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Special Quantifiers: Higher-Order Quantification and Nominalization

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Abstract

Special quantifiers are quantifiers like *something*, *everything*, and *several things*. They are special both semantically and syntactically and play quite an important role in philosophy, in discussions of ontological commitment to abstract objects, of higher-order metaphysics, and of the apparent need for propositions. This paper will review and discuss in detail the syntactic and semantic peculiarities of special quantifiers and show that they are incompatible with substitutional and higher-order analyses that have recently been proposed. It instead defends and develops in formal detail a semantic analysis of special quantifiers as nominalizing quantifiers. On this analysis, special quantifiers involve both singular objectual quantification and implicit on non-singular (higher-order, plural, or mass) quantification. The analysis rests on a range of recent insights and proposals in generative syntactic theory, in particular the recognition of *-thing* as a light noun and a potential classifier as well as recent views of the decomposition of attitudinal and locutionary verbs in syntax.

Introduction

Special quantifiers are quantifiers like *something*, *everything*, and *several things*. They are special both semantically and syntactically and play quite an important role in philosophy, in discussions of ontological commitment to abstract objects and to non-existents, of higher-order metaphysics, and of the apparent need for propositions. Partly based on previous work, this paper will review and discuss in detail the syntactic and semantic peculiarities of special quantifiers and show that they are incompatible with substitutional and higher-order analyses that have been recently proposed. It then defends and develops in some formal detail a semantic analysis of special quantifiers as nominalizing quantifiers. On this analysis, special quantifiers involve both singular objectual quantification and implicit on non-singular (higher-order, plural, or mass) quantification. The analysis rests on a range of recent insights and proposals in generative syntactic theory, in particular the recognition of *-thing* as a light noun and a potential classifier as well as recent views of the decomposition of attitudinal and locutionary verbs in syntax.

One peculiarity of special quantifiers is they do not lead to the Substitution Problem. It is a well-known observation that most attitude verbs do not permit the substitution of a clausal complement by an ordinary noun phrase (NP) without leading to unacceptability of the sentence or a different reading of the verb. This Substitution Problem is also known as Prior's Problem, illustrated below:¹

(1) a. John claims that he won.

b. ??? John claims a proposition / some content / some thing / a claim.

Special quantifiers permit a replacement of clausal complements of attitude verbs, preserving grammaticality or the same reading of the verb:

(2) John claims *something*.

In my previous work (Moltmann 2004, 2013), I have shown that Prior's Problem and the exceptional behavior of special quantifiers generalizes to predicative complements of copula verbs, complements of intensional transitive verbs (*need*, *look for*), direct quotes as complements of verbs of saying, measure phrases that are complements of predicates like *weigh*, and bare infinitival complements of perception verbs.

The phenomenon generalizes even further, namely to NPs in argument positions that do not have the semantics of singular terms, in particular (definite and bare) plural and mass NPs. Such non-singular referential NPs display the Substitution Problems when replaced by ordinary putatively coreferential singular terms, but permit a replacement by special quantifiers without change in the acceptability of the sentence or the reading of the predicate.

Given the current interest in higher-order metaphysics (Williamson 2003, Wright 2007, Skiba 2020, Bacon 2023, Fritz / Jones 2024), a particularly tempting analysis of special quantifiers is one on which they are genuine higher-order quantifiers, that is, as quantifiers ranging over higher-order semantic values, which singular terms could not stand for. Such an analysis has in fact been endorsed by Prior (1971), Rayo/Yablo (2001), Rosefeldt (2008), Trueman (2018) (for attitude reports), Jones (2016) (for predicates), and Zimmermann (2006) (for intensional transitives) and especially D'Ambrosio (2023), who emphasizes the need to

¹ In Moltmann (2003, 2013, chap. 4), I distinguished between substitution leading to unacceptability, as in (1a) from substitution leading to a different reading of the verb (*John fears that it will rain* – *John fears the proposition that it will rain*), the 'Objectivization Effect'. The difference won't matter for the purpose of this paper, and thus 'Substitution Problem' should cover both phenomena.

go higher-order even in the metalanguage. A somewhat similar analysis of special quantifiers is the substitutional analysis in the version recently proposed by Sainsbury (2018). On Sainsbury's analysis, special quantifiers are substitutional quantifiers, with substitution instances possibly involving concepts or conceptual structures and even objects themselves.

