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# parts, wholes, abstracts, tropes and ontology

Interview by Richard Marshall.



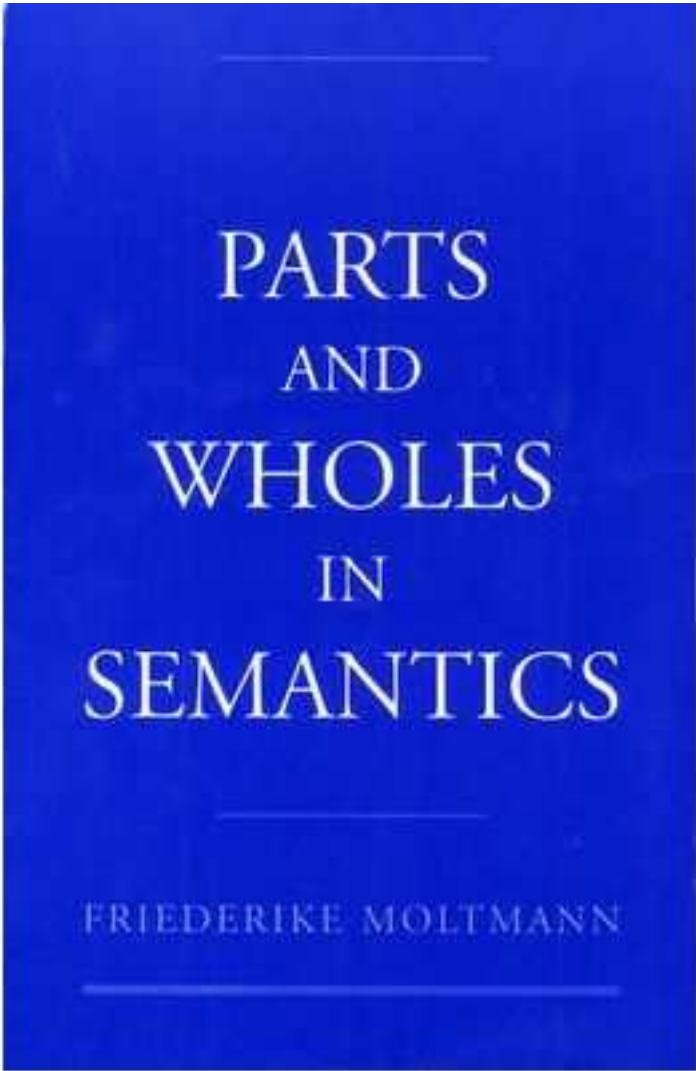
**Friederike Moltmann** is the Aberlour of philosophical linguistic interface. Her thoughts continually burn bright as she contemplates whether language really does carve nature at the joints, broods on descriptive, revisionary, shallow and fundamental metaphysics, on mereology and why extensional mereology won't do, on the role of integrated wholes, on what reference situations take care of, on why natural language doesn't allow abstract objects in its core and thinking it does is a result of naïve analysis, on the surprising ontology of natural language, on trope ontologies and on why systematic application of linguistic methodology can have serious philosophical consequences. The wind howls and the rain batters against the windows but these thoughts pour out like a different kind of storm...

**3:AM:** What made you become a philosopher? Is your preferred style lone brooding or dialogic argument or something quite different from these?

**Friederike Moltmann:** Let me start by clarifying that I am both a philosopher and a linguist. I had an interest in philosophy early on, and I have always had a fascination for language, but I did not know there was such a thing as theoretical linguistics until my second year at university. I actually had been torn between becoming a painter and becoming an academic. I think the decision to become a philosopher-linguist in the end was clearly the right one. It is difficult to see the direction one can take in art today, whereas I consider the interface between philosophy and linguistics an exceptionally promising and fruitful area of research to pursue right now.

