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## The Semantic Role of Higher-Order Objects in Natural Language

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In his paper, Cian Dorr presents a formal development of the view that higher-order entities such as properties, relations, and propositions act not just as semantic values of predicates and sentences, but also as referents of referential noun phrases (NPs), generally considered singular terms. Dorr’s paper focuses on properties; thus, *wise* as in *Socrates is wise* is taken to stand for the very same entity, a property, as the NPs *wisdom* and *the property of being wise*. The view entails that lots of expressions now would apply to entities of different types: *some*, *the*, *is interesting* now apply to entities of the type of individuals as well as the type of properties. Moreover, quantifiers like *everything* will now be able to range over both individuals and properties, and in fact over both individuals and properties at once (*Everything is interesting*). These problems are dealt with by imposing type ambiguities on the relevant expressions and allowing quantifiers like *everything* to be specified for sum types, roughly, a disjunctive specification of types.

I will not comment on the very interesting formal aspect of Dorr’s paper, but rather focus on the general assumptions it is based on. The first assumption is that the predicate *wise* stands for the very same higher-order entity as the bare (determinerless) adjective nominalization *wisdom* as well as the explicit property-referring term *the property of being wise*. This is in fact a standard assumption, except that usually a distinction had been made between properties as higher-order semantic values of predicates and properties as objects able to serve as semantic values of referential noun phrases. The second view is that quantifiers like *everything* can range over higher-order entities (properties, relations, propositions). Again, this is a standard assumption, except that that ability of *everything* has generally been reserved for its occurrences in nonreferential position (positions of predicates or embedded sentences).

I consider both assumptions problematic. Explicit property-referring like *the property of being wise* do not simply refer to a (possibly objectified) content of a predicate, as I have argued in recent work; rather they are subject to surprising constraints regarding the predicates they can actually apply to, which indicate a different kind of referent. Moreover, as I have argued in earlier work, adjective nominalizations like *wisdom* behave semantically just like bare (underived) mass nouns such as *water* and bare plurals such as *giraffes*, which indicates that they stand for kinds (in a suitable sense) of particulars (in this case, particularized properties or tropes). But not only do higher-order semantic values seem unavailable for reference by referential noun phrases. The assumption that referential NPs stand for higher-order objects also raises well-known substitution problems. Furthermore, predicates in contemporary semantics are generally taken to involve implicit arguments: events (or attitudinal objects) in the case of verbs, qualities or tropes (or perhaps states) in the case of adjectives. Nominalizations of verbs and adjectives generally pick up those implicit arguments, rather than the content of the verb or adjective denotation as a whole, that is, a property. In fact, the semantics of deverbal and deadjectival nominalization appears to display an ontology that is different from, yet competes with, higher-order metaphysics, namely an ontology of ontologically dependent entities and the individuals on which they depend.

### **1. Two kinds of apparent property-referring terms and their semantic differences**

The two sorts of noun phrases apparently involving reference to properties can be characterized more precisely as follows:

#### Quality terms (NPs referring to qualities)

In English, these are bare (that is, determinerless) adjective nominalizations or underived nouns standing for qualities, such as *wisdom*, *happiness*, *redness*, and *beauty* (which is not derived from an adjective), as well as NPs with the sortals *quality* and *virtue* (*the quality of gentleness*, *the virtue of humility*).

#### Property terms (NPs standing for properties)

These are explicit property-referring terms with the noun *property* as head noun, such as *the property of being wise* and *property of wisdom*

The two sorts of terms are not synonymous, but rather differ sharply in their semantics. In particular, quality terms and property terms differ with respect to the readings or applicability

of predicates. There are five types of predicates that exhibit different readings with the two sorts of terms:

[1] Existence predicates

Existence predicates exhibit a reading which claims the existence of instances with quality terms, but the existence of an abstract object, a possibly un-instantiated property, with property terms:<sup>1</sup>

- (1) a. Wisdom exists.  
 b. The property of wisdom exists.