The higher-order and substitutional analyses contrast with the Nominalization Theory of special quantifiers, which I myself have pursued (Moltmann 2003a, 2004, 2013). On that view, special quantifiers range over the same sorts of things that a corresponding nominalization would stand for. For example, *something* in (1c) will range over 'claims', entities in the denotation of the nominalization of the attitude verb *claim*, without those entities, though, being arguments of the embedding predicate.

The paper will first present the linguistic peculiarities of special quantifiers as well as a range of generalizations that pose serious problems for higher-order and substitutional analyses of special quantifiers and that motivate the Nominalization Theory. These generalizations in part have been established in my earlier work (Moltmann 2003, 2004, 2013), in part they go beyond that earlier work. The paper will then show how the Nominalization Theory deals with those problems and present a new development of that theory together with an outline of a formal compositional semantics of special quantification in its various contexts.

1. The range of special quantifiers and pronouns in English and related languages

One of the characteristics of special quantifiers to be that of not giving rise to the Substitution Problem as illustrated in (1-2), in contrast to ordinary NPs. Given that characteristic, special quantifiers in English include quantifiers with the bound morpheme *-thing* such as *something*, *everything*, *nothing*, but also the quantifiers *much*, *a lot*, and *little*. They also include the quantifiers *several things*, *one thing*, and *two things*, where *thing* occurs as a separate count noun. There are also special pronouns. In English, these are *that* and the relative or interrogative pronoun *what*. I will subsume special pronouns under the more generally term 'special quantifier'. Special quantifiers minimally contrast with the non-special quantifiers *some thing*, *every thing*, *some object*, *some entity* as well as the non-special pronouns *it*, *them*, and *which*.

Distinguished classes of special quantifiers can be found in other languages as well, often not with an overt correlate of *thing*. Thus, in German special quantifiers include *alles* 'everything', *nichts* 'nothing', *viel* 'much', *wenig* 'little', *etwas* 'something', *eines* 'one thing',

mehrere Dinge ‘several things’ and the pronouns, *das* ‘that’ and *was* ‘what’. The German quantifiers translate into French as *tout, rien, beaucoup, peu, quelque chose, une chose, plusieurs choses, le, ça, and que*.

Besides special quantifiers, English also has also a special noun, namely *word*. *Word-NPs* (*the word ‘help’, only a single word, a few words*) as complements of verbs of saying can take the place of clausal complements and direct quotes without leading to the Substitution Problem, as we will see shortly.

2. Special quantifiers and the Substitution Problem 1: non-referential complements

In this paper, I will focus on the following types of nonreferential complements displaying the substitution problem: clausal complements of attitude verbs and of verbs of saying, predicative complements of copula verbs, complements of intentional transitives, and direct quotes as complements of verbs of saying.

Here again is the illustration of the Substitution Problem with attitude verbs:

- (3) a. John claims that he won.
 b. ??? John claims a proposition / some content / some thing / a claim.
 c. John claims *something*.

The dominant view about clausal complements of attitude verbs in philosophy at least since Frege has been that *that*-clauses act as singular terms denoting propositions that act as arguments of a two-place relation expressed by the attitude verb. Propositions, abstract, shareable truth bearers, thus are at once meaning of sentences and objects (or content) of attitudes. The Substitution Problem is a major problem for the view. There are alternatives that have been proposed, and that do away with propositions as referents of *that*-clauses viewed as first-order singular terms. In particular, Prior (1971) argued that attitude verbs have the status of operators, applying to sentences, rather than referential terms, a view that has been adopted by Kuenne (2003), as well as proponents of higher-order metaphysics (Trueman 2018). Another view that has attracted both philosophers and linguists in that *that*-clauses are predicates of content bearers (Moulton 2015, Moltmann 1989, Elliott 2017, Bondarenko 2022). I more recently myself have adopted the view that clausal complements of attitude verbs are predicates of entities such as ‘claims’ or ‘beliefs’, that is, what I call *attitudinal objects* (Moltmann 2014, 20021), a view that I will make use of at the end of the paper.

The examples with verbs of saying show that not only special quantifiers with *-thing* but also NPs with head noun *word(s)* fail to give rise to problems of substitution:

- (4) a. John said that he won the race.
 b. ??? John said a thing / an utterance / a proposition / a verb.
 c. John said *only one thing*.
 d. John said *a few words*.
 e. John said *only one word*.

