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## NOMINALIZING QUANTIFIERS

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**ABSTRACT.** Quantified expressions in natural language generally are taken to act like quantifiers in logic, which either range over entities that need to satisfy or not satisfy the predicate in order for the sentence to be true or otherwise are substitutional quantifiers. I will argue that there is a philosophically rather important class of quantified expressions in English that act quite differently, a class that includes *something*, *nothing*, and *several things*. In addition to expressing quantification, such expressions act like nominalizations, introducing a new domain of objects that would not have been present in the semantic structure of the sentence otherwise. The entities those expressions introduce are of just the same sort as those that certain ordinary nominalizations refer to (such as *John's wisdom* or *John's belief that S*), namely they are tropes or entities related to tropes. Analysing certain quantifiers as nominalizing quantifiers will shed a new light on philosophical issues such as the status of properties and the nature of propositional attitudes.

**KEY WORDS:** nominalism, nominalizations, ontology, properties, propositional attitudes, quantification, quantifiers in natural language, tropes

### 1. WHAT ARE NOMINALIZING QUANTIFIERS?

Quantifiers in logic as well as natural language generally range over entities that need to satisfy or not satisfy the predicate in order for the sentence to be true. In this paper, I will argue that there is a philosophically rather important class of quantified expressions in natural language that act quite differently. Such expressions do not range over potential arguments of the predicate, but rather induce a new quantification domain beyond predicate-argument relations, a domain that contains entities that are obtained in certain ways from individuals and the content of predicates. The operations of introducing those new entities generally are, I will argue, the same as those involved in the semantics of nominalizations such as *John's wisdom*, *John's belief* or *the effectiveness of John's work*. Hence the quantified expressions can be called 'nominalizing quantifiers'.

In English, nominalizing quantifiers typically consist in combinations of a determiner with certain special morphemes, in particular the morphemes *thing* and *way*, as in *everything*, *nothing*, *something*, and *the same way*. Nominalizing quantifiers generally replace occurrences of expressions that do not serve to provide arguments of a relation expressed by



a predicate, such as predicative noun phrases or adjectives and adverbial modifiers, but also *that*-clauses (which arguably do not generally provide an argument of the predicate either).

Nominalizing quantifiers, however, do not range over possible meanings of occurrences of expressions they could replace (i.e. predicative, adverbial, or clausal expressions), namely entities such as properties or propositions. Rather nominalizing quantifiers induce reference to other kinds of objects, objects only related to the semantic contribution of expressions such quantifiers could replace. Nominalizing quantifiers generally range over what is now most often called ‘tropes’, that is, instantiations of properties in objects, or else entities related to tropes, such as collections of tropes, kinds of tropes, or higher-order tropes. Nominalizing quantifiers thus support an ontology based on particulars such as tropes and kinds of them, rather than, as has often been claimed, an ontology of abstract ‘meaning objects’ such as properties and propositions.

## 2. PREDICATIVE AND CLAUSAL COMPLEMENTS

Nominalizing quantifiers such as *something* can replace both predicative complements as in (1b) and (2b) and clausal complements, as in (3b):

- (1) a. John is wise.  
b. John is something admirable.
- (2) a. John remained wise.  
b. John remained something admirable.
- (3) a. John believes that Mary married Bill.  
b. John believes something.

Let’s say that in the two cases nominalizing quantifiers act as *propredicative* and as *prosentential quantifiers* respectively.

A common analysis of predicative and clausal complements is what I call the *Relational Analysis*. Such an analysis assigns some semantic value (in (1a) and (2a) a property and in (3a) a proposition) to the complement and takes this semantic value to act as an argument of the relation expressed by the verb. Thus, (2a) is analysed as in (4a) with *wise* standing for a property, and (3a) as in (4b) with the *that*-clause standing for a proposition:<sup>1</sup>

- (4) a. remain(John,  $\lambda x[\text{wise}(x)]$ )  
b. believe(John,  $[[\textit{that Mary married Bill}]])$ )

The possibility of quantifiers like *something* replacing predicative and clausal complements seems to give particularly good support for the Relational Analysis, assuming that those quantifiers are ordinary objectual quantifiers. *Something* then seems to range over properties in (1b) and (2b) and over propositions in (3b).

I will argue that *something* in (1b), (2b), and (3b) acts rather differently. Instead of ranging over potential arguments of a predicate (of the sort of properties or propositions), *something* in (1b) and (2b) ranges over things of the sort John's wisdom or wisdom, and in (3b) over things of the sort John's belief or the belief (that S). That is, *something* ranges over the kinds of things that nominalizations derived from adjectives and verbs refer to and these things are not, as will become clear, things of the sort of properties or propositions. Quantifiers like *something*, in other words, are nominalizing quantifiers. Thus, rather than analysing (2b) as in (4c), I will analyse it approximately as in (4d), where '*W*' is a variable ranging over predicates of English,  $\text{prop}(W)$  the property expressed by *W*, and  $f(\text{prop}(W))$  the entity that the nominalization of the predicate *W* refers to:

- (4) c.  $\exists x (\text{remain}(\text{John}, x) \ \& \ \text{admirable}(x))$   
       d.  $\exists x \exists W (x = f(\text{prop}(W)) \ \& \ \text{remain } W(\text{John}) \ \& \ \text{admirable}(x))$

My arguments for this kind of analysis are as follows:

1. Predicative and clausal complements do not actually provide arguments for a relation expressed by the verb, that is, the Relational Analysis is mistaken. This means that propredicative and prosentential quantifiers cannot be ordinary objectual quantifiers, ranging over possible arguments of the predicate.
2. Propredicative and prosentential quantifiers can relate to two syntactic positions simultaneously that require different syntactic categories of expressions or even entities of different kinds. Thus, such quantifiers are not substitutional and, for yet another reason, are not ordinary objectual quantifiers.
3. The possible restrictions of propredicative and prosentential quantifiers show that those quantifiers do not range over possible meanings of predicates or sentences, but rather over just the kinds of things that the relevant nominalizations refer to.

### 3. THE NONARGUMENT STATUS OF PREDICATIVE AND CLAUSAL COMPLEMENTS

In order to show that predicative and clausal complements do not have the function of providing an argument for a relation expressed by the predicate, let me introduce some terminology. Following a certain linguistic tradition (e.g., Chomsky, 1981), I will call *arguments* occurrences of expression in which they have the function of standing for arguments of a relation expressed by the embedding predicate and *nonarguments* occurrences of expressions in which they do not have that function. Thus, arguments include both referential noun phrases (acting as singular terms) and quantified noun phrases, whereas nonarguments include predicates, verbs, and adverbial modifiers. Note that to count as an argument, it does not matter whether an expression refers to or merely characterizes an entity, as long as that entity is to act as an argument of the predicate.

Arguments and nonarguments differ in the following way: in extensional contexts arguments allow for unlimited substitution by a coreferring expression, *salva veritate*; but nonarguments don't. Thus, if Mary is the mother of Sue, or the entity that . . . (any description to follow), then if (5a) is true, (5b) and (5c) are true as well:

- (5) a. John resembles Mary.
- b. John resembles the mother of Sue.
- c. John resembles the entity that . . .

Predicative complements do not allow for unlimited substitution and hence count as nonarguments. If what the predicative complement is taken to denote, a property, is described or quantified over by an argument, then either unacceptability results or the embedding predicate acquires a different meaning. Thus, in (6a) *remain* will have an identity reading, as in (6b), rather than a predicative one:<sup>2</sup>

- (6) a. John remained the property of being a lawyer/some property/some entity.
- b. John remained John.

This is what I will call *the Substitution Problem*.

The Substitution Problem does not arise when the predicative complement is replaced by a combination of a determiner with the bound morpheme *thing*, as it occurs in *something*, *everything*, or *nothing* – that is, by a nominalizing quantifier:<sup>3</sup>

(7) a. John remained something/everything/nothing I expected.

Also the relative pronoun *what* should be included among the nominalizing quantifiers, suitably extending the term:

(7) b. John remained what I expected.

Note the contrast between (8a) with a nominalizing quantifier (where *-thing* composes with *some* as a single word and requires the adjectival modifier to follow) and (8b) with an ordinary quantifier (where *thing* occurs as an independent word allowing the adjective to occur in its usual position between determiner and noun):

(8) a. John became something interesting (namely a lawyer).  
 b. John became some interesting thing.

Even though there is an overwhelming acceptance of the Relational Analysis in the case of clausal complements (taking *that*-clauses to provide propositions as arguments of the predicate), the Substitution Problem arises here as well. In many cases, a replacement of a *that*-clause by a description is possible – though not always by a description of a proposition, but perhaps by some other proposition-like object, such as a fact or possibility: *believe* allows for a replacement *salva veritate* of *that S* by *the proposition that S*, *remember* by *the fact that S*, and *fear* perhaps by *the possibility that S*:

(9) a. John believes that he will win.  
 b. John believes the proposition that he will win.  
 (10) a. John remembered that Mary is waiting.  
 b. John remembered the fact that Mary is waiting.  
 (11) a. John feared that he might lose.  
 b. (?) John feared the possibility that he might lose.

*Believe* does not allow for a replacement by *the fact that S* or *the possibility that S*, *remember* does not allow for a replacement by *the proposition that S* or *the possibility that S*, and neither does *fear* by *the proposition that S* or *the fact that S*.

One might take this to mean that *that*-clauses do not always stand for propositions, but sometimes stand for other kinds of proposition-like objects, and that therefore just some appropriate description has to be found to replace the *that*-clause (cf. Asher, 1993). However, there are many verbs that do not or at least not very felicitously allow for a replacement of the *that*-clause by a referential noun phrase, for example *think*:<sup>4</sup>

- (12) a. John thought that snow is white.  
 b. # John thought the proposition/fact/possibility that snow is white.

At the same time, though, *think* allows for a replacement by a nominalizing quantifier (and thus does syntactically accept noun phrases):

- (13) John thought something.

Other verbs, for example *expect*, do accept complements of the sort *the proposition that S*, as in (14b), but then receive a different reading, the reading they have when taking ordinary referential NPs, as in (14c):

- (14) a. John expects that he will win.  
 b. John expects the proposition that he will win.  
 c. John expects Mary.

No shift of the reading of *expect* takes place with the nominalizing quantifier *something*, however:

- (15) John expects something (namely that he will win).

Clausal complements thus exhibit the Substitution Problem in just the same way as predicative complements.

Let me briefly go through some possible ways of explaining the Substitution Problem away within a relational analysis of predicative complements.

Two possible explanations of the Substitution Problem with predicative and clausal complements fail rather obviously. First, the syntactic explanation that the verbs in question resist noun phrase complements syntactically has already been rejected. The verbs all take nominalizing quantifiers as complements, which behave as noun phrases in all syntactic respects.<sup>5</sup> Second, one must also reject explanations of the sort that there is something wrong with the descriptive content of the replacing description (let's say some inadequacy or inappropriateness concerning the nouns *property* or *proposition*). It is easy to verify that the Substitution Problem arises for any description for any user – however (non)technical the description and however knowledgeable the user. It arises even with the most basic objectual quantified NPs such as *some entity* or *some object*.

An explanation to be taken more seriously would be a Fregean one. Such an explanation would be based on an ontological distinction between the kinds of things referential NPs refer to and the kinds of things predicative or clausal complements stand for, namely a distinction between 'objects' on the one hand and 'concepts' or 'contents' on the other hand.

The explanation would say that a referential NPs such as *the property of being wise* and the predicate *wise* could not stand for the same thing because the former stands for (or refers to) an object (which is ‘saturated’), whereas the latter stands for (or expresses) a concept (which is ‘unsaturated’). Similarly, a Fregean would have to say that a referential NP such as *the proposition that S* and a *that*-clause *that S* could not stand for the same thing, because the former must refer to an object, whereas the latter stands for a ‘content’ (however the distinction between object and content then may be drawn). The basic problem with a Fregean explanation, it seems, is this: whatever the things might be that predicative or clausal complements stand for (‘concepts’ or ‘contents’), once they act as arguments of a relation expressed by the predicate, they simply *are* accessible by description to the philosopher and semanticist.