That said, I am now developing an interest in the notion of an artifact, which I think plays an important role in semantics as well and which in a way brings me back to my earlier interest in art. In my studies, I in fact went back and forth between philosophy and linguistics – my Ph D is in linguistics, but then I was drawn more to the philosophical side again when I felt that much of formal semantics was driven by philosophical choices that were rather arbitrary in nature and not well-suited for the phenomena at hand. I found it extremely enriching and fascinating to explore a much broader spectrum of philosophical approaches and conceptions for the semantic analysis of natural language, often finding out that a deeper analysis of natural language turns out to support a particularly interesting philosophical view.

I do a lot of thinking on my own, but also I enjoy tremendously trying out new ideas in conversations with philosophers that have a good intuitive sense of language, as well as with both semanticists and syntacticians.



# PARTS AND WHOLES IN SEMANTICS

FRIEDERIKE MOLTSMANN

**3:AM:** You analysed **parts and wholes in semantics**. Before asking you to explain your ideas about that can I ask a more general question: how great an overlap is there between mereology in metaphysics and mereology in semantics? I guess I'm wondering whether and how semantics is entwined with metaphysical, ontological claims? Should we assume that constructions of natural language cut nature at the joints?

**FM:** Let me first address the more general question, namely to what extent the ontology associated with natural language reflects 'what there really is' or 'carves reality at its joints'. There are two distinct metaphysical projects that need to be distinguished, namely roughly what Strawson (in his 1959 book *Individuals*) calls 'descriptive metaphysics' and 'revisionary metaphysics'. Descriptive metaphysics has as its aim to uncover the ontology that is reflected in our common conceptual scheme, or in fact in natural language. Revisionary metaphysics has as its aim the specification of a 'better' ontology and thus requires a particular justification, for example adequacy with respect to a particular scientific theory. Furthermore, one should distinguish two levels of analysis when pursuing the first project, namely what **Kit Fine** would call 'shallow metaphysics' and 'fundamental metaphysics'.

'Shallow metaphysics' is concerned with the ontology immediately reflected in language. This is not the ontology that 'carves reality at its joints' or reflects what there ultimately is. Rather that ontology is the subject matter of 'fundamental metaphysics', which concerns itself with explaining the notions of shallow metaphysics in more fundamental terms.

Not all areas of ontology are affected by this distinction, though. The ontology reflected in propositional attitude reports should not really be distinct from the ontology that philosophers of mind are after when they want figure out the notions of our 'common sense psychology', at least if natural language, properly analysed, is considered a reflection of our common sense psychology.

'Shallow metaphysics', by the way, should better not take as its subject matter the ontology of what an ordinary person takes there to be when thinking about what there is. Rather its subject matter should be the ontology that a speaker implicitly accepts when using a language. The 'naïve' ontology of what a speaker takes there to be tends to actually be quite different from the ontology reflected in language. The latter includes, for example, an entity like 'the book John needs to write', which few would accept as an entity upon reflection. The ontology that natural language reflects matches to an extent its referential terms, of which natural language generally displays a great range, including terms like *the book John needs to write* or *the screw that is missing*. The ontology reflected in the referential terms of natural language is a richer ontology than the ontology most philosophers and in fact 'ordinary people' are willing to accept.

Let me then turn to the topic of mereology. In my book *Parts and Wholes in Semantics*, I took as point of departure the view that definite plurals (such as *the students*) and definite mass terms (such as *the wood*) stand for entities, pluralities and quantities respectively, just as definite singular count terms like *the house* stand for objects. However, unlike the objects described by singular count nouns, the semantically relevant part structure of pluralities and quantities is to a great extent determined by the information content of the terms used to describe them. Thus it makes a difference as to what its relevant part structure is whether the plurality of the students is described as 'the individual students' or 'the male and the female students'. In the former case, only all and only the individual students count as parts; in the latter case, the male and the female students may count as the only two parts of the plurality. The project of that book was to show that, to an extent, the same ontological principles that govern the part structure of ordinary objects drive the information-based part structure of pluralities and quantities. Both sorts of part structures, on that view, involve not only a relation between parts, but also conditions of integrity. Integrity conditions are, for example, conditions of form, boundary, or maximal connectedness (for example by sharing a particular property).