Words-NPs can take the place only of complements of verbs of saying, not attitude verbs or illocutionary verbs (**John believes a few words*, **John claimed a few words*) (Moltmann 2017, forthcoming). This can be traced to a lexical restriction of the special noun *word* to ‘utterances’ or ‘locutionary objects’, as opposed to illocutionary and attitudinal objects.

Predicative complements of copula verbs are wellknown to display the Substitution Problem and to be able to be replaced by special quantifiers:

- (5) a. Mary is / remained happy.
 b. ??? Mary is / remained a property / some thing.
 c. Mary is / remained *something enviable*.

Complements of intensional transitive verbs likewise display the Substitution Problem and permit replacement by special quantifiers:

- (6) a. John needs two assistants.
 b. ??? John needs a quantifier / a property / an entity.
 c. John needs *something*.

Complements of intensional transitive display the Substitution Problem, whether they are taken to stand for properties (Zimmermann 1992) or intensional quantifiers (Montague 1973, Moltmann 1997).

Finally, direct quotes as complements of verbs of saying display the Substitution Problem, and can be replaced by special quantifiers as well as *words*-NPs:

- (7) a. John said ‘great’.

- b. ??? John said the adjective ‘great’ / some expression.
- c. John said *something*.
- d. John said *the word ‘help’ / just a single word*.

This behavior of direct quotes (which was noted in Moltmann 2013 and discussed in greater detail in Moltmann forthcoming, chap. 4) has received little attention in the literature, though it seriously challenges the standard view. The standard view is that direct quotes act expression-referring terms. But the fact that they give rise to the Substitution Problem means that that they cannot be referential terms referring to expressions that act as arguments of the embedding predicate, just as clausal complements of verbs like *claim* or *say* cannot be referential terms standing for propositions.

3. Special quantifiers and the Substitution Problem 2: Plural and mass NPs in referential position

The Substitution Problem that arises with plural and mass NPs in referential argument position has been little discussed in the literature, and even less so the fact that special quantifiers permit substitution of such NPs. Here are the relevant facts. First, definite plurals display the Substitution Problem if definite plurals are taken to stand for sums (or sets), as on the standard account of the semantics of definite plurals (Link 1983):

- (8) a. John counted the peas / ??? the sum / ??? the set of the peas.
- b. John counted *something*, the peas.

(8a) illustrates that the selectional restriction of *count* to plurals is not met by ordinary singular NPs referring to sums or sets. But it can still be met by special quantifiers as in (8b).

Second, bare (that is, determinerless) mass nouns and plurals display the Substitution Problem if they are considered terms standing for kinds, as on the widely accepted proposal of Carlson (1977). On Carlson’s view, a bare plural such as *beans* always stands for a kind even with an episodic verbs as in *John ate beans*. With episodic verbs, existential quantification over instances of the kind is attributed to a lexical condition on the verb when taking a kind-referring complement. (9a, b) shows that the Substitution Problem arises when bare plurals or

mass nouns are replaced by explicit kind-referring NPs, but not so when replaced by plural special quantifiers:²

- (9) a. John ate beans, peas, apples, and carrots today.
 b. ??? John ate various *kinds* today, beans, peas, apples, and carrots.
 c. John ate various *things* today,

A response to the Substitution Problem with definite plurals is to take definite plurals to not be singular terms referring to sums of individuals, but rather to plurally refer to each individual at once (McKay 2008, Oliver / Smiley 2016). The same move may apply to bare plural and mass NPs, namely by permitting plural and mass NPs to plurally refer to all possible and actual instances of the kind (Moltmann 2013, chap. 2).

4. Linguistic properties of special quantifiers

4.1. Special quantifiers as light quantifiers

Special quantifiers are syntactically distinct from ordinary quantificational and pronominal NPs. First of all, it is to be noted that special quantifiers with *-thing* are distinct from quantifiers with the ordinary noun *thing*. Here are three linguistic differences:

[1] *-thing* is a bound morpheme in the special quantifier *something*, but a free word in the ordinary quantifier *some thing*. This means (10a) could not possibly be true, in contrast to (10b):

- (10) a. John is some thing.
 b. John is something.

[2] The special quantifier *something* differs from the ordinary quantifier *some thing* in the position of the adjective:³

² The use of the noun *kind* in (9b) needs to be distinguished from its use in the construction *this kind of vegetable*, which does not act as a singular term referring to an abstract kind, but behaves just like a bare plural or mass noun, triggering the same readings of the predicate, as noted in Carlson (1977),.