[2] Episodic predicates

Episodic predicates, or what linguists following Carlson (1977) call ‘stage-level’ predicates, exhibit a reading with quality terms that involves existential quantification over instances and application of the predicate to an instance, as in (2a). By contrast, they involve application of the predicate to the property as a whole with property terms (generally resulting in a reading that could be true only in a metaphysical fantasy, as in (2b)):

- (2) a. John encountered wisdom.  
 b. ?? John encountered the property of wisdom.

[3] Intensional transitives

Intensional transitive verbs such as *look for* convey existential quantification over instances in potential satisfaction situations with quality terms, as in (3a). By contrast, they require the presence of a property as a whole with property terms, as in (3b):

- (3) a. Mary needs wisdom.  
 b. ?? Mary needs the property of being wise.

Mary’s need in (3a) is satisfied in a situation just in case Mary has an instance of wisdom in s. By contrast she would have to have the entire property in (3b).

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<sup>1</sup> Dorr (Fn. 32) notes the example *Many properties of humans also exist in the great apes, for example the property of caring about your place in society exist in the bonobos.* as a potential counterexample to the generalization, but as far as such examples are in fact acceptable, they involve a different the predicate *exist in*, which need not impose the same semantic conditions as *exist*.

## [4] ‘Characterizing’ predicates

‘Characterizing’ predicates, or what linguists following Carlson (1977) call ‘individual-level predicates’, involve generic quantification over instances with quality terms, but with property terms the application of the predicate to the property as an abstract object:

(4) a. Wisdom is admirable.

b. ??? The property of wisdom is admirable.

*Admirable* in (4a) evaluates instances of wisdom, a reading that is hard to get if even possible in (4b).

## [5] Frequency predicates

Frequency predicates are applicable to quality terms as in (5a) describing the distribution of instances of the quality, but hardly to property terms as in (5b):

(5) a. Ignorance is widespread.

b.??? The property of being ignorant is widespread.

The application of quality terms to particular instances rather than an abstract property is also evident from the fact that a quality term N is, more or less, interchangeable with the bare nominal *instances of N*, preserving the same readings with the five types of predicates:

(6) a. Wisdom does not exist.

a’. Instances of wisdom do not exist.

b. John encountered wisdom.

c’. John encountered instances of wisdom.

c. Mary needs wisdom.

c’. Mary needs instances of wisdom.

d. Wisdom is admirable.

d’. Instances of wisdom are admirable.

What are instances of qualities? The readings of predicates applicable to quality terms make clear that the instances that are not the bearers of the quality (individuals), but rather particularized properties or tropes (Williams1953). These are also the entities that quality terms stand for when they are modified by an NP standing for an individual bearer, such as

*the generosity of the gesture, John's generosity, the wisdom of Socrates, the redness of the apple.*

This matches other bare plurals and mass nouns, which have been considered kind terms since Carlson (1977). If *giraffes* stands for a kind, then *the giraffe in the zoo* stands for an instance and so for *water* and *the water in the glass*. Quality terms exhibit the very same readings with the five predicates as bare plurals and mass nouns, such as *giraffes* and *gold* (Carlson 1977):

#### Existence predicates

- (7) a. Black Swans exist.  
b. White sand exist.

#### Episodic predicates

- (8) a. John bought croissants.  
b. John found white sand.

#### Intensional transitives

- (9) a. John is looking for shells.  
b. The resort needs white sand.

#### Characterizing predicates

- (10) a. Black swans are / White sand is beautiful.  
b. Black swans are / White sand is rare.

This makes it tempting to consider qualities to just be kinds of tropes. Bare plurals and mass nouns, however, are not terms referring to kinds in the ordinary sense. This is first because they also include modified nominals like *polluted water* and *sick swans* and second because they do not refer to kinds as objects. Truly kind-referring terms in English are much more restricted than bare plural and mass NPs. The close appositions *the metal gold* and *the kind human being* are examples of terms referring to kinds as abstract objects, as indicated by the impossible sentences below:

- (11) a. ??? John bought the metal gold.  
b. ??? John encountered the kind human being.  
c. ??? John needs the metal gold.

