identity is the standard identity relation which subsists between individuals or objects. Besides this familiar notion, there is, still, another notion of identity which

we often refer to, namely “generic identity”. Examples of claims concerning generic identity are ‘for something to be a bachelor is for it to be an unmarried man’ and ‘to know that p is to have a true justified belief that p ’. More precisely, in the monadic case, generic identity is the relation that subsists between two features F and G if and only if for something to be F is for it to be G (in symbols, $F \approx G$). In the general case, ϕ and ψ are in the relation of generic identity if and only if for some things x_1, x_2, \dots to be such that ϕ is for them to be such that ψ .

Although generic identity has mostly been overlooked in the recent literature¹⁴. Fabrice Correia maintains that this notion plays a central role in metaphysics insofar as a number of other fundamental metaphysical notions can be reduced to it. In particular, in this talk, after laying down the basic elements of a theory of monadic generic identity (henceforth, simply ‘generic identity’¹⁵), Correia shows how this relation can be used to account for

- (i) conjunctive and disjunctive features;
- (ii) generic essence;
- (iii) generic subsumption;
- (iv) generic ground.

His proposal is based on three crucial assumptions. That is, (a) generic identity is a primitive non-reducible notion, (b) features can be complex, *i.e.* have parts, and, finally, (c) parts of features can be conjunctive or disjunctive. Let us consider all these points in turn.

7.2 Elements of a Theory of Generic Identity

Is generic identity reducible to other notions? Correia identifies and rejects two natural suggestions to give a positive answer to this question. The first consists in reducing generic identity to objectual identity.

(1) $F \approx G$ if and only if the property of being $F =$ the property of being G .

Correia has two arguments against (1). First, (1) presupposes an ontology of properties, which is not mandatory: one can well be a nominalist about properties and hold that, say, to be a square is to be a regular quadrilateral. Second and more seriously, (1) is in general wrong. Indeed, take the property of being a non-self-instantiated property. As it is well known, this property cannot exist, because

¹⁴Dorr (ms) and Rayo (2013) are exceptions to this tendency.

¹⁵Correia is currently working on an extension of the logic of monadic generic identity, which he partially presents in this talk, to cases in which F and G are assumed to have truth-functional complexity (cf. Correia, ms). Still, for the sake of simplicity, these latter cases are explicitly left aside in this talk.

it generates Russell's paradox. Hence, nothing can be identical to it, not even the property of being a non-self-instantiated property itself. But from this and (1) it follows that it cannot be the case that to be a non-self-instantiating property is to be a non-self-instantiating property, against the trivial truth that, in general, to be F is to be F . Therefore, as formulated, (1) must be discarded. Yet, the speaker maintains that we should accept

- (1*) provided the property of being F and the property of being G both exist
 $F \approx G$ if and only if the property of being $F =$ the property of being G .

As an alternative and ontologically more neutral option, Correia considers the proposal, recently put forward by Augusti n Rayo (2013), to reduce generic identity to mutual necessitation.

- (2) $F \approx G$ if and only if, necessarily, $\forall x (Fx \leftrightarrow Gx)$.

Against (2), Correia notes that mutual necessitation is too coarse-grained. In fact, if we endorse (2), then we are forced to accept that, for instance, to be red or not red is to be green or not green, which is false. What is more, this consequence of (2) also clashes with the plausible principle that, if to be F is to be G , then whatever makes something F also makes it G , and vice versa¹⁶. Indeed, going back to our example, it is clear that being red makes something red or not red but, of course, it does not make it green or not green. Nevertheless, Correia maintains that we should accept

- (2*) if $F \approx G$, then, necessarily, $\forall x (Fx \leftrightarrow Gx)$.

That is, mutual necessitation is a necessary condition for generic identity (we will come back to sufficiency later on).

In light of these preliminary considerations, Correia assumes that the notion of generic identity is primitive and not reducible. As mentioned in the introduction, this allows him to show that generic identity can be used to account for a range of central metaphysical notions. In order to see this and to better characterize generic identity, however, we first need to introduce the concept of part of a feature.

In a nutshell, taking it for granted that features can have parts, Correia distinguishes two kinds of parthood relation between features, namely conjunctive and disjunctive parthood. Letting F , G , and H be features, on the one hand, F is a conjunctive part of G if and only if, for some H , to be G is to be $F \& H$ (where ' $\&$ ' is an operator that takes features and returns features). In symbols,

- (3) $F \leq_{\&} G$ if and only if, for some H , $G \approx (F \& H)$.

For example, being an animal is a conjunctive part of being a rational animal. On the other hand, F is a disjunctive part of G if and only if, for some H , to be G is

¹⁶On this point, see especially "the grounding test" in Correia (2010).

to be F or H (where 'or' is an operator that takes features and returns features). In symbols,

(4) $F \leq_{or} G$ if and only if, for some H , $G \approx (F \text{ or } H)$.

For example, being red is a disjunctive part of being red or green.