³ There is a debate among syntacticians how to explain the exceptional position of adjectives with special quantifiers, see Kishimoto (2000) and Larson and Marusic (2004) for different syntactic analyses.

- (11) a. John said something nice.
 b. ??? John said some nice thing.

[3] Special quantifiers can be used in an absolutely unrestricted way, conveying absolute generality. By contrast, the ordinary noun *thing* generally imposes a restriction to material objects and artifacts. Thus, whereas (12a) can be true, this is not the case for (12b), on an ‘ordinary’ use of *thing*:

- (12) a. Everything there is is abstract or concrete.
 b. ??? Every thing there is is abstract or concrete.

Kayne (2005, chap. 4, 8, 10) argued that *thing* is what he calls a *light noun*. More precisely, it is the overt version of the abstract light noun THING, which, as a light noun, can remain unpronounced in the absence of an antecedent. For ordinary nouns to be unpronounced, by contrast, they require an antecedent (deletion under identity). The light noun THING is also present in special quantifiers in which THING does not appear overtly. Thus, there are silent occurrences of light nouns in *a lot* (*a lot* THING), *what* (*what*-THING), *that* (*that*-THING), and *whatever* (*what*-THING-*ever*).⁴ Special quantifiers thus are light NPs, that is, NPs headed by a light noun.

Special quantifiers are not the only light NPs. In *everybody*, *someplace*, *sometime*, *-body*, *-place*, and *-time* are overt versions of the light nouns PERSON, PLACE, and TIME. Kayne (2005, chap. 4) furthermore argued that *where* is a determiner selecting the light noun PLACE (in its silent version). Thus *where* is in fact *where*-PLACE, and likewise *there* is *there*-PLACE, and *when* *when*-TIME, with silent occurrences of PLACE and TIME.

Several linguistic peculiarities characterize light nouns. First of all, as already mentioned, they can remain silent in the absence of an antecedent (that is, they do not result from deletion under identity). Furthermore, they belong to the functional part, rather than the lexical part of grammar, which means they should form a universal inventory. In addition, they have special movement properties and fail to have syntactic gender features, or rather their syntactic

⁴ Baunaz and Lander (2018) argue that the light noun THING occurs in fact overtly in *what*. They take *what* to be morphologically complex, consisting of *wh* and the THING morpheme *at*.

features are semantically determined (gender features, mass-count distinction) (cf. Moltmann 2022).⁵

Unlike the light nouns PERSON, TIME and PLACE, THING can have a particular nominalizing function, permitting NPs headed by THING to occur in nonreferential positions. Moreover special quantifiers with THING display a particularly interesting behavior with respect to mass nouns and plurals, which also bears on the adequacy of a semantic analysis of them. In particular, THING-quantifiers display mass, plural, and superplural uses.

Below, THING-quantifiers display mass and neutral uses:

- (13) a. John ate *something*, an apple.
 b. John ate *something*, brown rice.
 c. John ate *something*, the cookies.
 d. I brought you *something*, a cup, some chocolate, and some cookies.

THING-quantifiers also have count uses, both in place of non-referential complements and in place of non-singular NPs in referential position. Here are examples with non-referential complements:⁶

- (14) a. John said several things, that S, that S', and that S''.
 b. John became several things Mary despises, greedy, selfish, and rude.
 c. John needs two things, students and equipment.

Below, *two things* takes the place of a conjunction of a definite plural NPs and a definite mass NP:

- (15) There are *two things* John does not like, the beans and the bread.

In (16) *a few things* acts as a superplural quantifier whose domain includes a plurality consisting of a plurality of paintings, a plurality of sculptures, and a plurality of drawings:

⁵ In Moltmann (2022), I argued that proper names in languages such as English and German are compounds of a name and a silent light noun. That is, we have *John*-PERSON, *Berlin*-PLACE, *France*-PLACE *Sanssouci*-HOUSE, *Notre Dame*-HOUSE, *2022*-TIME, and *two*-THING.

⁶ This was noted in Moltmann (2016, 2022) and in Sainsbury (2018).

(16) John has evaluated *a few things*, the paintings, the sculptures, and the drawings.

Several things in (17) likewise acts as a superplural quantifier, with the one difference being that the predicate here does not have a distributive reading but a collective one, which is the internal reading of *distinguish* on which members of a plurality are said to be distinguished:

(17) There are *several things* John cannot distinguish: the cups, the glasses, and the plates.