#### 4. SYNCATEGOREMATIC MEANING

If predicative and clausal complements do not serve to provide an argument of the predicate, they will still contribute, in some systematic way, to the definition of a property expressed by the complex predicate (verb + complement). That is, they and the verb will have a *syncategorematic* meaning. Clearly, if this is the case, then propredicative and prosentential quantifiers can’t be ordinary objectual quantifiers, ranging over potential arguments of the predicate.

It should suffice to give only some brief indications of how the verb and the complement together may define a property, as would be expressed by the complex predicate. The complex predicate *remain wise* can be assigned a meaning as in (16), where *remain* is treated as a context-changing temporal operator rather than as a relational predicate.  $\llbracket \ ]$  in (16) is the function that assigns intensions to expressions (functions from times to extensions).

$$(16) d \in \llbracket \text{remain wise} \rrbracket^t \text{ iff for all (relevant) times } t' < t, d \in \llbracket \text{wise} \rrbracket^{t'} \text{ and } d \in \llbracket \text{wise} \rrbracket^t.$$

That is, *remain wise* holds of an object *d* at a time *t* just in case *wise* holds of *d* at all relevant times *t'* prior to *t* as well as at *t* itself.

To semantically analyse a complex predicate such as *believe that S* with a *that*-clause and an attitude verb in a nonrelational way is more difficult. Following a proposal by Russell (1913, 1918), I argued in Moltmann (2003) that an attitude verb expresses not a relation between agents and propositions, but rather specifies, in the presence of a particular *that*-clause, a ‘multiple relation’, relating the agent to the various propositional

elements provided by the *that*-clause. Thus, in the simplest case of (17a), and with simplifications, *believe* specifies a three-place relation among John, the property of being happy, and Mary, so that *believe that Mary is happy* will express the complex predicate in (17b):

- (17) a. John believes that Mary is happy.  
 b.  $d \in \llbracket \textit{believe that Mary is happy} \rrbracket$  iff  
 $R_{\textit{believe, that Mary is happy}}(d, H, \textit{Mary})$ .

Here  $R_{\textit{believe, that Mary is happy}}$  is the attitudinal relation contributed by the occurrence of the verb *believe* in the presence of the clausal complement *that Mary is happy*.

The Russellian account of attitude reports does not really require any novel assumptions concerning the semantics of embedded sentences. If sentences express *structured propositions*, that is, sequences  $\langle X_1, \dots, X_n \rangle$  of meanings of the atomic constituents of the sentence, then the Russellian account simply takes the components of a structured proposition to act as the arguments of a multiple belief relation (together with the relevant agent).<sup>6</sup> See Moltmann (2003) for further details.

Spelling out the syncategorematic meaning of predicative and clausal complements is not only a task in itself, but can also bear on the analysis of nominalizing quantifiers, as we will see later in the case of presentential quantifiers.

## 5. NOMINALIZING QUANTIFIERS: SOME GENERAL FACTS

A crucial feature of nominalizing quantifiers is that they do not display the Substitution Problem, but preserve the acceptability of the sentence or retain the same reading of the verb as when the verb takes a predicative or a clausal complement. If predicative and clausal complements as well as the embedding predicate have a syncategorematic meaning, however, nominalizing quantifiers cannot be ordinary objectual quantifiers. So what is the semantic status of nominalizing quantifiers? Two possible views come to mind:

- [1] nominalizing quantifiers are substitutional,  
 [2] nominalizing quantifiers range over possible meanings of predicates or sentences, with those meanings, however, playing a different role in the overall meaning of the sentence than as arguments of the predicate.

There are serious empirical problems for both views. Let us first consider the substitutional account. If *something* is a substitutional quantifier,



then a sentence *S* containing just that quantifier will be true just in case a substitution instance is true – that is, some sentence *S'* that differs from *S* just in containing in place of *something* a nonquantificational expression, a suitable nonargument as required by the predicate.

One problem for the substitutional analysis is that nominalizing quantifiers can relate to two argument positions simultaneously which require expressions of different syntactic categories. For example in (18a), the object position of *claimed*, on the relevant reading, requires a *that*-clause, but *about* resists *that*-clauses and requires a noun phrase instead. Similarly, in (18b), *says*, on the relevant reading, requires *that*-clauses, but *likes* does not take clausal complements at all, but only NP complements:

- (18) a. John claimed something Mary never thought about.  
 b. John sometimes says something Mary does not like, namely sometimes he says that he hates to work.

In other words (that is, a linguist's words), nominalizing quantifiers do not care about syntactic selectional requirements.

Another problem for the substitutional analysis are certain types of predicates that can act as the restriction of a nominalizing quantifier, for example *interesting* as in (19):

- (19) John claimed something interesting (namely that Bill is a spy).

Substitutional quantifiers in formal languages are never restricted quantifiers (since they don't have a quantification domain on which to impose a restriction). Therefore, if *something* is translated as a substitutional quantifier, *interesting* in (19) has to be taken as constituting an additional conjunct in the scope of the quantifier (rather than as acting as the quantifier restriction). The problem then is the following. The substitutional analysis requires for the truth of (19) an expression that can fill in both the object position of *claimed* and the subject position of *interesting*. However, when *interesting* takes a sentential subject as in (20), it displays a different reading than in (19), namely a factive reading:

- (20) That Bill is a spy is interesting.

(20) presupposes the truth of the proposition that Bill is a spy, whereas (19) does not imply the truth of what John claimed. Thus, nominalizing quantifiers do not trigger the kinds of readings expected on a substitutional analysis.

There are similar problems for the view that nominalizing quantifiers range over possible meanings of predicates or sentences. Nominalizing

quantifiers can relate to two predicates simultaneously that require nonarguments with different kinds of meaning. Consider (21):

- (21) a. John became everything Mary hates.  
 b. John became everything Mary had wished for.

*Become* requires complements expressing properties, whereas *hate* and *wish for* do not take properties as arguments. Thus, nominalizing quantifiers operate at a level that is beyond the meanings required by particular predicates.

We can now turn to the second argument for the nominalizing status of nominalizing quantifiers, namely that nominalizing quantifiers identify different kinds of objects than could possibly be the meanings of predicative or clausal complements.

## 6. PROPREDICATIVE NOMINALIZING QUANTIFIERS

### 6.1. *The Domain of Propredicative Nominalizing Quantifiers*

Let us examine more closely the kinds of restrictions nominalizing quantifiers accept and thus identify the kinds of objects those quantifiers range over.

A good indication of what nominalizing propredicative quantifiers range over are evaluative predicates acting as quantifier restrictions, as in (22):

- (22) a. John is something nice, namely generous.  
 b. John is something that Mary very much admires (namely wise and calm).

Clearly, *nice* in (22a) and *that Mary very much admires* in (22b) are not predicates of properties. What (22a) says is not that the property of being generous is nice, but rather that John's generosity or perhaps generous behavior (that is, 'generosity') is nice. And what Mary admires, according to (22b), is not the property of being wise and calm, but John's wisdom and calm or perhaps generally wisdom and calm.

Things like generosity, wisdom, and calm have often been considered properties. But, as we have just seen, they differ from the kinds of things we call 'properties', namely in what properties they themselves can have. Instead, entities like generosity, wisdom, and calm are more closely related to things like John's generosity, John's wisdom, and John's calm, which are particularized properties or tropes.

Perceptual and epistemic predicates point in the same direction as evaluative ones:

- (23) a. John is something Mary never noticed (namely vain).  
 b. John is something Mary was never aware of (namely intelligent).

What Mary never noticed according to (23a) is not the property of being vain, but rather John's vanity, and what Mary was never aware of according to (23b) is not the property of being intelligent, but rather John's intelligence.

The same observations can be made for causal predicates:

- (24) a. John became something that caused Mary to be very upset (namely lazy and selfish).  
 b. John is something that often makes Mary nervous (namely careless).

What caused Mary to be very upset according to (24a) is, intuitively, not a property, but rather the thing that is John's laziness and selfishness; and what often makes Mary nervous according to (24b) is, intuitively, not a property, but John's carelessness.

One might suggest that what is going on here is simply that the restriction of nominalizing quantifiers has the freedom to take any description as complement that can be obtained from the linguistic context, for example the description *John's laziness and selfishness*. It is clear, however, when looking at a few more cases, that there are severe constraints on what *kinds of objects* those restrictions may take as their arguments. For example, the objects could not be propositions, nor could they be properties. Thus, (25a) cannot describe the situation in which John is lazy and Mary always said that John is lazy, and (25b) cannot describe the situation in which John is nice and Mary has the property of being nice:

- (25) a. # John is something Mary always said.  
 b. # John is something Mary has.

So we can conclude that nominalizing quantifiers can range over only certain kinds of thing: things either of the sort 'John's generosity' or else of the sort 'generosity'.

## 6.2. Tropes

Things of the sort 'John's generosity' have played a role throughout the history of philosophy and have received renewed interest more recently.

John's generosity is the instantiation of a property in an individual, or, to use the now most common term, a *trope* (Williams, 1953). Tropes have played a role in Greek, medieval and early modern philosophy (they include Aristotle's accidents as well as substantial forms, but can also be identified with the 'modes' of Descartes, Spinoza, and Locke). More recently, they have played a role as 'moments' (Husserl), 'qualia' (Goodman), and 'abstract particulars' (Campbell, 1990).<sup>7</sup>

Tropes can be characterized in terms of properties, individuals, and times, with existence and identity conditions as in (26):

- (26) For a property  $P$ , an object  $d$ , and a time  $t$ ,
- [1] the trope that corresponds to  $d$  and  $P$  at  $t$ ,  $f(d, \langle P, t \rangle)$ , exists iff  $P$  holds of  $d$  at  $t$ ,
  - [2] the trope that corresponds to  $d$  and  $P$  at  $t$ ,  $f(d, \langle P, t \rangle)$ , is *identical* to the trope that corresponds to  $d'$ ,  $P'$  and  $t'$ ,  $f(d', \langle P', t' \rangle)$ , iff  $P = P'$ ,  $d = d'$ , and  $t = t'$ .

Let me call the pair  $\langle d, \langle P, t \rangle \rangle$  the *parent proposition* of the trope  $f(d, \langle P, t \rangle)$  (and sometimes, the corresponding sentence, the *parent sentence* of  $f(d, \langle P, t \rangle)$ ).

Tropes can also be based on relations. Thus, for an  $n$ -place relation  $R$ , a time  $t$ , and individuals  $d_1, \dots, d_n$ , there will be a trope  $f(d_1, \dots, d_n, \langle R, t \rangle)$  just in case  $R$  holds among  $d_1, \dots, d_n$  at  $t$ .

If, as in (26), the property constituting a trope is relativized to a time, John's generosity two years ago will not be the same as John's generosity today. There is a way, though, to also talk about John's generosity in general (saying, for example, that it has not diminished over time). In this case, John's generosity is a *kind of trope*, involving abstraction over times (cf. Section 6.4). In what follows, I will disregard times as constituents of tropes, unless they are of particular relevance. I will simply say that from an object  $d$  and a property  $P$  a trope  $f(d, P)$  can be obtained if  $P$  holds of  $d$ .

Tropes can be composed to form collections or sums of tropes. This is at least so given the common linguistic view according to which conjunctions of NPs and definite plurals denote pluralities, collections, or sums of entities (cf. Link, 1983; Moltmann, 1997):

- (27) a. John's wisdom and Mary's intelligence are equally amazing.  
 b. John's qualities are equally amazing.

Given that view, *John's wisdom and Mary's intelligence* in (27a) refers to a group of two tropes, so that (27a) would state that the amount of

amazement triggered by the group members is the same. A sum of tropes would also be what *John's qualities* in (27b) refers to.