Now, an easy objection to (3) and (4) is that they involve quantification over (and, hence, ontological commitment to) features or properties, against Correia's own remark on the desirability of an ontologically neutral account of generic identity. Interestingly enough, however, it turns out that the definitions of conjunctive and disjunctive parthood can also be formulated without quantifying over features. In particular, the following equivalences can be proved.

(3*) $F \leq_{\&} G$ if and only if $G \approx (F \& G)$.

(4*) $F \leq_{or} G$ if and only if $G \approx (F \text{ or } G)$.

Without entering into the details, Correia states that a proof of (3*) and (4*) makes use of the principles in the following table, which he accepts as unproblematic.

Table 2:

A1.	\approx is an equivalence relation, <i>i.e.</i> , it is reflexive, transitive, symmetric	
A2.	$F \& F = F$	idempotence of $\&$
A3.	$F \& G = G \& F$;	commutativity of $\&$
A4.	$F \& (G \& H) = (F \& G) \& H$	associativity of $\&$
A5.	if $F \approx G$, then $F \& H \approx G \& H$	$\&$ -adjunction for \approx
A6.	$F \text{ or } F = F$	idempotence of <i>or</i>
A7.	$F \text{ or } G = G \text{ or } F$	commutativity of <i>or</i>
A8.	$F \text{ or } (G \text{ or } H) = (F \text{ or } G) \text{ or } H$	associativity of <i>or</i>
A9.	if $F \approx G$, then $F \text{ or } H \approx G \text{ or } H$	<i>or</i> -adjunction for \approx

As it is easy to see, with this framework at hand, we can now naturally account for the notions of conjunctive and disjunctive features and, hence, accomplish the first of Correia's aims. In particular, a feature is conjunctive if and only if it has a proper or strict conjunctive part. That is,

(5) being G is conjunctive if and only if, for some F , $F \leq_{\&} G$ and $\neg F \approx G$.

For example, being human is clearly a conjunctive feature. Analogously, a feature is disjunctive if and only if it has a proper or strict disjunctive part. That is,

(6) being G is disjunctive if and only if, for some F , $F \leq_{or} G$ and $\neg F \approx G$.

For example, being red or green is a disjunctive feature.

Besides this, there are other two desirable immediate consequences of (3) and (4) which are worth considering, namely that (i) every genus turns out to be a conjunctive part of each of its species and, that (ii) every determinate turns out to be a disjunctive part of the corresponding determinable. Indeed, if S is a species of genus G , then $S \approx (G \ \& \ D)$, where D is the differentia associated with S . And, if D is a determinable and d one of its determinates, then $D \approx (d \ \text{or} \ \delta)$, where δ is itself a disjunction of determinates of D .

At this point, all elements to provide an account of generic essence, generic subsumption and generic ground are in place.

7.3 How to Reduce Generic Essence, Subsumption and Ground

Let us start from generic essence. According to Correia (but see also Fine 2015), a statement about generic essence “is one which states that to be thus and thus is essentially to be so and so” (2006: 752). More precisely, a statement about generic essence has the form ‘being F is part of what it is to be G ’, in symbols: $F \text{ ess } G$. Examples include ‘being an animal is part of what it is to be a human’ and ‘being human is part of what it is to be Socrates’. Now, in line with Rayo (2013), Correia’s central claim about generic essence is that this notion reduces to conjunctive parthood, that is

(7) $F \text{ ess } G$ if and only if $F \leq_{\&} G$

(being F is part of what it is to be G if and only if F is a conjunctive part of G)

As the speaker indicates, a proof of (7) makes use of **A1–A3** and four additional bridge principles, which connect generic essence, generic identity and the operator $\&$, namely as in the following table:

Table 3:

A10.	$F \text{ ess } F \ \& \ G$	$\&$ -intro
A11.	If $F \text{ ess } G$, then $F \ \& \ H \text{ ess } G \ \& \ H$	$\&$ -adjunction for <i>ess</i>
A12.	if $F \text{ ess } G$ and $G \approx H$, then $F \text{ ess } H$	substitution
A13.	if $F \text{ ess } G$, and $G \text{ ess } F$, then $F \approx G$	associativity of $\&$

Interestingly, from (7) and the plausible assumption that every genus is in the relation *ess* with each of its species it follows that every genus is indeed a conjunctive part of each of its species. Hence, given (7), a second argument in favour of the thesis that genera and species are in the conjunctive parthood relation becomes available. So far for generic essence.

Turning now to generic subsumption, a statement about generic subsumption is a statement of the form ‘being F is a way for something to be G ’, in symbols: $F \text{ sub } G$. For instance, ‘being red is a way for something to be coloured’ and ‘being green and

observed before t is a way for something to be *grue*' are statements about generic subsumption. In addition, as generic essence, also generic subsumption reduces to a relation of part between features, specifically disjunctive parthood. In particular, the following can be proved:

(8) $F \text{ sub } G$ if and only if $F \leq_{or} G$

(being F is a way for something to be G if and only if F is a disjunctive part of G).