*The metal gold* and *the kind human being* thus are on a par with property terms, which refer to properties as abstract objects. The two notions of a kind thus match the distinction between qualities and properties (as objects).

One might think that *the property of XP* involves reference to an abstract object (rather than instances) in virtue of its construction. But this is not the case. The choice of head noun kind or *property* matters: *quality* and *virtue* in that same construction do not lead to property-referring terms. NPs like *the quality of empathy* and *the virtue of humility* pattern with quality terms rather than property terms, as the acceptability of the examples illustrates:

- (12) a. The quality of gentleness exists.  
 b. John encountered the quality of humility.  
 c. Mary needs the quality of humility.  
 d. The quality of wisdom is admirable.  
 e. The virtue of humility is rare.

Even though it has become common place in semantics to take bare plurals and mass nouns to denote kinds, the semantic behavior of bare plurals and mass nouns suggests that they do not denote single entities at all, but rather refer to pluralities of particulars, including possible particulars (as needed for intensional transitives). This of course would carry over to quality terms, which contrast with property terms by not referring to single objects that exhibit typical properties of abstracta (lack of a spatio-temporal location and causal inertness). Qualities obtain their properties strictly from their instances (in the way that corresponds to a particular property or predicate type), or rather qualities are nothing but pluralities of actual and possible tropes. The latter view was pursued in Moltmann (2013a), within the approach of plural reference, reference to several entities at once with a single term (McKay 2006, Yi 2005, 2006, Oliver and Smiley 2016).<sup>2</sup> The challenge for that view is to explain why pluralities of the modalized sort have predicates apply in the particular ways they do, when ordinary pluralities, the denotations of definite plurals (*the students*) don't.

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<sup>2</sup> If conceived as single entities, qualities would have to be entities that just cannot bear properties themselves (an option I had pursued in Moltmann 2004). The difficulty for that view, though, is how to make the notion of an entity unable to have properties intelligible. After all such an entity is an entity and should be able to bear properties as a whole.

Definite plurals do not display readings of existential quantification with episodic verbs and intensional transitive verbs:

- (13) a. John met the students.  
 b. John needs the solutions to the ten problems.

But even if the plural reference approach to quality terms faces challenges, the generalization stands that quality terms cannot be treated semantically or ontologically on a par with property terms.

## 2. The semantics of property terms

That terms of the form *the property of XP* picks out the property denoted by XP has been a standard assumption both among philosophers and linguists.<sup>3</sup> The view has equally been endorsed by Platonists, who take *the property of XP* to reveal the sort of object XP by itself stands for. It has also been endorsed by higher-order metaphysicians such as Dorr, on which *the property of XP* stands for a property as a higher-order object just like the predicate XP itself. It is compatible with deflationist approaches (endorsed by Dorr), based on equivalences such as:

- (14) *John is XP* is true iff John has the property of being XP

However, there are a range of linguistic data, generally ignored in the literature, that show that that standard assumption cannot be right. The observation is that the modifier XP of *the property of XP*, is subject to a range of restrictions (which seem rather robust also crosslinguistically).

First, XP cannot be a verb phrase with an eventive verb:

- (15) a. ??? the property of walking / laughing / jumping / speaking / thinking  
 b. ??? the property of meeting / kissing / watching someone

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<sup>3</sup> See, for example, Chierchia and Turner (1988).

Eventive verbs are only allowed when the verb has a habitual reading, not when it describes a particular event:

- (16) a. the property of speaking French  
       b. ??? the property of speaking right now
- (17) a. the property of eating meat (regularly)  
       b. ??? the property of eating that piece of meat

On the habitual reading, ‘eventive’ verbs are in fact stative verbs of a sort (‘abstract state verbs’, see below), and not eventive verbs.