Within this account of the semantics of plurals, any set of individuals will need to have a sum, and so will any set of tropes. As the domain of individuals is closed under sum formation  $v$ , forming a structure  $\langle D, v \rangle$ , the domain  $T$  of tropes will be closed under sum formation under the operation  $v_t$  of sum formation among tropes. Thus, if  $t_1$  is John's wisdom and  $t_2$  Mary's intelligence, then  $t_1 v_t t_2$ , the sum of those two tropes, will be the referent of *John's wisdom and Mary's intelligence*.

Sum formation with tropes needs to be distinguished from the formation of complex tropes by means of property conjunction and by means of sum formation among individuals. Thus, John's wisdom and intelligence ( $f(d, P \& P')$ ) is not the same as John's wisdom and John's intelligence ( $f(d, P) v_t f(d, P')$ ). For example, a predicate such as *differ in degree* may be true of John's wisdom and John's intelligence, but is hardly even applicable to John's wisdom and intelligence. Also John's intelligence and Mary's intelligence ( $f(d, P) v_t f(d', P)$ ) differs from the complex trope John and Mary's intelligence ( $f(d v_t d', P)$ ). For example, one can compare or distinguish John's intelligence and Mary's intelligence, but hardly John and Mary's intelligence, and measuring John and Mary's strength is not the same as measuring John's strength and Mary's strength.

Not all nominalizing quantifiers range over tropes, as we will see. However, nominalizing quantifiers, one can say, always range over entities related to or similar to tropes.

### 6.3. *Kinds of Tropes*

There is another reading of the examples (22a) and (22b), one on which the evaluative predicates apply to what one would just call 'generosity', 'wisdom' or 'calm'. That is, what is said to be nice in (22a) is generosity (not just John's generosity) and what Mary is said to admire in (22b) is wisdom and calm (not just John's wisdom and calm).

But what is generosity, as opposed to John's generosity? Clearly, generosity is an entity that can have instantiations: John's generosity or the generosity of that gesture (at a time) are instances of generosity. That is, generosity is a universal. However, generosity, I will argue, is not a property. Instead it is a *kind of trope*, in a certain sense of 'kind'.<sup>8</sup>

Obviously, this sense of kind is not that of a natural kind. Rather, the relevant notion of kind is to be understood in the context of linguistic semantics. The semanticist Carlson (1978) argued that determinerless (or 'bare') mass nouns and plurals such as *water* or *tigers* always stand for kinds, while triggering rather distinctive readings of certain classes of predicates

(see also Chierchia, 1998). Those same readings of predicates can also be observed with explicit kind-referring descriptions of the sort *this kind of animal*. Crucially, they can also be observed with bare mass nouns like *generosity*. It is just that bare mass nouns like *generosity* stand for kinds whose instances are tropes, rather than kinds whose instances are quantities (as in the case of *water*) or kinds whose instances are individuals (as in the case of *tigers*). Three kinds of predicates in particular exhibit specific readings with bare plurals and mass nouns.

First, predicates describing relatively permanent properties ('individual-level predicates', as linguists call them) trigger readings with bare mass nouns and plurals involving some sort of generic quantification over instances:

- (28) a. Gold is expensive.  
 b. This kind of material (gold) is expensive.  
 c. Generosity is nice.  
 d. The property of being generous is nice.

(28a) and (28b) roughly say that usually instances of gold are expensive, and (28c) that usually instances of generosity are nice. By contrast, *nice* in (28d) is said to hold of an abstract object.

The second class of predicates consists of episodic predicates (or 'stage-level predicates', in linguists' terminology), that is, predicates that express properties that are naturally limited to a particular time. Such predicates trigger readings involving existential quantification over instances:

- (29) a. One rarely finds gold.  
 b. One rarely finds generosity.  
 c. One rarely finds this kind of behavior.  
 d. One rarely finds the property of being generous.

In (29a), it is not the kind gold itself that is said to be found rarely, but rather instances of the kind. Similarly, in (29b), what is said to be found is instances of generosity, rather than the kind 'generosity' itself, and so for (29c). By contrast, (29d) is about finding an abstract object.

Third, intensional verbs like *look for* trigger readings involving existential quantification relative to a counterfactual situation:

- (30) a. John is looking for gold.  
 b. John is looking for this kind of material.  
 c. John is looking for sympathy.  
 d. John is looking for the property of sympathy.

In (30a) and (30b), in order for John's search to be satisfied, John just needs to come across one instance of gold (rather than the entire kind gold). Similarly, for John's search to be fulfilled in (30c), John needs to 'have' an instance of sympathy. By contrast, in (30d), John's search is fulfilled only if John somehow has the abstract property of sympathy.<sup>9</sup>

There are also some predicates that can be true only of the kind as a whole. These are predicates measuring the distribution of instances, such as *rare* or *extinct*. Thus, *rare* in (31a) measures the distribution of instances of gold, just as it measures the distribution of instances of generosity in (31b):

- (31) a. Gold/This kind of material (i.e. gold) is rare.  
b. Generosity is rare.

Nominalizing quantifiers replacing predicates, we can now see, range over kinds (of tropes) in just the sense described. Below we see that the three classes of predicates display the same readings as with bare mass nouns and plurals and also that predicates like *rare* are acceptable:

- (32) a. Mary is something that is not often rewarding (namely generous).  
b. Mary is something John never experienced (namely generous).  
c. Mary is exactly what John was looking for (namely highly talented mathematically).  
d. Mary is something that is rare (namely generous).

In (32a), instances of generosity are meant to be rewarding, not of course the property as such. What John never experienced according to (32b) is not some abstract object, but rather an instance of generosity. Finally, in (32c), it is an instance of the kind of the trope 'great mathematical talent' that is to satisfy John's search, namely Mary's talent.

One might think that the different readings of the predicates are based on different interpretations of the kind-referring term (e.g., as a generic or an existential quantifier ranging over instances). However, this cannot be the case. All three predicates (with the relevant readings) as well as predicates like *rare* are available simultaneously, that is, with a single occurrence of a quantifier ranging over kinds:

- (33) John is looking for something that is very expensive, very rare, and impossible to get (namely white gold/that kind of gold).  
(34) shows that this is also the case with nominalizing quantifiers:  
(34) John is something that is very rare, very admirable, hard to find, and often needed, namely an entirely selfless being.

Thus, the different readings of the predicates are not a matter of interpreting kind terms or kind variables differently with different predicates, but rather are a matter of the kind terms or the kinds themselves. But how exactly?

Carlson (1978) argued that generic quantification and existential quantification with individual-level and stage-level predicates is part of the meaning of those predicates when applied to kinds. On Chierchia's (1998) Neocarlsonian account, generic quantification and existential quantification over instances are a matter of interpreting individual-level and stage-level predicates in the presence of a kind variable. Both accounts require a distinction between kind variables and individual variables, which is problematic, because nominalizing quantifiers can range over a joint domain of tropes and kinds of tropes, as in (35):

- (35) John has received nothing, neither gratefulness nor Mary's admiration.

This indicates that the different readings of predicates should be traced to the way properties apply to kinds as opposed to individuals (rather than being triggered by a particular sort of variable). If  $\text{ext}_t(P)$  is the extension of a property  $P$  at a time  $t$ , then the three different kinds of properties will apply to a kind  $k$  in the following way:

- (36) a.  $k \in \text{ext}_t(P)$  iff  $\text{Gn } x(xIk \rightarrow x \in \text{ext}_t(P))$  for any property  $P$  perceived as permanent.  
 b.  $k \in \text{ext}_t(P)$  iff  $\exists x(xIk \ \& \ x \in \text{ext}_t(P))$  for any episodic property  $P$ .  
 c.  $k \in \text{ext}_t(P)$  iff  $\text{int}(k) \in \text{ext}_t(P)$ , for any intensional property  $P$ .

In (36a)  $\text{Gn}$  is a suitable generic quantifier, and in (36c),  $\text{int}(k)$  is the intension of the kind  $k$ , the function mapping a time and a world onto the set of instances of  $k$  at that time and that world.

But why do properties apply in such special ways of kinds? This is, it appears, because kinds are entities that cannot bear genuine properties. If kinds are ascribed a property, then only because that property holds of the instances or, as in the case of instance-distribution predicates, the property actually amounts to a quantifier ranging over instances (or a second-order property holding of the set of instances).

Unlike tropes, which depend on an individual and a property, kinds depend only on a property. Let  $k_f$  be a function that maps a property onto a kind of trope. Then the following condition holds for the instantiation relation at a time  $t$ :  $I_t: xI_t k_f(\text{prop}(W))$  iff  $x \in \text{ext}_t(W)$ . There are of



course also kinds of relational tropes. For example, *awareness* denotes a kind of trope based on a two-place relation ('being aware of'). *Awareness of the problem*, however, denotes a kind of trope based on a property (being aware of the problem, which is of the form  $\lambda x[R(x, d)]$ ), as does *awareness of problems* (which is based on the property of being aware of a kind ('problems'), which is of the form  $\lambda x[R(x, k)]$ ).

There are now two denotations for nominalizations like *wisdom*, one for the noun as it occurs in *John's wisdom* in (37a) and one for the bare mass noun *wisdom* in (37b), where  $f$  is the function mapping properties onto kinds of tropes:

- (37) a.  $\llbracket \text{wisdom}_1 \rrbracket = \{(x, y) \mid x = f(y, \text{prop}(\text{wise}))\}$ .  
 b.  $\llbracket \text{wisdom}_2 \rrbracket = \{x \mid x = k_f(\text{prop}(\text{wise}))\}$ .

Kinds of tropes can also be composed, as in *wealth and generosity are quite different things*. In this example, clearly, composition of kinds of tropes is not based on property conjunction, but is sum formation of kinds of tropes *sui generis*. This contrasts with cases in which the composition of tropes is based on a conjunction of properties, for example in *beauty without intelligence is uninteresting*. Here the property of being beautiful is composed with the negative property of not having intelligence. An instance of the kind of trope that is 'beauty without intelligence' then is an instance of the kind of things that have beauty and lack intelligence.

#### 6.4. *The Compositional Semantics of Propredicative Nominalizing Quantifiers*

Turning now to the formalization of the semantics of nominalizing quantifiers, we see that they have an ordinary quantificational structure: determiner-*thing*-restriction:

- (38) John remained something interesting.

What is special, from a formal point of view, about nominalizing quantifiers is not the determiner or the restriction, but rather the occurrence of the morpheme *-thing* as a bound morpheme, attracting the determiner *some* and enforcing the postnominal occurrence of the restriction *interesting*. It is the morpheme *-thing* that I will assume acts as a *nominalizer*, leading to a new quantification domain for the determiner and its restriction. I will assume that at some level of 'logical form', the verb and *-thing* form unit (in the sense of 'logical' form of generative syntax). From the point of view of contemporary syntactic theory this would be achieved by an operation of so-called head movement (cf. Baker, 1988), by which, roughly,

the morpheme *-thing* would move up to the verb, to form a complex word with it. The denotation of the ‘complex verb’ *remain-thing* will then be a relation between individuals and tropes so that the denotation of *some* and its restriction *interesting* can apply to that relation in the way quantifiers in object position apply to a relation. Thus, we get (39):

(39) John [remained-thing] [some interesting].

A linguist would have to answer the question of why *-thing* should move up to the verb. A plausible answer is this: *-thing* does not have a meaning in itself, but can have a meaning only together with the verb, requiring formal adjacency.

The complex verb *remain-thing* will have two closely related denotations: [1] a two-place relation that holds between an individual  $x$  and a trope  $y$  just in case  $x$  continues to have the property expressed by the predicate  $W$  on which the trope  $y$  is based, as in (40a), [2] a relation that holds between an individual  $x$  and a trope  $y$  just in case  $x$  continues to have the property expressed by the predicate  $W$  on which the kind of trope  $y$  is based, as in (40b):

- (40) a.  $\llbracket \textit{remain-thing}_1 \rrbracket = \{ \langle x, y \rangle \mid \exists W \in \text{Pred(ENGL)}$   
 $(x \in \llbracket \textit{remain } W \rrbracket \ \& \ y = f(x, \text{prop}(W))) \}$ .  
 b.  $\llbracket \textit{remain-thing}_2 \rrbracket = \{ \langle x, y \rangle \mid \exists W \in \text{Pred(ENGL)}$   
 $(x \in \llbracket \textit{remain } W \rrbracket \ \& \ y = k_f(\text{prop}(W))) \}$ .