Today, I no longer hold the view of the book entirely. The part structure of ordinary objects involves not only conditions of integrity, but also functional roles of parts permitting the replacement of parts. Moreover, I nowadays prefer the plural-reference approach to plurals. This is the view according to which *the students* does not stand for a single collective entity (a mereological sum or set, that is, a collection 'as one'), but rather plurally refers to each

student at once – or stands for a collection ‘as many’. Today, I am also not so sure that the semantics of mass nouns should be conceived as parallel to that of singular count nouns (or plurals), as I did in my book. Mass nouns might just work entirely differently.

**3:AM:** What are the philosophical motivations for looking at parts and wholes in semantics? What’s at stake here? Which big philosophical issues depend on getting this analysis right? Sometimes it’s difficult for outsiders to see the relevance of this work outside of its domain – does it transfer to things people would easily see is important?

**FM:** I think that in my work on parts and wholes it is more that the philosophical perspective sheds light on the linguistic phenomena than vice versa. As I said, the project was to show that conditions on part structure involving the notion of an integrated whole apply to pluralities, the entities described by plurals, and quantities, the entities described by mass nouns in the same way as they apply to objects, the entities described by singular count nouns.

What the book contributes to the philosophical discussion, though, is provide a much greater range of data and generalizations that bear on part-whole relations than what philosophers generally are aware of. These involve, for example, expressions like *completely* and *whole* and generalizations regarding predicates that are sensitive to the contextually relevant part structure of their arguments, such as *compare*, *distinguish*, *rank*, and *rate*. My work on parts and wholes thus extends the range of ‘intuitions’ about parts and wholes as they are reflected in natural language.

Some of the analyses, though, have philosophical significance of their own. Thus, *complete(ly)* involves a comparison between the part structure of an abstract object and the part structure of a concrete object. *Whole*, on one of its readings, involves an ‘Aristotelian’ notion of part structure according to which conditions of form also count as parts of an object. This is when *the whole play delighted her* is understood as ‘the play as a whole delighted her’, rather than as ‘every part of the play delighted her’.

**3:AM:** You’re arguing against a particular view- that of ‘extensional mereology’ aren’t you. Can you give us the gist of this position and why isn’t it adequate for ontology?

**FM:** Extensional mereology is based on the view that part-whole structure consists just in a relation between entities, the parts and the whole. On that view, the part relation is transitive (if a is a part of b and b a part of c, then a is a part of c), closed under sum formation (any non-empty set of entities has a sum), and ‘extensional’, which means that two entities consisting of the same proper parts are identical. Many philosophers actually take this view to be problematic, today as in the past (Aristotle being one of them). Part-whole structure involves not just a relation among parts, but also structure and more generally conditions of integrity (and functional role). This holds for the notion of part-whole in metaphysics just as it does for the notion of part-whole relevant for the semantics of natural language. More recently, the recognition of the importance of conditions of integrity can be attributed to Gestalt Theory of the early 20th century and to Peter Simons’ 1987 book *Parts. A Study in*

**Ontology.** Inspired by that, my book applies notion of an integrated whole to a range of semantic phenomena involving plurals and mass nouns for which the importance of the notion is less obvious than it is for the part-whole structure of objects.

**3:AM:** So what does your approach of ‘integrated wholes’ bring to the table? What does integrity do?

**FM:** Certainly extensionality is inadequate for our common sense ontology. The statue and the clay from which it is made are not identical even though they share the same parts. There are many properties they may distinguish them, for example elegance, age, and price. The reason is that form is essential to the statue but not the clay. Also transitivity is problematic, though this is not the standard view. A book may be part of the library and a page part of the book, but the page is intuitively not part of the library. By contrast, if an amount of rice is part of a larger amount of rice, which in turn is part of a dish, the first amount of rice is still part of the dish. This is because amounts of rice are not integrated wholes, whereas books are. I also take integrity conditions to restrict the formation of mereological sums.

The role of integrity conditions, according to the view, is the same for individuals as it is for pluralities and quantities. Integrity conditions determine the way quantities and pluralities are divided in a context and may influence the way a predicate applies. Integrity conditions allow the parts of the plurality of the students to consist only of individual students and no subgroups, or else only of certain subgroups and no individuals. Thus, *the students gathered* can have a distributive reading on which different subgroups students gathered, but only if those subgroups form integrated wholes in the context in question. Such a division is also at stake for a reading of *John compared the students* on a collective reading on which John compared the different groups of students to each other rather than individual students.