The second restriction pertains to a distinction among stative verbs or predicates, introduced first by Maienborn (2007). These are on the one hand verbs that describe what Maienborn calls ‘Kimian-state verbs’ (as they describe states that for her fall under Kim’s (1976) account of events). I will call those verbs, theory-neutrally, *abstract-state verbs* (Moltmann 2013b, 2024b, 2025). Abstract-state verbs contrast with what Maienborn calls Davidsonian-state verbs or what I call *concrete state verbs*. The difference between the two kinds of verbs consists in that abstract-state verbs resist most adverbials, in particular those conveying a spatial location, a particular manner, and causal roles - all adverbials applicable to concrete state verbs (see Maienborn 2007 and Moltmann 2013b for discussion). The observation then is that property terms do not permit concrete-state verbs:

- (18) ??? the property of standing / sitting / kneeling / sleeping / waiting

By contrast, property terms permit the full range of abstract-state verbs. This is illustrated below with verbs describing qualitative or quantitative tropes, as in (19), verbs describing mental states, as in (20), and modal verbs, as in (21):

- (19) a. the property of resembling Napoleon  
       b. the property of weighing 100 pounds
- (20) a. the property of believing that the world is round  
       b. the property of expecting to win
- (21) the property of needing to work



Stative intensional transitive verbs also count as abstract-state verbs, and they are acceptable with property terms:

- (22) a. the property of needing a coat  
 b. the property of lacking understanding

Two specific generalizations are of particular interest. First, property terms always allow for complex predicates with *have*, whether the complement of *have* describes an ordinary object or a permanent or episodic particularized property:

- (23) a. the property of having a sister / a vacation / a house  
 b. the property of having wisdom / pride / intelligence  
 c. the property of having a cold / a migraine / backpain / a nervous feeling / fear

Second, property terms always allow for complex predicates with the copula *be*, and that regardless of the nature of the complement, whether it describes an episodic or permanent property:

- (24) the property of being wise / angry / sick / nervous / sleepy / upright / sleep / alive

This leads to striking contrasts between episodic verbs and *be* with an episodic adjective, in the minimal pairs below:

- (25) a. ??? the property of sleeping  
 b. the property of being asleep  
 (26) a. ??? the property of suffering  
 b. the property of being in pain  
 (27) a. ??? the property of living (as opposed to being dead)  
 b. the property of being alive

Similar contrasts hold for predicates describing event participation with eventive verbs and predicates describing them with *be* + complement:

- (28) a. the property of being the cause of something

- b. ??? the property of causing something
- (29) a. the property of being an agent / being active / having an activity  
 b. ??? the property of acting
- (30) a. the property of being the initiator of an investigation  
 b. ??? the property of initiating an investigation

Explicit property-referring terms admit only the stative copula verb *be* and not dynamic ones, such as *become*:

- (31) a. the property of being sick / cancer free  
 b. ??? the property of becoming sick / cancer free

These observations make clear that the standard view (also endorsed by Dorr) cannot be right. Property terms do not just pick up a property in the sense of the content of a predicative expression. They involve a different semantics. My own recent proposal as regards the semantics of property terms of the sort the property of XP is as follows (Moltmann 2024a, 2025). The predicate XP is either overtly of the form *have* YP or *be* YP or it is underlyingly of the form *have* YP. Thus, abstract-state verbs are derived from complex predicates along the following lines: *resemble* – *have resemblance*, *weigh 100 kilo* – *have a weight of 100 kilo*, *believe that p* – *have the belief that p*, *expect that P* – *have the expectation that p*, *need NP* – *have the need of NP*. This means that abstract state verbs involve implicit reference to a trope or other particular that is ontologically dependent on an individual (a belief, expectation need). Property terms then select the have-(or be-)relation applied to a trope or an entity of the sort of a belief, expectation, or need, or to an ordinary object (*have a sister*) (note that *be wise* is *have wisdom*) and reify that relation for its reference. Thus we have [*the property of having an N*] = *reif*( $\lambda x[\exists d(\text{have}(x, d) \ \& \ N(d))]$ ), where the function *reif* is to be understood as a suitable relation of reification. I will not go into further details of such an analysis in this paper.<sup>4</sup> What is clear is that the linguistic facts provide little motivation for a view on which the property term *the property of XP* picks up the content of XP as its higher-order referent.