Here  $\text{Pred(ENGL)}$  is the set of predicative expressions in English (or rather an extension of it, since not all relevant properties may be expressed in English). *Remain*  $W$  denotes the relation spelled out earlier in Section 4.

Next we have to compose the meaning of *remain-thing* with the meaning of *some interesting*. For this purpose, let us first spell out the meaning of *some* and of *some interesting*. In subject position, the determiner *some* denotes a function mapping a set  $X$  to a function that assigns a set  $Y$  1 if  $X$  and  $Y$  have common elements and 0 otherwise, as in (41a). In object position (with narrow scope), *some* (let’s call it there  $\textit{some}_{\text{obj}}$ ) denotes a function from a set to a function from relations to sets, as in (41b):

- (41) a.  $\llbracket \textit{some} \rrbracket(X)(Y) = 1$  iff  $X \cap Y \neq \emptyset$ .  
 b.  $\llbracket \textit{some}_{\text{obj}} \rrbracket(X)(R) = \{ x \mid \llbracket \textit{some} \rrbracket(X)(\{ y \mid \langle x, y \rangle \in R \}) = 1 \}$ .

Proper names such as *John* can also be construed as denoting generalized quantifiers, namely functions mapping a set  $Y$  to 1 if the referent of the proper name is in  $Y$  and to 0 otherwise. Then (42a) (on one reading) will have the truth conditions in (42b):

- (42) a. John remained something interesting.  
 b.  $\llbracket \text{John} \rrbracket (\llbracket \text{some} \rrbracket (\llbracket \text{interesting} \rrbracket)) (\llbracket \text{remain-thing}_1 \rrbracket)) = 1$   
 iff  $\exists x \exists W \in \text{Pred}(\text{ENGL})(x = f(\text{John}, \text{prop}(W)) \&$   
 $\text{John} \in \llbracket \text{remain } W \rrbracket \& x \in \llbracket \text{interesting} \rrbracket).$

In certain contexts, such as (43), nominalizing quantifiers have a double nominalizing function:

- (43) John is something that Mary is too (namely impatient).

In (43), *something* acts as a nominalizing quantifier with respect to the main sentence as well as with respect to the embedded sentence, leading to a logical form of the sort: ‘for some  $x$ , John is-thing  $x$  and Mary is-thing  $x$ ’. Such a logical form still needs to be justified linguistically, a task which is beyond the scope of this paper.<sup>10</sup>

There are also nominalizers for particular kinds of tropes, such as *color*, *size* and *shape*. Thus in (44), *some color* replaces a predicate without leading to the Substitution Problem:

- (44) The house is some nice color.

The noun *color* itself is a predicate of kinds of tropes (since colors are kinds of tropes). *Color* in (45) thus acts as a nominalizer as well as a predicate of the entities that are derived (kinds of tropes). It will have the following syncategorematic meaning:

- (45)  $\llbracket \text{is color} \rrbracket = \{ \langle x, y \rangle \mid \exists W \in \text{Pred}(\text{ENGL})(x \in \llbracket \text{is } W \rrbracket \&$   
 $y = k_f(\text{prop}(W)) \& x \in \llbracket \text{color} \rrbracket) \}.$

Given (45), (44) states that there is a trope that is nice and a color and is composed of the house as well as the content of some color predicate.<sup>11, 12</sup>

## 7. PROSENTENTIAL NOMINALIZING QUANTIFIERS

Nominalizing quantifiers when they replace clausal complements display almost analogous phenomenon as when they replace predicative complements. In what follows, I will give only the roughest outline of the relevant facts and the corresponding analysis. For an extensive discussion, the reader is referred to Moltmann (2003).

Nominalizing quantifiers replacing sentences range, it appears, over objects of the sort of John’s belief that  $S$  or else the belief that  $S$ .

Again, one piece of evidence for this is the restrictions such quantifiers can take. Evaluative and emotive predicates clearly show that *something* when replacing a *that*-clause cannot range over possible meanings of *that*-clauses, that is, propositions. This is seen in the following contrasts:

- (46) a. John said something nice, namely that progress has been made.  
 b. ?? The proposition that progress has been made is nice.  
 c. John's saying/claim that progress has been made is nice.
- (47) a. John said something that shocked Mary, namely that he does not love her.  
 b. ?? The proposition that he does not love her shocked Mary.  
 c. John's saying/claim that he does not love her shocked Mary.
- (48) a. John promised something that delighted Mary, namely that he will take her to Hawaii.  
 b. ?? The proposition that he will take her to Hawaii delighted Mary.  
 c. The promise that he will take her to Hawaii delighted Mary.

What is said to be nice according to (46a) is not the proposition that progress has been made as in (46b), but rather John's saying so, or John's claim (as in 46c). Similarly, the cause of Mary's shock in (47a) and of Mary's delight in (48a) is not a proposition (as in (47b), (48b)), but rather a claim and a promise (as in (47c), (48c)).

Thus, evaluative restrictions of prosentential quantifiers do not apply to propositions, but rather to the kinds of things that nominalizations like *John's claim that S* or *John's promise that S* refer to. These objects differ from propositions in that they include the specific contribution of the attitude verb – let's call it the *attitudinal mode*. At the same time, they share semantic properties with the corresponding proposition (truth or falsity and aboutness relations), as can be seen from the possibility of content- and truth-related predicates with both nominalizations and prosentential nominalizing quantifiers:

- (49) a. John's claim was about Mary/was true.  
 b. John said something that was not about Mary/that was true.

The traditional view about nominalizations like *John's claim* is that they either refer to propositions (the content of John's claim) or events (John's claiming) (see, for example, Strawson, 1950). However, the contrasts between (46b) and (46c), and between (47b) and (47c) show that nominalizations like *John's claim* cannot refer to propositions. The possibility of combining truth-related predicates (which can't apply to events)

and attitudinal-mode-related predicates (*John said something nice that was true*) shows that such nominalizations cannot stand for events.

Free relative clause constructions of the sort in (50) give additional evidence as to what nominalizing quantifiers range over when they replace sentences:

(50) Mary believes what John believes, namely that it will rain.

Let us call the kind of object that *what John believes* stands for in (50) the *propositional object* of John's attitude. Then it appears that in general – at least for a significant number of speakers – different propositional attitudes cannot share their propositional object:

- (51) a. # Mary promised what John believes, namely that he will return.  
 b. # Mary promised something that John believes, namely that he will return.
- (52) a. ?? Mary hopes what John believes, namely that Sue will return.  
 b. ?? John wrote what Mary claimed, namely that he lost the game.  
 c. ?? John whispered what Mary happens to believe, namely that Sue is a genius.
- (53) a. # Mary observed what John knows, namely that Bill cannot walk.  
 b. # John promised what Mary expects, namely that he will return in time.  
 c. ?? John saw what Mary heard, namely that the door was being opened.

Only if the propositional attitudes are more or less the same, except for the degree of the strength of the attitude, can they share their propositional object (for the relevant speakers):

- (54) a. John sometimes tended to believe what Mary is now convinced of, namely that Bill is a spy.  
 b. John has often suggested what Mary now claims, namely that Bill is a spy.  
 c. John demanded what Mary was going to request, namely that the door be opened.

What this indicates is that the propositional object referred to, for example, by *what John believes* is not a proposition but rather an object of the sort of John's belief that S, or better the belief that S. In sentences such as those in (54), it is of the sort 'the (weaker or stronger) belief that S'. That is, the objects said to be shared include the particular attitudinal mode of the two verbs, without though necessarily including a specification of strength.

As expected, ordinary nominalizations show the same possibilities of identifying propositional objects:

- (55) a. # John's promise is Mary's belief.  
       b. # John's promise is Mary's expectation.
- (56) a. John's belief was also Mary's belief.  
       b. Mary's suggestion was in fact John's claim.  
       c. Mary's request was in fact John's demand.

Thus, what prosentential nominalizing quantifiers stand for are either things of the sort 'John's belief that S' or of the sort 'the belief that S', just the kinds of things the relevant nominalizations refer to.<sup>13</sup>

If John's belief that S is a propositional object, then, the belief that S is a *kind of propositional object*: it is a kind whose instances are, for example, John's belief that S or Mary's belief that S. It is such kinds of propositional objects that are said to be shared in (51)–(53).<sup>14</sup> That things like 'the belief that S' are kinds of propositional objects is confirmed by the readings that relevant predicates display. Thus, in (57a), we have an episodic and an instance-distribution predicate and in (57b) an episodic and an evaluative predicate, displaying the familiar kinds of readings:

- (57) a. John never had to deal with the belief that S, even though it is quite widespread.  
       b. I have never encountered the claim that S, even though it is not that implausible.

For defining propositional objects, good use can be made of the Russellian semantics of attitude verbs – in fact the kinds of entities that nominalizing prosentential quantifiers range over provide a very good linguistic argument for the Russellian account (Russell, 1913, 1918). If the content of attitude verbs consists in relations relating propositional elements and an agent to each other, then propositional objects will be instantiations of an attitudinal relation by a structured proposition and an agent. Kinds of propositional objects will, more simply, be instantiations of attitudinal relations in structured propositions.

Let us say that propositional objects (or kinds of them) are obtained by a function  $g$  from an  $(n + 1)$ -place relation, a structured proposition with  $n$  elements, and an agent (or the kind agents), subject to the following existence and identity conditions:

- (58) For an  $(n + 2)$ -place attitudinal relation  $R$ , a structured proposition  $\langle R', X_1, \dots, X_n \rangle$ , an agent  $a$ , and a time  $t$ ,

- [1] the propositional object that corresponds to  $R, \langle R', X_1, \dots, X_n \rangle$ , and  $a, g(\langle R', X_1, \dots, X_n \rangle, a, \langle R, t \rangle)$  exists iff  $\langle R', X_1, \dots, X_n, a \rangle \in \text{ext}_t(R)$ ,
- [2] the propositional object that corresponds to  $R, \langle R', X_1, \dots, X_n \rangle$ ,  $a$ , and  $t, g(\langle R', X_1, \dots, X_n \rangle, a, \langle R, t \rangle)$  is identical to the propositional object constituted by an  $(n+2)$ -place attitudinal relation  $R_1$ , a structured proposition  $\langle R'', X'_1, \dots, X'_n \rangle$ , an agent  $a'$ , and a time  $t'$ ,  $g(\langle R'', X'_1, \dots, X'_n \rangle, a', \langle R_1, t' \rangle)$ , iff  $R = R_1, \langle R', X_1, \dots, X_n \rangle = \langle R'', X'_1, \dots, X'_n \rangle$ , and  $a = a'$ .

But propositional objects are not relational tropes. This is because tropes do not inherit properties from their base, whereas propositional objects do. More precisely, propositional objects inherit the semantic properties (truth conditions and aboutness conditions) from the structured proposition they are based on:

- (59) A propositional object that corresponds to a structured proposition  $p$ , an agent  $a$ , and an attitudinal relation  $R(g(p, a, R))$  has a semantic property  $P$  iff  $p$  has  $P$ .

Moreover, propositional objects will have only those evaluative properties that are based on the attribution of the attitudinal relation to the structured proposition and the agent.