Plural special quantifiers thus appear to be able to act as superplural quantifiers ranging over pluralities of pluralities, which in itself is remarkable.

Philosophers have often declared special quantifier ‘non-nominal quantifiers’ (Prior 1971, Rayo/Yablo 2001, Rosefeldt 2008). It is usually not made very clear how exactly the term ‘non-nominal’ is to be understood. Generally, what seems to be meant is that such quantifiers do not fill in syntactic positions in which NPs in a referential function occur. Certainly, ‘non-nominal’ cannot be understood literally, in the sense that special quantifiers would not be NPs. It is easy to verify that special quantifiers such as *something* are syntactically nominal. First, they require case, which manifests itself in the fact that they cannot be complements of adjectives or nouns, which do not assign case:

- (18) a. John is happy that he won.
 b. * John is happy something.
 c. the proof that John won
 d. * the proof something

Moreover, they can appear after prepositions, which in English generally do not select non-nominal phrases:

- (19) a. John is happy about something
 b. * John is happy about [that he won].

There are better candidates for syntactically non-nominal quantifiers. Philosophers often cite the adverbial quantifier *somehow* as well as the proforms *so* and *thus*. But adverbial quantifiers and pronouns of this sort are highly restricted (*everyhow*, *nohow* are at least not part of standard English). The use of *so* in place of *that*-clauses in English (*I thought so*) does

not have a correlate even in other European languages, such as German, Italian, and French. One might consider the quantifier *somewhere* (*everywhere, nowhere*) a non-nominal quantifier. But recall that on Kayne's view, *where* is a determiner selecting a (silent) light noun, which means that *somewhere* is in fact the NP *somewhere-PLACE*. Moreover, *somewhere* allows for adjective restrictions (*somewhere nice*). Since adjectives are first-order predicates, this would be incompatible with *somewhere* being a non-nominal quantifier. In fact, non-nominal quantifiers in general appear to be very rare, which means that a general semantics of special quantifiers should better not be based on their purported non-nominal status.

5. Substitutional and higher-order approaches to special quantifiers

Before discussing the semantics of special quantifiers within higher-order and substitutional approaches, we first need to clarify how the semantics of sentences with the various sorts of nonreferential complement looks on those approaches.

5.1. Higher-order analyses of nonreferential complement constructions

On the higher-order approach, attitude verbs will be 'prenectives', to use Kuenne's (2003) term, that is they are considered predicates to the left and connectives or sentence operators to the right (Trueman 2006). Thus, (20a) is formalized as in (20b), with the prenective C representing the attitude verb:

(20) a. John claimed that S.

b. C(j, S)

Generally, subject-predicate sentences such as *John is happy* are just formalized as 'Hj', leaving out the formalization of the copula. Taking into account the copula in such a sentence, a copula verb like *remain* will be a predicate R that is first-order to the left and second-order to the right, as in (21b) for (21a):

(21) a. John remained happy.

b. R(j, H)

If an intensional transitive verb like *need* is to apply to an intensional quantifier, it will be formalized by a predicate N that is first-order to the left and third-order to the right:

(22) a. John needs at most one book.

b. $N(j, Q)$

Clearly, the higher-order analysis of attitude verbs, copula verbs, and intensional transitives accounts for the Substitution Problem: only first-order predicates in the relevant position permit replacement by ordinary NPs acting as singular terms.

Direct quotes as non-referential complements of verbs of saying have not been discussed in the literature and there are no proposals for a higher-order analysis. Thus, I will set them aside, until I come back to them in my own proposal in Section 7.2.

The higher-order analysis does not cover definite plural and mass DPs. However, it is natural to supplement it by *sui generis* plural reference and quantification (e.g. McKay 2008, Oliver / Smiley 2017) as well as *sui generis* mass reference and quantification (McKay 2016). Then (23a) will be formalized as in (23b), where *max* is an operator binding a plural variable and ‘max xx[students(xx)]’ is the description of the maximal plurality (as many) of peas:

(23) a. John counted the peas

b. $C(j, \max xx[\text{peas}(xx)])$

Given this analysis, substitution of the plural description by a singular one will not generally be permitted.

5.2. The Substitutional Analysis of special quantifiers

The substitutional analysis of special quantifiers naturally goes along with the higher-order analyses of sentences with predicates taking non-referential complements. A recent development of the substitutional analysis is Sainsbury (2018). Sainsbury (2018) gives the following truth conditions of sentences with verbs taking non-referential complements:

(25) ‘X is V-ing something’ is true iff something of the form ‘X is V-ing –’ is a true vindicating instance.