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<sup>4</sup> One might speculate that reification is involved only in expressions in what I call the ontological ‘periphery’ of language (Moltmann 2013a, 2020), expressions that involve some form of reflection in their use and permit non-ordinary, reflective uses. This would also apply to philosophical (uses of) terms, including those aiming to refer to denotations of referential NPs as higher-order semantic values.

### 3. Syntactic structure and reference to higher-order objects

If predicates are assigned properties as higher-order objects, this is meant to reflect their syntactic function, as predicates rather than singular terms. The overall view of higher-order metaphysics is that that distinction between the denotations of singular terms and predicates also reflects the structure of reality, which involves a division between first-order entities and higher-order entities.

Now if singular terms (referential NPs) are allowed to stand for higher-order objects as on the higher-order view of property terms, this requires not only introducing type-ambiguities in predicates, coordinators, and functors, but also overgenerates interpretable syntactic structures. Certainly, it is reasonable to appeal to syntactic conditions in order to rule out examples like (32), since the noun phrase *the property of being a man* is not a verb phrase as the position requires (Rieppel 2016):

(32) \* John the property of being a man.

But an indefinite or definite NP as complement of *be* is fine syntactically:

(33) a. John is a man.

b. John is the chairman of the company.

However, if *the property of being the chairman* denotes that very same higher-order object as *the chairman*, then (34) should likewise be possible:

(34) ??? John is the property of being the chairman.

But of course (34) cannot mean what (33b) means. This is the Substitution Problem, which has been discussed both for copula verbs (Moltmann 2003, 2013a, Rieppel 2016) and for sentence-embedding attitude verbs like *think* (*John thought that S*, \* *John thought the proposition that S*) (Prior 1971, Moltmann 2003, 2013a). The problem also arises for intensional quantifiers as arguments of intensional transitives (*John was looking for an assistant*, \* *John was looking an intensional quantifier*) and for pure quotes (*'Rouge' means 'red'*, \* *'Rouge' means the property of being red*) (Moltmann 2013a). The problem arises

from the fact that properties as higher-order objects reflect the predicative function of occurrences of expressions, and referential noun phrases simply cannot carry that function. The view more generally confounds the complement position of *be*, which requires a predicatively used nominal, and the complement of *have*, which allows for definite and quantificational NPs:

(35) John has the property of being a man.

Put in terms of semantic selection, *be* selects properties as higher-order objects, *have* selects single entities or pluralities, which may be reified properties (*have the property of being wise*) or qualities (*have wisdom*). The higher-order view of property terms deviates from the original motivation for higher-order semantic values, tracking syntactic functions, and that leads to a serious difficulty.

The substitution problem with property terms is parallel to that with plural terms, which do not permit substitution by a singular term aiming to capture the denotation of the plural term as a collection of some sort:

(36) a. The children are few.

b. ??? The sum of the children is few.

The right remedy also ought to be the same. The substitution problems with plurals has led various philosophical logicians to adopt plural reference for the semantics of plurals, that is, reference to several individuals at once rather than reference to a collective entity (McKay 2006, Yi 2005, 2006, Oliver and Smiley 2016). The approach involves making use of plural reference also in the metalanguage through the use of plural variables, as indicated below:

(37) *The children are few* is true iff *are few* is true of the referents of *the children* at once.