The fact that propositional objects inherit properties from the propositions on which they are based makes them *relational qua objects*, rather than relational tropes, in the sense of Fine's (1982) notion of a qua object. Only qua objects, not tropes, inherit descriptive properties from the objects they are based on. Thus, even though qua objects and tropes may be based on the same parent proposition, they will be distinct as objects, namely because they are associated with different conditions on what properties they will have given the parent proposition.<sup>15</sup>

Formally, the nominalizer *thing* when replacing a clausal complement of an attitude verb will have a syncategorematic meaning in conjunction with the verb. But as in the case of predicative complements, two syncategorematic meanings need to be distinguished, one leading to propositional objects, as in (60a), and another leading to kinds of propositional objects, as in (60b), where  $k_g$  is the function mapping a structured proposition and an attitudinal relation to a kind of propositional object.  $\text{prop}(S)$  is the structured proposition expressed by the sentence  $S$ ,  $R_{V,S}$  is the attitudinal relation determined by the verb  $V$  in the context of the embedded sentence  $S$  and the syncategorematic meaning of  $V$  that  $S$  is as given earlier in Section 4:

- (60) a.  $\llbracket V\text{-}thing1 \rrbracket = \{(x, y) \mid \exists S \in \text{Sent}(\text{Engl}) (y = g(\text{prop}(S), x, R_{V,S}) \& x \in \llbracket V\text{ that } S \rrbracket)\}$ .  
 b.  $\llbracket V\text{-}thing2 \rrbracket = \{(x, y) \mid \exists S \in \text{Sent}(\text{Engl}) (y = k_g(\lambda x[\langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{V,S})]) \& x \in \llbracket V\text{ that } S \rrbracket)\}$ .

In (60b),  $p_n(\text{prop}(S))$  is the  $i$ th constituent of the structured proposition  $\text{prop}(S)$ . (60) again involves quantification over expressions of English, English sentences ( $\text{Sent}(\text{Engl})$ ), again to be understood as including sentences of an extension of English.

(61a) can now be given the truth conditions in (61b) (on the propositional-object reading, not the kind of propositional-object reading):

- (61) a. John said something nice.  
 b.  $\llbracket John \rrbracket(\llbracket some \rrbracket(\llbracket nice \rrbracket(\text{said-}thing))) = 1$  iff  $\exists y(y \in \llbracket nice \rrbracket \& \exists S \in \text{Sent}(\text{Engl}) (y = g(\text{prop}(S), \text{John}, R_{\text{say},S}) \& \text{John} \in \llbracket \text{said that } S \rrbracket))$

That is, *John said something nice* is true just in case there is something  $x$  that is nice and obtained by the function  $g$  from the proposition expressed by some English sentence  $S$ , John, and the appropriate saying relation, and John has the property expressed by *said that S*.

## 8. PROADVERBIAL NOMINALIZING QUANTIFIERS

Predicative and clausal complements are not the only nonarguments. Even more obviously, adverbials do not have the function of providing an argument for a verb. Adverbials can also be replaced by nominalizing quantifiers or other nominalizing expressions, though of a different sort. Quantifiers, descriptions, or demonstratives that can replace adverbials are those formed with the morpheme *-way*:

- (62) a. John behaved the same way Mary behaved, namely awkwardly.  
 b. John works efficiently. Mary works that way too.  
 c. Mary reads books in a strange way, namely backwards.

Clearly, adverbials do not stand for entities of some sort that noun phrases with *-way* could refer to.

Again, then, one might think that *-way* is some sort of substitutional device. But there are the same arguments against a substitutional analysis of *way*-expressions as we have seen in the case of pro-predicative and pro-sentential nominalizing quantifiers. Thus, (63) shows that *way* can relate to two argument positions with different syntactic and semantic selectional requirements:



- (63) a. John works in a way Mary has never noticed (namely efficiently).  
 b. Mary never noticed the way John works (namely efficiently).

What Mary has never noticed according to (63a) and (63b) is not what the adverb *efficiently* could possibly express (a property or function), but rather ‘the efficiency of John’s work’.

That *way* is not a substitutional device is clear also from the fact that noun phrases like *the way John behaves* or *the way Mary works* (where *way* relates to an adverbial position) can act as arguments of predicates, as in (64), which of course would not be possible if those noun phrases were to be replaced by an adverbial:

- (64) a. The way John behaves isn’t any better than the way Mary behaves.  
 b. The way Mary works is admirable.

*Better* in (64a) compares entities that are modes of behavior, but these are not entities that could possibly be denoted by adverbials like *badly* (as a complement of *behaves*). Moreover, what is admirable according to (64b) is the efficiency of Mary’s work, not anything that could be expressed by the adverbial *efficiently* alone.

In (63), the *way*-expressions stand for things of the sort ‘the efficiency of John’s work’, which obviously are *tropes of events*. In cases like (62a) and (62b), *way*-expressions do not stand for tropes of events, however. In (62b), for example, Mary could not possibly be said to share John’s efficiency of work. Rather, *that way* here stands for the more general entity ‘the efficiency of work’, which is a trope of a kind of event, the kind ‘work’, whose instances are John’s work or Mary’s work.

Before formalizing the semantics of *-way* expressions, a few words are necessary concerning the notion of an event. I will take events to be derived objects, individuated on the basis of individuals, properties, and times (cf. Kim, 1969; Bennett, 1988; Lombard, 1986, 1998), rather than adopting the Davidsonian approach on which events are considered primitives (individuated in terms of causes and effects or space and time) (Davidson, 1980a, b). The first view goes along with the semantic assumption according to which events are introduced into the semantic structure of a sentence generally only on the basis of a nominalization (cf. Chierchia, 1984; Moltmann, 2002).

Within the second approach to events, adverbial modifiers are best considered not predicates of events (acting as additional arguments of the verb), but rather predicate modifiers, mapping a property onto another property (cf. Bennett, 1988). Thus, if *walk* is a predicate specifying an agent’s bodily positions at particular times, then *walk slowly* is a predicate

specifying not only the bodily positions of an agent at certain times, but also that those times have a certain distance to each other.

When events are considered entities entirely dependent on individuals, times, and properties, then they can be conceived as tropes constituted by a dynamic property, i.e. a conjunctive property such as being  $P$  at  $t$  and being  $P'$  at  $t'$ , for successive times  $t$  and  $t'$  and contrary properties  $P$  and  $P'$  at least so for simple events. Not every verb expresses a dynamic property of the sort that would constitute a simple event, though. In fact, few do. Most verbs express a property that holds of an agent in virtue of various dynamic properties holding of that agent. For example, *disturb* expresses the relation that holds between an agent  $a$  and an object  $d$  in virtue of some act on  $a$ 's part (involving various dynamic properties) causing some sort of irritation in  $d$ . That is, if an event  $e$  is obtained from an agent  $a$ , an object  $d$ , the content of the predicate *disturb*, and some time  $t$ , this is because  $e$  is ultimately constituted by various dynamic properties holding of  $a$  or  $d$  during  $t$  that are not specifically determined by the verb *disturb*. Formally, though, the event can still be considered the value of a function  $f$  applied to some agent, the property expressed by the verb, and a time. Thus,  $f(a, d, \langle \text{prop}(\textit{disturb}), t \rangle)$  will be the event (whatever it may consist in) that is a disturbance by  $a$  of  $d$  at  $t$ . See Moltmann (2002) for further discussion.<sup>16</sup>

If adverbials are predicate modifiers, then there are in fact two ways of deriving an entity from the sentence *John works efficiently*. One may either derive the event trope 'the efficiency of John's work', a second-order or hierarchical trope, or else the trope 'John's work efficiency', a complex trope based on the modified property expressed by *work efficiently*. Again, this is a case of two distinct entities having the same existence conditions and being based on the same parent proposition. But the two entities have different properties because they are composed differently. The efficiency of John's work can be compared to the efficiency of Bill's cleaning; but John's work efficiency can't be compared in the same way to Bill's cleaning efficiency. The former is what is involved in the semantics of *way*-expressions. For example, one can say, that the way John works is similar to the way Bill cleans. Thus, *way*-quantifiers involve the derivation of second-order tropes rather than complex modifier tropes.<sup>17</sup>

*Way* can then be analysed as a nominalizer that together with an intransitive verb will be evaluated as a relation between individuals and tropes of events. The complex verb *work-way*, for example, will have the following denotation:

$$(65) \llbracket \textit{work-way} \rrbracket^t = \{ \langle x, y \rangle \mid \exists W \in \text{Adv}(\text{ENGL}) (y = f(f(x, \langle \text{prop}(\textit{work}), t \rangle), \langle \text{prop}(W), t \rangle)) \ \& \ x \in \llbracket \textit{work}W \rrbracket^t \}.$$

That is, *work-way* denotes, at a time *t*, the relation between an individual *x* and a trope *y* constituted by the event of *x*'s work at *t* and an event property obtained from some adverb *W*.

*Way* may also lead to kinds of tropes of events, namely in cases like (62a) and (62b). In that case, the event would depend only on a property and a time.

A more complex analysis is required for (62a). Here *way*, like *-thing* in (43), has a double nominalizing function, requiring an analysis roughly of the sort 'For some *x*, John behaved-way *x* & *x* = the *y* such that Mary behaved-way *y*'. Such a double function of *way* is also involved in adverbials like *in that way* as in (62b), where *that way* acts as a demonstrative of a trope of a kind of event and at the same time as a nominalizer with respect to the main verb.<sup>18</sup>

## 9. CONCLUSIONS

Nominalizing quantifiers are formed from a limited number of nouns (such as *thing*, *way*, and *color*) that induce new domains of quantification. The resulting domains involve an ontology of tropes, kinds of tropes, and related objects – precisely the kinds of objects nominalizing quantifiers share with ordinary nominalizations.

The failure to recognize the nominalizing status of such quantifiers has given rise to a number of philosophical views that now appear to have been misguided by a naive analysis of a limited amount of linguistic facts. For example, the possibility of replacing predicates by *something* cannot be used as an argument for an ontology of properties anymore, and the possibility of replacing a *that*-clause by *something* does not provide a good an argument for the Relational Analysis of attitude reports.

A particular ontology has emerged from the analysis of nominalizing quantifiers, an ontology where 'pure contents', properties and propositions, hardly play any role (except of course for the semantics of the nouns *property* and *proposition*). Rather it is more concrete objects, tropes, qua objects, and events, which are central, as well as kinds of such objects. There is an obvious sense in which tropes, qua object, and events are to be taken as ontologically prior to kinds of tropes and qua objects, and that is because kinds are generally attributed properties on the basis of generalizations concerning their instances.

The view also emerged that ontology and semantic structure go together in the sense that generally objects that have a derived status ontologically also have a derived status semantically and vice versa.

Nominalizing quantifiers thus appear to be a case where a more detailed linguistic analysis sheds a significant light on a number of philosophical issues.

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#### APPENDIX

This appendix gives a formal semantic analysis for a fragment of English or rather a modified form of a fragment of English, involving nominalizing expressions. I will call this fragment 'NOM'. In NOM, nominalizing quantifiers occur only in the object position of copula verbs and attitude verbs. NOM does not allow for different scope relations for quantifiers in subject and object position and allows only for conjunctions of full sentences and noun phrases. For that reason it will not contain variables.

NOM is somewhat artificial in that it contains sentences of the form *John [remained-thing] some e interesting*, where *remained-thing* counts as a complex verb and *some e interesting* is a quantified noun phrase with an empty noun *e* as head. NOM also contains several artificial morphemes:  $\text{nom}_{a1}$  for nominalizations of adjectives standing for tropes,  $\text{nom}_{a2}$  for nominalizations of adjectives standing for kinds of tropes,  $\text{nom}_{adv1}$  and  $\text{nom}_{adv2}$  for nominalizations of adverbs, leading to tropes of events and kinds of tropes of events respectively, and finally  $\text{nom}_{v1}$  for nominalizations of verbs standing for relational qua objects, and  $\text{nom}_{v2}$  for those standing for kinds of relational qua objects. Thus,  $\text{wisenom}_{a1}$  and  $\text{wisenom}_{a2}$  correspond to *wisdom*,  $\text{efficientnom}_{adv1}$  and  $\text{efficientnom}_{adv2}$  to *efficiency*, and  $\text{believenom}_{v1}$  and  $\text{believenom}_{v2}$  to *belief*. Both the expression  $\text{believenom}_{v1}$  that *S* and the expression  $\text{believenom}_{v1}$  will have a syncategorematic meaning. The former will lead to the denotation of *John's belief that S*; the latter to the denotation of, for example, *some belief*. Similarly for the morpheme  $\text{nom}_{v2}$ .