As Correia suggests, besides **A1**, a proof of (8) makes use of principles dual to the ones used to demonstrate (7), namely **A6**, **A7**, plus the one in the following table:

Table 4:

A14.	$F \text{ sub } F \text{ or } G$	or-intro
A15.	if $F \text{ sub } G$, then $F \text{ or } H \text{ ess } G \text{ or } H$	$\&$ -adjunction for ess
A16.	if $F \text{ sub } G$ and $G \approx H$, then $F \text{ sub } H$	substitution
A17.	if $F \text{ ess } G$, and $G \text{ ess } F$, then $F \approx G$	antisymmetry

Under the plausible assumption that every determinate is in the relation *sub* with the corresponding determinable, from (8) it follows that determinates are indeed disjunctive parts of the corresponding determinables. Hence, as in the case of (7), given (8), a second argument in favour of the thesis that determinates and determinables are in the relation of disjunctive parthood becomes available.

At this point, we can finally consider what Correia calls generic ground, a notion to which, besides the speaker himself, only Fine (2015) has been recently sensitive to. Statements about generic ground have the form "something's being F , being G , ... makes it be H "; in symbols: $G, F, \dots < H$. Examples are "something's being red makes it be coloured" and "something's being green and observed before t makes it be *grue*".

Now, can we reduce generic ground to the relation of parthood between features as we did with generic essence and generic subsumption? According to Correia, yes. Indeed, so the argument goes, the following is an obvious necessary condition for generic ground:

(9) if $F, G, \dots < H$, then $(F \& G \& \dots) \text{ sub } H$

(if being F , being G , ... make something be H , then $F \& G \& \dots$ is a way of being H).

What is more, let us say that F and G are in the relation of partial subsumption (in symbols: $F \text{ p-sub } G$) if and only if, for some H , being $F \& H$ is a way for something to be G , *i.e.*

(10) $F \text{ p-sub } G$ if and only if, for some H , $F \& H \text{ sub } G$.

Then, arguably, the following is a second necessary condition for generic ground¹⁷.

- (11) if $F, G, \dots < H$, then neither H *p-sub* F , nor H *p-sub* G, \dots
 (if being F, G, \dots make something be H , then H does not partially ground F, G, \dots).

At this point, if we assume that (9) and (11) are not only separately necessary but also jointly sufficient conditions for generic ground, then, by (8), we clearly obtain the desired reduction of generic ground to disjunctive parthood between features and, hence, by (4), to generic identity. Accordingly, Correia's proposal is to assume

- (12) if $F, G, \dots < H$ if and only if
- (i) if $F, G, \dots < H$, then $(F \& G \& \dots)$ *sub* H , and
 - (ii) if $F, G, \dots < H$, then neither H *p-sub* F , nor H *p-sub* G, \dots .

As he stresses, this account fits both his own conception of factual grounding (see Correia, 2012) and Fine's semantic characterization of factual grounding (see Fine, 2012). What is more, (12) has two further desirable consequences regarding the relation between generic grounding and generic essence. That is, (i) it rules out cases in which a grounded feature is part of the essence of one of its grounds (*i.e.* it cannot be the case that $F < G$ and G *ess* F), and, (ii) it is consistent with cases in which a ground is part of the essence of what it grounds (*i.e.* it is possible that $F < G$ and F *ess* G). In light of this, (12) undoubtedly represents a promising starting point for a unified account of essence and ground based on the notion of generic identity.

To conclude his talk, Correia adds a final remark on mutual necessitation. Indeed, we have seen above that, according to him, mutual necessitation is a necessary condition for generic identity. Still, given the proposed account, can it also be sufficient? Surprisingly, it cannot. Indeed, it turns out that, if we identify generic identity and mutual necessitation, then

1. $F \leq_{\bar{G}} G$ if, and only if, necessarily, $\forall x (Gx \rightarrow Fx)$;
2. $F \leq_{or} G$ if, and only if, necessarily, $\forall x (Fx \rightarrow Gx)$
3. hence, $F \leq_{\bar{G}} G$ if, and only if $F \leq_{or} G$.

But this has disastrous consequences. To be sure, given 3., every feature which is not necessarily universal turns out to be conjunctive; hence, the proposed account of conjunctiveness of features fails. Dually, every feature which is not necessarily empty turns out to be disjunctive; hence, the proposed account of disjunctiveness of

¹⁷Indeed, Correia argues, under the plausible assumption that ways for something to be F are grounds of what F grounds (*i.e.* if $F < H$ and X *p-sub* F , then $X < F$), it is easy to see that if H were in the relation of partial subsumption with, say, F , then, for some X , $X \& H$ would be a ground of H itself. But, in general, no feature of type $A \& B$ could help ground B .

features also fails. Finally, 3 is inconsistent with (12). Indeed, by (8), (12) and 3, $F < G$ entails $F \leq_{\text{G}} G$, i.e. $F \text{ ess } G$. Hence, if mutual necessitation were both necessary and sufficient for generic identity, then also the proposed account of generic ground would fail. This means that, although mutual necessitation satisfies the principles on generic identity assumed by Correia (i.e., A1-A9), identifying generic identity with mutual necessitation would obliterate the unifying power of the notion of generic identity. This is a further substantial reason why the notion of generic identity should be treated as a primitive and non-reducible one.

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