The very same move should be made for properties considered as higher-order entities. Properties in that sense need to be treated that way also in the metalanguage in order to avoid the substitution problem.<sup>5</sup> This means that semantic values of predicative occurrences of

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<sup>5</sup> See also Jones (2016) and d'Ambrosio (2023), who makes the point in the context of an advocacy of a higher-order approach to special quantifiers for predicative and other contexts in which the substitution problem arises, the generalization of Prior's problem established in Moltmann (2003, 2013a).

expressions can simply not be treated as objects and be assigned to expressions acting as referential terms.

There is also another general concern for the higher-order view of property terms. This is that the status of predicates in contemporary semantics is no longer obvious. On the by now dominant Davidsonian view, verbs take events as implicit arguments, and on the Neo-Davidsonian view, verbs are one place-predicates of events and thus not predicates of individuals at all. If verbs do not express properties of individuals, there should be no expectation that deverbal nominalizations should denote such properties. In fact, deverbal nominalizations generally denote just events (*John's walk, Mary's speech* etc.). A slight variation of the Davidsonian view is that certain verbs, attitude verbs, are predicates of attitudinal objects, entities like beliefs, desires and intentions (which are related to acts and states but unlike the latter come with truth or satisfaction conditions). Obviously, the corresponding nominalizations (*belief, desire, intention*) denote attitudinal objects and not properties of individuals (Moltmann 2013a, 2024b). Now one might argue that at least adjectives act as predicates of individuals. But the same sorts of arguments, from adjectival modifiers, show that adjectives take tropes as implicit arguments (Moltmann 2013a). In fact, as we have seen, deadjectival nominalizations refer to tropes or kinds of them (pluralities of tropes), rather than to properties. In linguistics, the notion of a predicate is thus far from obvious and positing higher-order entities as denotations of expressions would be far from uncontroversial.

#### **4. Problems for the higher-order view of special quantifiers**

Quantifiers like *everything (something, many things* etc.) are what I call ‘special quantifiers’ (Moltmann 2013a, 2024a). What makes them special is that they can range not just over individuals, but can also quantify into nonreferential positions, in particular predicate position:

- (38) a. John ate something.  
 b. John is something admirable, courageous.

It is a common view that *special quantifiers* are quantifiers able to quantify over properties as higher-order entities (Wright 2006, d’Ambrosio 2023):

(38) *John is something* is true iff for something  $F$ ,  $F(\text{John})$ .

Let me call this *the higher-order view of special quantifiers*. It is a view endorsed by Dorr as well. Dorr notes that if predicates like *is interesting* are considered first-order predicates, then

(39) presents a difficulty for the higher-order view of special quantifiers:

(39) Everything is interesting.

Dorr's solution is to endorse sum types (disjunctive types) for special quantifiers.

However, the higher-order view of special quantifiers supplemented by sum types does not give justice to the semantic behavior of special quantifiers. There are three serious problems for that view.

[1] Adjectival quantifier restrictions

The first problem consists in that adjectives as restrictions of special quantifiers in predicate position do not generally convey properties of properties. Rather, they convey properties of qualities or tropes:

(40) a. Mary is something admirable, courageous.

b. ?? The property of being courageous is admirable.

c. Courage / Mary's courage is admirable.

(41) a. Joe became something unexpected, charming.

b. ?? The property of being charming was unexpected.

c. John's charm was unexpected.

*Admirable* in (40a) is understood as in (40c), rather than as in (40b). *Unexpected* in (41a) is understood as in (41c), rather than as in (41b).

[2] Relative clauses as quantifier restrictions

Relative clauses as restrictions of special quantifiers make not only the same point as adjectival restrictions, in that they do not generally convey properties of properties but rather properties of qualities of tropes. In addition, the relative pronoun *what* may bind a position inside the relative clauses that is syntactically and semantically incompatible with higher-order expressions or values:

(42) a. Mary is something that I admire *e* a lot, courageous.