There are also part-structure sensitive modifiers in natural language that involve the notion of an integrated whole as part of their meaning, for example the adjective/adverbial *individual(ly)*, which has been entirely neglected in the literature, and the adjective *whole*, which did receive some attention in the literature, but only in the medieval literature on philosophy of language.

**3:AM:** You make use of the notion of ‘Reference situation’ – can you explain what this is and how this is important for your account?

**FM:** In my book, I argue that part-structure-sensitive expressions require a rethinking of the notion of reference and argumenthood. Part-structure-sensitive predicates such as *compare* and distributive readings of predicates do not just apply to pluralities as such, but to entities that display a particular division (driven by conditions of integrity) in the relevant context or reference situation. Moreover, they may carry presuppositions regarding conditions of integrity that their arguments need to satisfy with respect to the reference situation. *Compare*, for example, applies with an ‘internal’ reading only to entities which are not integrated wholes in the reference situation (and which consist only of parts that are integrated wholes, that is pluralities). Thus, *John compared the class* does not have an

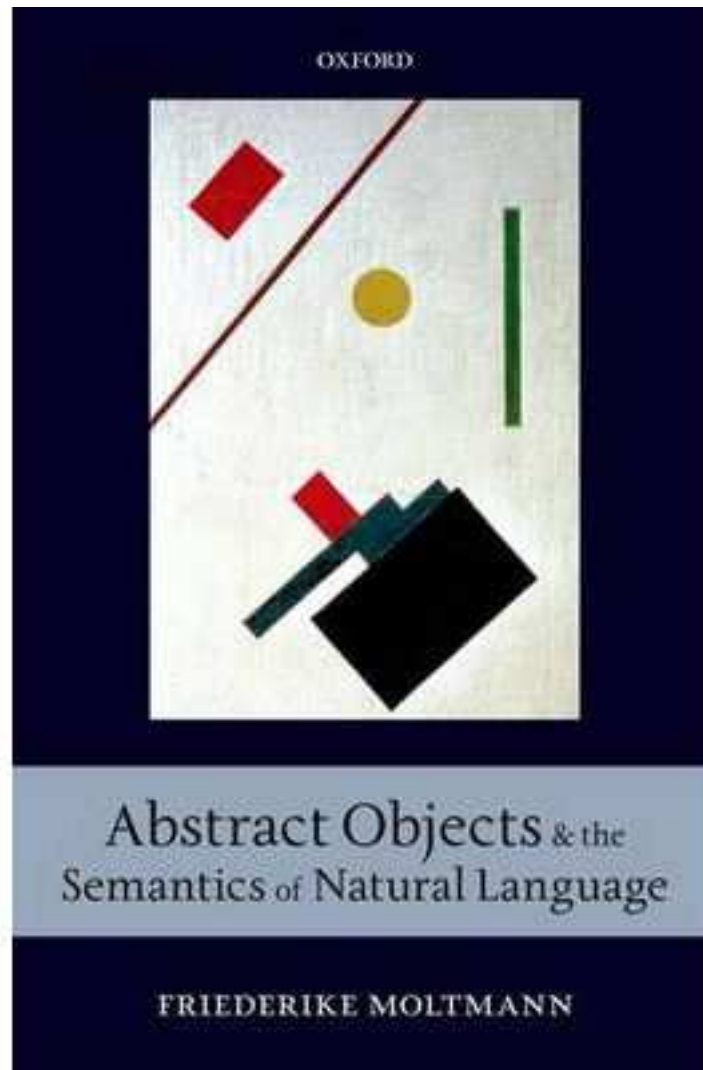
internal reading, unlike *John compared the students*, and that's because the class is an integrated whole, but not the plurality of the students.