The semantics will be a direct semantics, assigning semantic values directly to sentences of NOM. Models will contain a domain **E** of objects that includes kinds, tropes, and qua objects, as well as a separate domain **P** of properties, relations, and propositions. I will assume that sentences are interpreted as structured propositions of a simple sort: as *n*-tuples containing an (*n* – 1)-place relation from **P** and *n* objects  $d_1, \dots, d_n$  from **E**.

[1] Syntax:

(1) the set of lexical expressions Lex(NOM) of NOM is the union of the following sets:

- the set of copula verbs:  $\{be, remain\}$
- the set of attitude verbs:  $\{believe, claim\}$
- the set of intransitive verbs IV(NOM):  $\{work, fall\}$
- the set of nouns:  $\{man, e, entity\}$
- the set of proper names:  $\{John, Mary\}$
- the set of adjectives:  $\{slow, efficient, wise, interesting\}$
- the set of adverbs Adv(NOM):  $\{slowly, efficiently, wisely\}$
- the set of determiners for subject positions:  $\{some, the, the_{gen}, \emptyset_{gen}\}$
- the set of determiners for object positions:  $\{some_{obj}\}$

(2) the set of syncategorematic expressions SYNC(NOM) consists of the following elements:

- connectives: *and*
- nominalizers for propredicative quantifiers:  $thing_{a1}, thing_{a2}$
- nominalizers for prosentential quantifiers:  $thing_{v1}, thing_{v2}$
- nominalizers for proadverbial quantifiers:  $way_{adv1}, way_{adv2}$
- nominalizers for adjectives:  $nom_{a1}, nom_{a2}$
- nominalizers for adverbs:  $nom_{adv1}, nom_{adv2}$
- nominalizers for attitude verbs:  $nom_{v1}, nom_{v2}$

syntactic formation rules:

- (1) If  $X$  is an adjective and  $Y$  a noun or an  $N'$ , then  $XY$  is an  $N'$ .
- (2) If  $X$  is a determiner and  $Y$  a noun or an  $N'$ , then  $XY$  is an NP.
- (3) If  $X$  is a proper name, then  $X$  is an NP.
- (4) If  $X$  is an adjective, then  $X$  is a predicate ( $X \in \text{Pred}(\text{NOM})$ );  
if  $X$  is a noun, then  $a X$  is a predicate ( $a X \in \text{Pred}(\text{NOM})$ ).
- (5) If  $X$  is a copula verb and  $Y$  a predicate, then  $XY$  is a VP.
- (6) If  $X$  is an attitude verb and  $S$  a sentence, then  $X \text{ that } S$  is a VP.
- (7) If  $X$  is an adverb and  $V$  a verb, then  $V X$  is a VP.
- (8) If  $X$  is an NP and  $Y$  a VP, then  $XY$  is a sentence ( $XY \in \text{Sent}(\text{NOM})$ ).
- (9) If  $X$  is an attitude verb and  $S$  a sentence, then  $Xnom_{v1} \text{ that } S$  and  $Xnom_{v2} \text{ that } S$  are  $N'$ s.
- (10) If  $X$  is an adjective, then  $Xnom_{a1}$  and  $Xnom_{a2}$  are nouns.
- (10) If  $X$  is an adverb, then  $Xnom_{adv1}$  and  $Xnom_{adv2}$  are nouns.
- (11) If  $X$  is an attitude verb, then  $Xnom_{v1}$  and  $Xnom_{v2}$  are nouns.

syntactic well-formedness conditions:

- (1) A VP of the form  $V\text{-thing } NA$  is well-formed only if  $N = e$ .
- (2) A noun phrase of the form  $DN \text{ that } S$  is well-formed only if  $D = the$ .

- (3) A sentence of the form  $DN' VP$  is well-formed only if  $D \neq D_{\text{obj}}$ .  
 (4) A verb phrase of the form  $VDN'$  is well-formed only if  $D = D_{\text{obj}}$ .  
 (5) A noun phrase  $[D \text{ Anom}_{a2}]$  for some adjective  $A$  is well-formed only if  $D = \emptyset_{\text{gen}}$ .

[2] semantics for NOM

A model for NOM will first of all contain a domain  $\mathbf{E}$  of objects. This set will include as subsets the set  $\mathbf{D}$  of individuals, the set  $\mathbf{T}$  of tropes, the set  $\mathbf{Q}$  of qua-objects, the set  $\mathbf{K}_{\mathbf{D}}$  kinds of particulars, the set  $\mathbf{K}_{\mathbf{T}}$  of kinds of tropes, and the set  $\mathbf{K}_{\mathbf{Q}}$  of kinds of qua objects. A model will include another set, disjoint from  $\mathbf{E}$ , the set  $\mathbf{P}$  of properties and relations, which is closed under conjunction  $\&$ .  $\mathbf{P}$  contains entities that can be assigned by a function  $\text{prop}$  to the predicates, verbs, and adverbs of NOM. The entities in  $\mathbf{P}$  are used for the identification of objects in  $\mathbf{E}$  and in the compositional semantics of expressions, but they will never act as referents of names or be in the domain of quantifiers. A model for NOM also includes a set of time intervals  $\mathbf{I}$ , ordered by a precedence relation  $<$ .

An element  $R$  of  $\mathbf{P}$  has relative to a time  $t$  an extension  $\text{ext}_t(X)$ , which will be the same as the extension of any expression  $X$  assigned to  $R$  by the function  $\text{prop}$ , that is,  $\text{ext}_t(R) = \llbracket X \rrbracket^t$ .  $\text{prop}$  will moreover assign sentences structured propositions, that is, sequences of an  $n$ -place relation from  $\mathbf{P}$  and  $n$  elements from  $\mathbf{E}$ . For the semantics of plurals and conjunction, a model for NOM will also involve operations for forming collections or sums with the various kinds of entities in  $\mathbf{E}$ . Thus, there will be a mereology for individuals  $(\mathbf{D}, \nu)$ , for tropes  $(\mathbf{T}, <_t)$ , for qua-objects  $(\mathbf{Q}, \nu_q)$ , for kinds of individuals  $(\mathbf{K}, \nu_k)$ , for kinds of tropes  $(\mathbf{K}_{\mathbf{T}}, \nu_{kt})$ , and for kinds of qua-objects  $(\mathbf{K}_{\mathbf{Q}}, \nu_{kq})$ . There also will be partial functions  $f$  and  $g$  mapping sequences of entities from  $\mathbf{E}$  and a pair consisting of a property or relation from  $\mathbf{P}$  and a time  $t$  from  $\mathbf{I}$  onto objects in  $\mathbf{T}$  and  $\mathbf{Q}$  respectively. Finally, there will be functions  $k_f$  and  $k_g$  mapping properties onto elements of  $\mathbf{K}_{\mathbf{T}}$  and  $\mathbf{K}_{\mathbf{Q}}$ , respectively.

Thus, a model for NOM is a sixteen-tuple  $\langle \mathbf{E}, (\mathbf{D}, \nu), (\mathbf{T}, \nu_t), (\mathbf{Q}, \nu_q), (\mathbf{K}, \nu_k), (\mathbf{K}_{\mathbf{T}}, \nu_{kt}), (\mathbf{K}_{\mathbf{Q}}, \nu_{kq}), (\mathbf{P}, \&), (\mathbf{I}, <), f, g, k_f, k_g, \text{prop}, \text{ext}, F \rangle$  such that the following holds:

- (1)  $F$  is a function whose domain, relative to a time  $t$ , is  $\text{LEX}(\text{NOM})$  such that

$$\begin{aligned} F_t(X) &\in \{E' \mid d \in E' \ \& \ E' \subseteq \mathbf{E}\} \text{ for some } d \in E, \text{ for proper names } X. \\ F_t(X) &\subseteq \mathbf{E} \text{ for simple nouns } X, \\ F_t(X) &\subseteq \mathbf{E} \text{ for predicates } X, \\ F_t(X) &\in \{1, 0\}^{\mathcal{P}(\mathbf{E})} \text{ for any determiner for subject positions } X, \\ F_t(X) &\in (\mathcal{P}(\mathbf{E}))^{\mathcal{P}(\mathbf{E} \times \mathbf{E})} \text{ for any determiner for object positions } X. \end{aligned}$$

- (2)  $\mathbf{D} \subseteq \mathbf{E}$ ,  $\mathbf{T} \subseteq \mathbf{E}$ ,  $\mathbf{Q} \subseteq \mathbf{E}$ ,  $\mathbf{K} \subseteq \mathbf{E}$ ,  $\mathbf{K}_{\mathbf{T}} \subseteq \mathbf{E}$ ,  $\mathbf{K}_{\mathbf{Q}} \subseteq \mathbf{E}$ .

- (3)  $\text{prop}$  is a function from the set of predicates, adverbs, and sentences to

$$\mathbf{P} \cup \bigcup_{n \in \mathbb{N}} (\mathbf{P} \times \mathbf{E}^n) \text{ such that:}$$

for a predicate or adverb  $X$ ,  $\text{prop}(X) \in \mathbf{P}$  and

for a sentence  $S$ ,  $\text{prop}(S) = \langle R, d_1, \dots, d_n \rangle$  for some  $n$ -place relation  $R \in \mathbf{P}$  and some  $d_1, \dots, d_n \in \mathbf{E}$ .

- (4) For some  $t \in \mathbf{I}$ ,  $\text{ext}_t$  is a function from  $\mathbf{P}$  to  $\bigcup_{n \in \mathbb{N}} \mathcal{P}(E^n) \cup \{0, 1\}$  such that:
- (i) for any predicate  $X$  and  $t \in \mathbf{I}$ ,  $\text{ext}_t(\text{prop}(X)) = F_t(X)$ ,
  - (ii) for any adverb  $A$  and any  $d \in \mathbf{E}$  and  $t \in \mathbf{I}$ ,  $d \in \text{ext}_t(\text{prop}(A))$  iff  $d = f(d', \langle \text{prop}(VA), t \rangle)$  for some  $d' \in \mathbf{E}$  and verb  $V$ .
- (5)  $f$  is a partial function from  $\bigcup_{n \in \mathbb{N}} \mathbf{E}^n \times (\mathbf{P} \times \mathbf{I})$  to  $\mathbf{T}$  such that
- (i)  $f(d_1, \dots, d_n, \langle R, t \rangle)$  is defined iff  $R$  is  $n$ -place and  $\langle d_1, \dots, d_n \rangle \in \text{ext}_t(R)$ ,
  - (ii)  $f$  is 1-1.
- (6)  $g$  is a function from  $(\mathbf{P} \times \bigcup_{n \in \mathbb{N}} \mathbf{E}^n) \times \mathbf{E} \times (\mathbf{P} \times \mathbf{I})$  to  $\mathbf{G}$  such that:
- (i)  $g(\langle R, d_1, \dots, d_n \rangle, a, \langle R', t \rangle)$  is defined iff  $R'$  is  $(n+2)$ -place and  $\langle R, d_1, \dots, d_n, a \rangle \in \text{ext}_t(R')$  ( $R, d_1, \dots, d_n, a = 1$ ),
  - (ii)  $g$  is 1-1.
- (7)  $k$  is a partial function from  $\mathbf{P}$  to  $\mathbf{K}$  such that:
- (i) for an  $n$ -place relation  $R \in \mathbf{P}$ ,  $k(R)$  is defined iff  $\text{ext}_t(R)(d_1, \dots, d_n) = 1$  for some objects  $d_1, \dots, d_n \in \mathbf{E}$  and some time  $t \in \mathbf{I}$ ,
  - (ii)  $k$  is 1-1.
- (8)  $k_t$  is a partial function from  $\mathbf{P}$  to  $\mathbf{K}_t$  such that:
- (i) for any  $n$ -place relation  $R \in \mathbf{P}$ ,  $k_t(R)$  is defined iff  $\langle d_1, \dots, d_n \rangle \in \text{ext}_t(R)$  for objects  $d_1, \dots, d_n \in \mathbf{E}$  and a time  $t \in \mathbf{I}$ ,
  - (ii)  $k_t$  is 1-1.
- (9)  $k_q$  is a partial function from  $\mathbf{P}$  to  $\mathbf{K}_q$  such that:
- (i) for any  $n$ -place relation  $R \in \mathbf{P}$ ,  $k_q(R)$  is defined iff  $\langle d_1, \dots, d_n \rangle \in \text{ext}_t(R)$  for objects  $d_1, \dots, d_n \in \mathbf{E}$  and a time  $t \in \mathbf{I}$ ,
  - (ii)  $k_q$  is 1-1.