- b. Bill is everything that Mary likes *e* in a man.
- c. Joe is something that Sue hates *e*, very sloppy.

Here ‘*e*’ represents an empty syntactic position, bound by the relative clause operator. The special quantifiers in these examples quantify at once into predicate and referential position, or so it seems. In addition, a free relative clause formed with respect to predicate position can occupy a referential position (the object position of *like*):

(43) I like what John has become, very athletic.

Such examples cannot be accommodated through types ambiguity or sum types associated with an expression. Here the problem is that a single entity in the domain of the special quantifier would need to be at once of the type of individuals and of properties as higher-order objects, but that is impossible. Similar examples can be made up for sentential positions and positions for intensional quantifiers (object positions of intensional transitive verbs such as *look for*) (Moltmann 2013a, 2024a).

## 5. A different perspective: nominalization and ontological dependence

The semantic behavior of special quantifiers relating to predicate position indicates that such quantifiers range over qualities or tropes, just the sorts of things that the nominalization of the adjective stands for that could fill in the position. In previous work (Moltmann 2003, 2013a, 2024a), I have argued for special quantifiers having the status of *nominalizing quantifiers*:

(44) The Nominalization Theory of special quantifiers

Special quantifiers range over the very same entities that a corresponding nominalization would stand for.

The Nominalization Theory as leaves open how exactly special quantifiers manage to range over such entities. Here is a way of conceiving the semantics of special quantifiers as nominalizing quantifiers when they occur in the position of the predicative complement of *be*, as in (45b):

(45) a. John is wise.

b. John is something admirable.

*Admirable* in (45b) applies to a trope (John's wisdom) or a quality (or kind of trope) (wisdom), both of which are denotations of the nominalization *wisdom*. Special quantifiers as in (45b) range over qualities or tropes, allowing for first-order predicates as restrictions, but at the same time they range over properties as higher-order objects as well, since the latter will serve to saturate the copula verb. The Nominalization Theory thus must combine with implicit higher-order quantification over properties. The morpheme *-thing* as part of *something* or *everything* can be considered a nominalizing morpheme, mediating between tropes (qualities) and the properties expressed by adjectives. Let us thus assume that *-thing* expresses a relation **THING** between a trope  $x$  and a property  $X$ . (45b) will then have the following logical form:

(46)  $\exists x \exists X (\text{is}(\text{John}, X) \ \& \ \mathbf{THING}(x, X) \ \& \ \text{admirable}(x))$

Here 'x' is a variable for individuals and 'X' a variable for properties. How can **THING** relate a trope to a property? If tropes are implicit arguments of adjectives, the property involved in (45b) will involve existential quantification over tropes (or qualities) and be of the form  $\lambda x [\exists d (\text{wise}(x, d))]$ . The relation **THING** will then be established between a trope  $d$  and a property  $P$  by retrieving implicit trope (or quality) arguments of the adjectival relation from which  $P$  is formed.

## 6. Conclusion

The view that referential NPs pick up denotations of predicates as properties of a type distinct from individuals, we have seen, faces a series of challenges, such as the Substitution Problem and the non-obvious status of the notion of a predicate in contemporary linguistics.

Moreover, the terms and quantifiers that are supposed to stand for properties as the contents of predicates show a semantic behavior that is indicative of a rather different ontology, an ontology of ontologically dependent particulars (tropes, qualities, attitudinal objects and alike) as well as the bearerhood relation (have-relation) involving such entities. Even though higher-order metaphysics may play a role in semantics, as it does in the semantics of copula verbs given in this paper, it is apparent that nominal expressions themselves reflect an



ontology of ontological dependence among first-order entities (and pluralities thereof), rather than an ontology of objects of higher types. Ontological dependence is a modal notion, pertaining to the essence of (first-order) entities, whereas objects of higher-order types pertain to the semantically relevant syntactic role of occurrences of expressions in a sentence.

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