Adjectives like *individual* and *whole* when they modify noun phrases may set up particular reference situations and thus influence the way predicates apply. For example, *John compared the individual students* no longer has a subgroup-comparison reading, and *John gave the whole class an A* allows for a distributive reading of the predicate ('John gave every student an A'), which *John gave the class an A* doesn't.

Also the information content that goes along with the construction of the noun phrase may set up a particular reference situation. This may lead to a division of a plurality into two integrated subgroups, as in *John compared the male and the female students*. It may even lead to the division of a quantity into integrated subquantities, as in *John compared the jewelry of the two women* on the reading on which John compared the jewelry of the one woman to that of the other woman, thus giving the semantic value of a mass term the ontological status of a plurality.

Reference situations take care of the fact that the way part-structure-sensitive predicates like *compare* and distributivity apply depends how the plurality or quantity is individuated in the context of reference, based on the information that is explicitly or implicitly given. This requires an enrichment of the semantics of noun phrases with a situation of reference containing the relevant lexical and contextually given information. Moreover, predicates like *compare* will no longer apply to pluralities as such, but only relative to a particular situated part structure. Unlike in other situation-based semantic theories, such as Barwise and Perry's **Situation Semantics**, reference situations not only provide a restricted domain from which the semantic values of noun phrases are obtained, but also carry relevant information on which the part structure of entities is based that part-structure-sensitive predicates or readings of predicates care about.

I now hold the view that reference situations are also needed if definite plurals are not taken to stand for a single collective entity, but to plurally refer to several entities at once. On this view, predicates like *compare* care about 'situated structured pluralities', not just pluralities ('as many') as such.



**3:AM:** Another area you've looked at from the point of view of what natural languages allow are **abstract objects**. The question you raise is whether natural languages allow for abstract objects. This might strike someone as an odd question – surely the fact that we use sentences like 'there are three bottles in the bag' 'look at the redness of her cheeks' 'her happiness is boundless' etc shows that natural languages allow us to use abstract objects without problem just like Quine said. So why is this person (probably me!) not grasping the problem properly?

**FM:** It is a common view among philosophers that natural language generously permits reference to a great range of abstract objects. Let me give a few more examples. It is commonly held that *wisdom* in *wisdom is admirable* stands for a property, that *the number of planets* and *eight* (in *John counted eight*) stand for numbers, and that the *that*-clause in *John thinks that it is raining* stands for a proposition. In my book ***Abstract Objects and the Semantics of Natural Language***, I argue that natural language does not in fact permit reference to abstract object in its 'core', that is, with central expressions and constructions of the sort *wisdom*, *the number of planets*, *eight*, and *that it is raining*. Instead, *wisdom*, for me,



stands for the plurality of concrete wisdom manifestations and *the number of planets* for the manifestation of being eight in the concrete plurality of the planets. Moreover, number words like *eight* and *that*-clauses, for me, are not really referential terms at all, but make a different contribution to the semantics of the sentence in which they occur. On my view, philosophers that took it to be obvious that natural language allows reference to abstract objects such as properties, numbers, and propositions with core expressions were misguided by a naïve analysis of the linguistic data.

**3:AM:** Quine and Frege were suspicious of natural language because they thought that if it was committed to all these abstract objects then it was clearly untrustworthy. So are you saying that once we get hold of what ontology natural language is actually committed to then we should be less suspicious?

**FM:** Yes, it is really amazing that natural language involves such a different ontology than what is commonly thought. I think something like that holds for many other philosophical topics that have a reflection in natural language and where a deeper analysis of the linguistic data may reveal a very different philosophical conception than what philosophers generally take the data to display.

This includes topics such as propositional attitudes, existence, truth, relative truth, and relative identity – to name just some that I myself have worked on. For example, a more thorough look at the semantics of *that*-clauses in attitude reports like *John thought that it is raining* and of terms like *John's thought that it is raining* shows that they cannot act as terms referring to abstract propositions. However, an enormous range of views and discussions both in philosophy of language and in philosophy of mind are based on the mistaken linguistic view that they do.