The semantic valuation function  $\llbracket \ ]$  can now be defined as follows:

(1) *lexical expressions*

$$\begin{aligned} \llbracket X \rrbracket^{M,t} &= F_t(X), \\ \llbracket e \rrbracket^{M,t} &= \mathbf{E}. \end{aligned}$$

(1) *determiners*:

$$\begin{aligned} &\text{for any } A, B \subseteq \mathbf{E} \text{ and } R \subseteq \mathbf{E} \times \mathbf{E}, \\ \llbracket the \rrbracket^{M,t}(A)(B) &= \llbracket \emptyset_{\text{gen}} \rrbracket^{M,t}(A)(B) = 1 \text{ iff } |A \cap B| = 1, \end{aligned}$$

$$\begin{aligned} \llbracket \text{some} \rrbracket^{M,t}(A)(B) &= 1 \text{ iff } |A \cap B| \neq \emptyset, \\ \llbracket \text{some}_{\text{obj}} \rrbracket^{M,t}(A)(R) &= \{x \mid \llbracket \text{some} \rrbracket^{M,t}(A)(\{y \mid \langle x, y \rangle \in R\}) = 1\}. \end{aligned}$$

(2) *complex predicates:*

$$\begin{aligned} \text{for a predicate } W, \llbracket \text{is } X \rrbracket^{M,t} &= \llbracket X \rrbracket^{M,t}, \\ \text{for a predicate } W, \llbracket \text{remain } W \rrbracket^{M,t} &= \{x \mid \exists t' < t (x \in \llbracket W \rrbracket^{M,t'} \& x \in \llbracket W \rrbracket^{M,t})\}, \\ \text{for a sentence } S, \llbracket \text{think } S \rrbracket^{M,t} &= \{x \mid \langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{\text{think},S})\}, \text{ where } p_i(\text{prop}(S)) \text{ is the } i\text{th component of the structured proposition } \text{prop}(S), \\ \text{for a sentence } S, \llbracket \text{say } S \rrbracket^{M,t} &= \{x \mid \langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{\text{say},S})\}. \end{aligned}$$

(3) *nominalizations:*

$$\begin{aligned} \text{for an adjective } X, \\ \llbracket X_{\text{nom}_1} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid x = f(y, \langle \text{prop}(X), t \rangle)\}, \\ \llbracket X_{\text{nom}_2} \rrbracket^{M,t} &= \{x \mid x = k_f(\text{prop}(X))\}. \\ \text{For an adverb } X, \\ \llbracket X_{\text{adv}_1} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists W \in IV(\text{NOM}) x = f(f(y, \langle \text{prop}(V), t \rangle), \langle \text{prop}(A), t \rangle)\}, \\ \llbracket X_{\text{adv}_2} \rrbracket^{M,t} &= \{x \mid \exists W \in IV(\text{NOM}) x = k_f(k_f(\text{prop}(V)), \text{prop}(A))\}. \\ \text{For an attitude verb } V \text{ and sentence } S, \\ \llbracket V_{\text{nom}_1} \text{ that } S \rrbracket^{M,t} &= \{\langle x, y \rangle \mid x = g(\text{prop}(S), y, \langle R_{V,S}, t \rangle)\}, \\ \llbracket V_{\text{nom}_2} \text{ that } S \rrbracket^{M,t} &= \{x \mid x = k_g(\lambda x [\langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{V,S})])\}, \\ \llbracket V_{\text{nom}_3} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists S \in \text{Sent } x = g(\text{prop}(S), y, \langle R_{V,S}, t \rangle)\}, \\ \llbracket V_{\text{nom}_4} \rrbracket^{M,t} &= \{x \mid \exists S \in \text{Sent } x = k_g(\lambda x [\langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{V,S})])\}. \end{aligned}$$

(4) *complex verbs:*

$$\begin{aligned} \text{for a copula verb } V, \\ \llbracket V\text{-thing}_{\text{a}_1} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists W \in \text{Pred}(\text{NOM}) (x \in \llbracket V \ W \rrbracket^{M,t} \& y = f(x, \langle \text{prop}(W), t \rangle))\}, \\ \llbracket V\text{-thing}_{\text{a}_2} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists W \in \text{Pred}(\text{NOM}) (x \in \llbracket V \ W \rrbracket^{M,t} \& y = k_f(\text{prop}(W)))\}. \\ \text{For an intransitive verb } V, \\ \llbracket V\text{-way}_{\text{adv}_1} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists A \in \text{Adv}(\text{NOM}) (x \in \llbracket V \ A \rrbracket^{M,t} \& y = f(f(x, \langle \text{prop}(V), t \rangle), \langle \text{prop}(A), t \rangle))\}, \\ \llbracket V\text{-way}_{\text{adv}_2} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists A \in \text{Adv}(\text{NOM}) (x \in \llbracket V \ A \rrbracket^{M,t} \& y = f(k_f(\text{prop}(V)), \langle \text{prop}(A), t \rangle))\}. \\ \text{For an attitude verb } V, \\ \llbracket V\text{-thing}_{\text{v}_1} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists S \in \text{Sent}(\text{NOM}) (x \in \llbracket V \ S \rrbracket^{M,t} \& y = g(\text{prop}(S), x, R_{V,S}, t))\}, \\ \llbracket V\text{-thing}_{\text{v}_2} \rrbracket^{M,t} &= \{\langle x, y \rangle \mid \exists S \in \text{Sent}(\text{NOM}) (x \in \llbracket V \ S \rrbracket^{M,t} \& y = k_g(\lambda x [\langle x, p_1(\text{prop}(S)), \dots, p_n(\text{prop}(S)) \rangle \in \text{ext}_t(R_{V,S})])\}. \end{aligned}$$



(5) *other complex expressions*

- For an adjective  $A$  and a noun  $N$ ,  $\llbracket A N \rrbracket^{M,t} = \llbracket A \rrbracket^{M,t} \cap \llbracket N \rrbracket^{M,t}$ .  
 For an  $N'X$ ,  $\llbracket aX \rrbracket^{M,t} = \llbracket X \rrbracket^{M,t}$ .  
 For a determiner  $D$  and a noun  $N$ ,  $\llbracket D N' \rrbracket^{M,t} = \llbracket D \rrbracket^{M,t} (\llbracket N' \rrbracket^{M,t})$ .  
 For a verb  $V$  and an adverb  $A$ ,  $\llbracket V A \rrbracket^{M,t} = \llbracket A \rrbracket^{M,t} (\llbracket V \rrbracket^{M,t})$ .  
 For a verb  $V$  and an NP  $X$ ,  $\llbracket V X \rrbracket^{M,t} = \llbracket X \rrbracket^{M,t} (\llbracket V \rrbracket^{M,t})$ .  
 For an NP  $X$  and VP  $Y$ ,  $\llbracket XY \rrbracket^{M,t} = \llbracket X \rrbracket^{M,t} (\llbracket Y \rrbracket^{M,t})$ .  
 For sentences  $S$  and  $S'$ ,  $\llbracket S \text{ and } S' \rrbracket^{M,t} = 1$  iff  $\llbracket S \rrbracket^{M,t} = 1$  and  $\llbracket S' \rrbracket^{M,t} = 1$ .  
 For definite noun phrases or proper names  $X$  and  $Y$ ,  $\llbracket X \text{ and } Y \rrbracket^{M,t} = \{Z \subseteq \mathbf{E} \mid x v_i y \in Z \& x \in \llbracket X \rrbracket^{M,t} \& y \in \llbracket Y \rrbracket^{M,t}\}$ , where  $i = \emptyset$  if  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{D}$ ,  $i = t$  iff  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{T}$ ,  $i = q$  if  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{Q}$ ,  $i = k$  if  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{K}$ ;  $i = kt$  if  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{K}_t$ ,  $i = kq$  if  $\llbracket X \rrbracket^{M,t}, \llbracket Y \rrbracket^{M,t} \subseteq \mathbf{K}_q$ ; undefined otherwise.

[3] *examples*

It is easy to verify that the inferences in (1a), (2a), and (3a) are validated by the semantics of the corresponding sentences in NOM in (1b–d), (2b–d), and (3b–d):

- (1) a. *John claimed that Mary works.*  
       *The claim that Mary works is interesting.*  
       *John claimed something interesting.*  
 b.  $\llbracket \text{John claim that Mary works} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{claim that Mary works} \rrbracket^{M,t})$ .  
 c.  $\llbracket \text{the claim}_{\text{nom}_{v2}} \text{that Mary works is interesting} \rrbracket^{M,t} = (\llbracket \text{the} \rrbracket^{M,t} (\llbracket \text{claim}_{\text{nom}_{v2}} \text{that Mary works} \rrbracket^{M,t})) (\llbracket \text{interesting} \rrbracket^{M,t})$ .  
 d.  $\llbracket \text{John claimed-thing some } e \text{ interesting} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{some} \rrbracket^{M,t} (\llbracket e \text{ interesting} \rrbracket^{M,t})) (\llbracket \text{claim-thing} \rrbracket^{M,t})$ .
- (2) a. *John is wise.*  
       *Wisdom is admirable.*  
       *John is something admirable.*  
 b.  $\llbracket \text{John is wise} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{is wise} \rrbracket^{M,t}) = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{wise} \rrbracket^{M,t})$ .  
 c.  $\llbracket \emptyset_{\text{gen}} \text{ wisdom}_{\text{nom}_{a2}} \text{ is admirable} \rrbracket^{M,t} = \llbracket \emptyset_{\text{gen}} \rrbracket^{M,t} (\llbracket \text{wisdom}_{\text{nom}_{a2}} \rrbracket^{M,t}) (\llbracket \text{is admirable} \rrbracket^{M,t})$ .  
 d.  $\llbracket \text{John is-thing}_{v2} \text{ some } e \text{ admirable} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{some} \rrbracket^{M,t} (\llbracket e \text{ admirable} \rrbracket^{M,t})) (\llbracket \text{is-thing}_{v2} \rrbracket^{M,t})$ .
- (3) a. *John works efficiently.*  
       *Efficiency is admirable.*  
       *John works in some admirable way.*  
 b.  $\llbracket \text{John work efficiently} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{efficiently} \rrbracket^{M,t} (\llbracket \text{work} \rrbracket^{M,t}))$ .  
 c.  $\llbracket \emptyset_{\text{gen}} \text{ efficient}_{\text{nom}_{a2}} \text{ is admirable} \rrbracket^{M,t} = (\llbracket \emptyset_{\text{gen}} \rrbracket^{M,t} (\llbracket \text{efficient}_{\text{nom}_{a2}} \rrbracket^{M,t})) (\llbracket \text{is admirable} \rrbracket^{M,t})$ .  
 d.  $\llbracket \text{John work-way some } e \text{ admirable} \rrbracket^{M,t} = \llbracket \text{John} \rrbracket^{M,t} (\llbracket \text{some} \rrbracket^{M,t} (\llbracket e \text{ admirable} \rrbracket^{M,t})) (\llbracket \text{work-way} \rrbracket^{M,t})$ .

## NOTES

<sup>1</sup> For an analysis on which copula verbs take properties as arguments see Montague (1974); for analyses on which *that*-clauses stand for propositions acting as arguments see most of the philosophical and semantic literature on attitude reports, e.g., Stalnaker (1984) and Schiffer (1987).