**3:AM:** So how does your analysis do this?

**FM:** In my book, I argue that core expressions such as *wisdom* are plural terms plurally referring to the various wisdom manifestations at once, that is, tropes of the sort of John's wisdom, the wisdom of that remark etc. Other expressions such as *that*-clauses have been misdiagnosed as referential terms, when they in fact play a different semantic role entirely. Also quantifiers like *something* or *everything* have commonly been taken to range over abstract objects, in particular properties as in the inference from *John is wise* to *there is something John is* and propositions in the inference from *John thinks that it is raining* to *John thinks something*. On my view, quantifiers like something which characteristically can take the place of a predicative or clausal complement are in fact nominalizing expressions. This means they stand for the same sorts of things that relevant nominalizations stand for, that is, expressions of the sort *John's wisdom* or *wisdom* and of the sort *John's thought that it is raining* or *the thought that it is raining*. These, on my view, are not terms standing for properties or propositions, but terms that stand for tropes or kinds of them.

**3:AM:** The ontological picture your natural language ends up with is particularist and full of 'tropes' isn't it? Can you explain what you mean by this?

**FM:** Yes. On my view, lots of expressions that have been taken to refer to properties, numbers, or degrees are in fact trope-referring expressions, that is, they refer to particular manifestations of properties in objects. A trope such as John's wisdom has a unique bearer, namely John, and thus, unlike properties, it is not shareable among different individuals. However, two tropes that manifest the same property are similar, which means that properties may be identified with classes of similar tropes

The range of tropes natural language permits reference to is in fact much richer than in recent trope-based ontologies such as those of **Campbell** and **Bacon**, in which only tropes are recognized that are instances of natural properties, properties indispensable in a full description of the world. Such ontologies, which were generally developed within a revisionary, not a descriptive metaphysical project, had as their aim a reduction of all categories of entities to tropes, in particular properties to classes of similar tropes and individuals to bundles of co-located tropes. Natural language predicates, however, hardly ever express natural properties and their nominalizations generally refer to more complex tropes than simple instances of natural properties.

For example, in English both *John's height* and *John's tallness* refer to tropes, but they refer to different kinds of tropes. The standard trope ontologies would also have difficulties distinguishing between tropes of strength and of weakness: the statements 'John is stronger than Mary' and 'Mary is weaker than John' appear to involve the very same tropes on the standard view, yet they permit only the inference to 'John's strength exceeds Mary's strength', not to 'John's weakness exceeds Mary's weakness'. The ontology of natural language displays a great variety of different sorts of tropes, complex tropes, relational tropes, higher-level tropes, number tropes, and degree tropes, as well as corresponding kinds of tropes. The philosophical literature on tropes presents such hugely simplified trope ontologies because it has completely ignored relative and gradable adjectives, different sorts of trope nominalization, and the fact that predicates generally do not express natural properties – or in short, because it has largely ignored natural language and the ontological intuitions reflected in it.

**3:AM:** You also argue that variable objects, as in 'the book John needs to write', are not abstract objects either. Why not?

**FM:** Most people would not actually accept that *the book John needs to write* stands for an object at all. I myself did not think so for a while. What convinced me most that such terms are object-referring is that they can specify the bearers of tropes, as in *the length of the book John needs to write*. There is little motivation for considering *the book John needs to write* an abstract object, though. It can be attributed the same sorts of properties that concrete books can have (though generally requiring a modal), for example causal properties in *the book John needs to write must have a lot of impact*.

On my analysis, *the book John needs to write* refers to a variable object, whose manifestations are books in possible situations satisfying John's need. A variable object is an entity that may have different manifestations (as different objects) in different possible

circumstances. As such, it inherits its properties from its manifestations (with modals acting as devices accessing the circumstances). A variable object is not that special an object actually. Rather I take it to be an object falling under Kit Fine's notion of a variable embodiment. Most ordinary objects are in fact variable embodiments, that is, entities allowing for a replacement of parts, for example organisms and artifacts.

**3:AM:** Doesn't this position change an awful lot of standard views embedded in philosophy? It's a tad revolutionary isn't it? Can you explain what will have to stop and change if you're right?