<sup>2</sup> For similar observations see Wiggins (1984) and the reply of Strawson (1987). Wiggins took the Substitution Problem to mean that referential noun phrases and predicates cannot stand for the same entity, but that instead predicates stand for Fregean concepts, whose predicative function is triggered by the copula. Strawson argued that both can be taken to stand for the same universal and that the predicative function can be attributed to the predicative linguistic context.

<sup>3</sup> A bound morpheme is one that can only occur as part of a morphologically complex word. The nominalizing morpheme *thing* as it occurs in nominalizing quantifiers is actually only sometimes bound. In (1a,b), it acts as a free morpheme in a nominalizing quantifier:

- (1) a. John became several things I absolutely detest, namely . . . .  
 b. John mentioned a few things.

*Several things* and *a few things* thus are ambiguous between a nominalizing and an ordinary use.

Quantifiers like *something* are actually ambiguous in that they can occur either as nominalizing quantifiers or as ordinary mass quantifiers, as in *John ate something*.

<sup>4</sup> For the observation that certain verbs do not allow a replacement of a *that*-clause by the proposition *that* S, and different theoretical conclusions from it, see Prior (1971) and Bach (1997).

<sup>5</sup> There are verbs, though, for example *complain*, which do not take any noun phrases at all as complements.

<sup>6</sup> For an extension of the structured propositions account to quantifiers and connectives see Soames (1988).

<sup>7</sup> For recent articles on tropes see the collection in Laurence and Macdonald (1998), Chapter 6. Contemporary trope theorists generally consider tropes the most basic entities, construing individuals and properties as collections of tropes on the basis of relations of compresence and resemblance (Williams, 1953; Campbell, 1990; Simons, 1994; Bacon, 1988, 1989). The use of tropes in this paper implies no such view.

<sup>8</sup> A distinction between properties on the one hand and other universals (such as kinds) on the other hand has also been drawn quite clearly by Strawson (1959).

<sup>9</sup> A view according to which bare mass nouns refer to kinds can also be found in Strawson (1959), who, though, uses the term 'feature'. Strawson takes sentences like (1) to be 'feature-placing' sentences, i.e. as claiming the presence of a universal, a 'feature', at a particular location:

- (1) There is snow here.

<sup>10</sup> A linguist might make use of an old idea of Vergnaud (1974) according to which the head of a relative clause originates from clause-internal position. The logical form of *John is something Mary is* would then be derived roughly as below, with *thing* leaving a copy in clause internal position that will be relevant for semantic interpretation:

- (1) a. John is [[that Mary is something]].  
 b. John is [[that Mary is-thing something]].  
 c. John is [something[that Mary is-thing *e*]].  
 d. John is-thing [some *e* [that Mary is-thing *e*]].

<sup>11</sup> The observation that *color* is special in that NPs containing it as a head can replace NPs of predicative type has been made by Williams (1983).

<sup>12</sup> As Mark Sainsbury pointed out to me, *example* may be another noun acting as a nominalizer. *Example* may help form an objectual quantifier, which can be explicated with a nonreferential noun phrase:

- (1) a. John gave a particular example, namely a round circle.  
 b. John mentioned several examples, one of which was a round circle.

But *example* leads to a quantificational NP that in itself does have the function of providing arguments for the predicate.

<sup>13</sup> The data in (69)–(71) are not unproblematic: they trigger judgments that fluctuate rather peculiarly: some speakers actually accept almost all of the sentences; others accept them under particular conditions or after some time of exposure and reflection. For an explanation and a formal account of that fluctuation see Moltmann (2003).

<sup>14</sup> The kind-referring term *the belief that S* is obtained as a term referring to kinds presumably in the same way as definite singular generics such as *the tiger*, as in *the tiger is not yet extinct*. One use of the definite singular determiner seems to go along with a semantic operation mapping a noun describing individuals to a noun describing kinds.

<sup>15</sup> This means that existence and identity conditions based on the identity of parent propositions as in (26) are not sufficient to characterize tropes and other ‘derived objects’. Rather, their identity depends also on how the object’s properties relate to the constituents of their parent propositions. A way of accounting for the kinds of properties derived objects may or must have, given the entities on which they depend, has been proposed by Fine (1999). Here ontological operations deriving entities from simpler ones are distinguished by imposing various postulates. Such postulates specify not only whether a derived entity exists and when it is identical to another entity of the same sort, but also include *location conditions* (which tell if a derived object has a spatial or temporal location and if so what it is, given the entities it depends on) and *character conditions* (which specify which descriptive properties the object has, given the entities on which it depends). The location conditions specify that tropes inherit their temporal and spatial location from the object they are constituted of, and it would be the character conditions that require that the descriptive properties of tropes (especially evaluative and measurement properties) must somehow all be based on the extent and the way the property holds of the object. Moreover, it would be the character conditions that specify that a ‘qua object’ based on an entity *d*, a time *t*, and a property *P* will inherit all those properties from *d* that *d* has at *t* and for which the property *P* is somehow relevant.

<sup>16</sup> A complex event may also be constituted on the basis of a simpler event and an event property, for example a causal property or the property of being a particular kind of signal. This is what Goldman (1970) calls ‘level-generation’ and what Fine (1982) takes to be formation of a ‘qua event’. Thus, if Brutus stabs Caesar and kills him, *Brutus’ killing of Caesar* will refer to the stabbing of Caesar qua being a killing (a causal property).

<sup>17</sup> The linguistic status of *way* has been seen quite clearly by Simons (1994), who takes *way* to stand for tropes of tropes, that is, second-order tropes. Note though that *way* cannot stand for tropes of tropes constituted by a static property, but requires a dynamic property,

i.e. it must stand for tropes of events. This can be seen from the fact that one cannot refer to the contribution of *very* in (1a) by (1b):

- (1) a. John is very wise.  
b. \* the way John is wise.

<sup>18</sup> In a limited way, nominalizing quantifiers with *way* can also replace predicates. Some favoured locutions in philosophical discussions are those below:

- (1) a. Relations are ways things are. (Armstrong)  
b. Possible worlds are ways things could have been. (Lewis)

Even here, though, *way* has a different function than *thing*. This is clear from a comparison between (2a) and the marginal (2b):

- (2) a. John is the same thing/# the same way, namely a lawyer.  
b. John is the same way/# the same thing, namely nervous and irritable.

Unlike *same thing*, it appears, *same way* does not stand directly for a quality of John, but rather for a quality of his behavior, that is, a quality of his various actions and dispositions.

It is reasonable to assume that even in the propredicative function, *way* stands for a trope of an event or a state, a trope of John's behavior in (2b), and a trope of the state of the world (or part of it) in (1a) and (1b). In (2a), it can be analysed as standing for the collection of John's actions and dispositions, and it is this collection of which the predicate will be predicated. Thus, *same way* will not stand for a trope involving an individual, but rather for a trope involving an event (or a kind of such tropes).

## REFERENCES

- Armstrong, D. (1978): *Universals and Scientific Realism*, Vols 1 and 2, Cambridge University Press, Cambridge.
- Asher, N. (1993): *Reference to Abstract Objects*, Kluwer Academic Publishers, Dordrecht.
- Bach, K. (1997): Do belief reports report beliefs? *Pacific Philos. Quart.* **78**.
- Bacon, J. (1988): For modal modelings, *J. Philos. Logic* **17**.
- Bacon, J. (1989): A single primitive trope relation, *J. Philos. Logic* **18**.
- Baker, M. (1988): *Incorporation*, Chicago University Press, Chicago.
- Bennett, J. (1988): *Events and their Names*, Clarendon Press, Oxford.
- Campbell, K. (1990): *Abstract Particulars*, Blackwell, Oxford.
- Carlson, G. (1978): Reference to kinds in English, Ph.D. dissertation, University of Massachusetts, Amherst.
- Chierchia, G. (1984): Topics in the syntax and semantics of infinitivals and gerunds, Ph.D. dissertation, University of Massachusetts, Amherst.
- Chierchia, G. (1998): Reference to kinds across languages, *Natural Language Semantics* **6**(4).
- Chomsky, N. (1981): *Lectures on Government and Binding*, MIT Press, Cambridge, MA.
- Davidson, D. (1980a): The logical form of action sentences, in D. Davidson: *Essays on Actions and Events*. Originally in N. Rescher (ed.), *The Logic of Decision and Action*, Pittsburgh University Press, Pittsburgh.
- Davidson, D. (1980b): The individuation of events, in D. Davidson: *Essays on Actions and Events*. Originally in N. Rescher (ed.), *The Logic of Decision and Action*, Pittsburgh University Press, Pittsburgh.

- Fine, K. (1982): Acts, events and things, in W. Leinfellner et al. (eds.), *Language and Ontology*, Proceedings of the Eighth Wittgenstein Symposium, Hoelder-Pichler-Tempsky, Vienna.
- Fine, K. (1999): Things and their parts, in *Midwest Studies in Philosophy* 23.
- Frege, G. (1892): Funktion und Begriff, reprinted in G. Patzig (ed.), *Funktion, Begriff, Bedeutung*, Vandenhoeck and Ruprecht, Goettingen.
- Goldman, A. (1970): *A Theory of Human Action*, Princeton University Press, Princeton.
- Kim, J. (1976): Events as property exemplifications, in M. Brand and D. Walton (eds.), *Action Theory*, Reidel, Dordrecht, reprinted in S. Laurence and C. Macdonald (eds.).
- Laurence, S. and Macdonald, C. (eds.) (1998): *Contemporary Readings in the Foundations of Metaphysics*, Blackwell, Oxford.
- Lombard, L. B. (1986): *Events. A Metaphysical Study*, Routledge/Kegan, London.
- Lombard, L. B. (1998): Ontologies of events, in S. Laurence and C. Macdonald (eds.).
- Moltmann, F. (1997): *Parts and Wholes in Semantics*, Oxford University Press, Oxford.
- Moltmann, F. (2002): Events as derived objects, in C. Beyssade et al. (eds.), *Empirical Issues in Formal Syntax and Semantics* 4, Presses Universitaires de Paris-Sorbonne, Paris.
- Moltmann, F. (2003): *Propositional Attitudes without Propositions*, Synt.
- Prior, A. (1971): *Objects of Thought*, Clarendon Press, Oxford.
- Quine, W. V. O. (1960): *Word and Object*, MIT Press, Cambridge, MA.
- Russell, B. (1913): *Theory of Knowledge*, reprinted in 1993 by Routledge, London.
- Russell, B. (1918): The philosophy of logical atomism, in B. Russell, *Logic and Knowledge*, Routledge, London.
- Schiffer, S. (1987): *Remnants of Meaning*, MIT Press, Cambridge, MA.
- Simons, P. (1994): Particulars in particular clothing: Three trope theories of substance, *Philosophy & Phenomenological Research* 54(3), reprinted in S. Laurence and C. Macdonald (eds.).
- Soames, S. (1988): Direct reference, propositional attitudes, and semantic content, in N. Salmon and S. Soames (eds.), *Propositional Attitudes*, Oxford University Press.
- Stalnaker, R. (1984): *Inquiry*, MIT Press, Cambridge, MA.
- Strawson, P. (1950): Truth, *Aristotelian Society*, suppl. vol. 24, reprinted in S. Blackburn and K. Simmons (eds.), *Truth*, Oxford University Press, Oxford, 1999.
- Strawson, P. (1959): *Individuals*, Methuen, London.
- Strawson, P. (1987): Concepts and properties or predication and copulation, *Philos. Quart.* 37.
- Vergnaud, J.-R. (1974): French relative clauses, Ph.D. dissertation, MIT, Cambridge, MA.
- Wiggins, D. (1984): The sense and reference of predicates: A running repair to Frege's doctrine and a plea for the copula, *Philos. Quart.* 34.
- Williams, D. C. (1953): On the elements of being, *Review of Metaphysics* 7.
- Williams, E. (1983): Semantic vs. syntactic categories, *Linguistics and Philosophy* 5.

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