**FM:** I do think that the application of a systematic linguistic methodology for philosophical issues that have a significant reflection in natural language can have important philosophical consequences. But of course there are many philosophical topics that won't be affected. In any case, what needs to change given the development of theoretical linguistics and the refinement of linguistic intuitions that went along with it is philosophical theories being based on naïve and mistaken linguistic analyses of a few arbitrarily selected sentences. The right linguistic analysis of the full range of relevant linguistic data may in fact go along with a very different philosophical view than initially thought.

**3:AM:** So how different is a trope-drenched ontology from one assuming abstract objects?

**FM:** In general, a trope-based ontology allows identifying universals with classes of similar tropes, or, as I conceive of them, as pluralities of similar tropes, thus reducing them to particulars and the relation of similarity. A well-known problem for such a particularist ontology is how to deal with uninstantiated properties and modal statements that contain terms for universals such as *wisdom might have been more widespread than it is*. A common move, which I myself take in my book, is to include merely possible tropes among the particulars. Such a trade-off between abstract objects and merely possible particulars is a familiar issue for any nominalist view, including the one that identifies universals with classes of individuals standing in similarity relations.

The trope nominalist view of universals is quite well reflected in natural language. Nominalizations of adjectives like *wisdom* classify as kind terms, standing for kinds of tropes (pluralities 'as many' on my view), and terms like *John's wisdom* act as terms for particular tropes. Besides terms for such 'adjectival' universals (as some philosophers have called them), terms for kinds of individuals are systematically available as well, namely bare plurals of the sort *giraffes*, with corresponding terms like *that giraffe* referring to particular individuals. The way English displays terms for kinds of tropes and kinds of individuals as well as terms for the corresponding particulars strongly recalls Aristotle's ontology in *The Categories*, with its distinction between two sorts of universals, qualities and secondary substances, and two sorts of corresponding particulars, accidents (or tropes) and substances.

There is a less familiar role of tropes, namely for a replacement of propositions, though such a view can be found in **Husserl**, who identified propositions with types of tropes. On the view I develop in the book, certain sorts of complex tropes, which I call 'attitudinal objects', or

kinds of them play the role of propositions. Again this view is well-reflected in natural language. Natural language hardly displays terms for propositions, as was observed already by Bolzano, the philosopher who preceded Frege in introducing the notion of an abstract proposition in the mid-19th century. Instead natural language displays a wealth of terms for attitudinal objects, of the sort *John's thought that it is raining* or *John's hope that it will rain*, and for kinds of them, such as *the thought that it is raining* or *the hope that it will rain*.

In the ontology presented in my book, abstract objects also play a role actually, though a marginal role, as entities introduced by abstraction by the use of reifying expressions of the sort *the property of being wise* or *the number eight*, expressions whose syntactic complexity goes along with the derivative ontological status of the entities they introduce.

**3:AM:** Even if you're right that the ontology assumed by natural language is not as it has been assumed, isn't it still the case that your trope world isn't that of physics and so it is still at a fundamental level in error?

**FM:** That may be so, of course. The target of my work is to an extent a cognitive ontology that may in some respects be in error or that may involve a creative ontology, say of 'language-created' objects that are not needed in all contexts of ontology. Moreover, the ontology reflected in natural language may be driven by requirements of discourse that won't be relevant for other contexts of reasoning.

**3:AM:** And for the readers here at 3:AM are there five books you could recommend that will take us further into your philosophical world?

**FM:** I cannot really think of particular books that pursue systematically work in the interface between ontology and linguistic semantics in the way I do, though there is a lot work done nowadays in the interface between linguistics and philosophy in general, though more focused on the relation between linguistic semantics and philosophy of language, philosophical logic, or epistemology. Work in metaphysics that takes linguistic intuitions more seriously can be found, though, throughout the history of philosophy. Linguistic data played a significant role in medieval philosophy, for example in the work of **Ockham** and **Aquinas**. In the analytic tradition, **Twardowski**, Strawson, and Austin are to be mentioned, as well as part of **Kit Fine**'s work.



## **ABOUT THE INTERVIEWER**

**Richard Marshall** is still biding his time.

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