There are well-known problems for substitutional quantification, in particular the possibility of properties or contents not expressible in the language in question. Sainsbury addresses that problem by allowing vindicating instances not just to involve expressions, but also concepts, in a, extended range, as well as objects themselves (covering the case in which the special quantifier is in referential position).

Sainsbury does not give an account of the special pronouns *that* and *what*. In fact, it is not obvious at all how special pronouns can be dealt with on a substitutional analysis, in particular the relative-clause pronoun *what* in descriptions like *what John became*.

Sainsbury makes an interesting suggestion regarding plural special quantifiers, proposing that plural special quantifiers count vindicating instances, for example in *John is two things, wise and joyful*. However, this will not account for the possibility of collective interpretations with plural quantifiers:

(26) John compared two things, Sue's books and Mary's books.

Furthermore, predicates of identity, difference and similarity do not apply to vindicating instances, but rather to contents, as these examples make clear:

(27) a. John needs two very different things, a coat and a French grammar.

b. John said two incompatible things, that he lives in France and that he does not live in Europe.

Thus, special quantification do not give particular support for the Substitutional Analysis.

5.3. The higher-order analysis of special quantifiers

The higher-order analysis of special quantifier has attracted a number of philosophers and seems to fit particularly well within the recent interest in higher-order metaphysics (Prior 1971, Wright 2007, Williamson 2003, Rosefeldt 2008, Trueman 2018, d'Ambrosio 2023). On the higher-order analysis, special quantifiers are considered higher-order quantifiers, ranging over possible denotations that are not individuals and cannot be referred to using singular terms *even in the metalanguage*.

(28) a. John claims something.

b. $\exists S C(j, S)$

(29) a. John is something.

b. $\exists F F(j)$

(30) a. John is looking for something.

b. $\exists Q L(j, Q)$

As with the substitutional analysis, it is not clear how the higher-order analysis can be extended to direct quotes; but let's set the issue aside till later.

Given the plural reference approach to plurals and kind terms, special quantifiers in place of plurals would range over pluralities 'as many', as below, where, again, 'xx' is a plural variable able to stand for several individuals at once:

(31) a. John counted something.

b. $\exists xx C(j, xx)$

Likewise special quantifiers in place of kind terms would range over modalized pluralities, for which I will use the plural variable 'mm':

(32) a. John ate something, beans.

b. $\exists mm A(j, mm)$

The substitutional analysis claims a particular advantage, namely of providing a single semantics, that in (25), which would cover special quantifiers in place of nonreferential complements of different sorts as well as plural and singular NPs in referential position. The higher-order analysis, by contrast, must associate with special quantifiers a variety of meanings, as higher-order quantifiers of different levels, as plural and modalized plural quantifiers, and of course as first-order quantifiers if the quantifiers occur in referential position (*John ate something, the apple*). (Singular quantifiers can be subsumed under plural quantifiers, given that individuals are limit cases of pluralities.) Which quantifier a special NP stands for will depend on the particular context in which the special NP occurs.

The higher-order analysis has no difficulty dealing with special pronouns. *That* will have a contextually given higher-order semantic value. Likewise, the relative pronouns *what* as in *what John became* will serve to bind a higher-order variable, forming a description of a

higher-order semantic value. However, special quantifiers in the plural may present a challenge to the higher-order approach since here the special quantifiers range over pluralities as countable, and thus single entities.

6. Problems for substitutional and higher-order analyses

We can now turn to the main topic of this paper, the problems for substitutional and higher-order analyses to the semantics of special quantifiers.

6.1. Quantifier restrictions 1: adjectives

The first problem is adjectives when they act as restrictions of special quantifiers in place of clausal complements of attitude verbs, predicative complements, and complements of intensional transitives:

- (34) a. John claimed something *outrageous*, that he is a genius.
 b. John said something *strange*, that he is an alien.
- (33) a. Mary is something *admirable*, courageous.
 b. Sue is something *not uncommon*, nervous.
- (35) John is looking for something *expensive*, a villa with a sea view.

Adjectives are first-order predicates and thus could not apply to the higher-order semantic values that special quantifiers, on a higher-order analysis, are supposed to range over.

While developing the Substitutional Analysis, Sainsbury (2018) takes note of the phenomenon, pointing out that ‘Adjectives are not existentially committing’, but no account is given. As mentioned Sainsbury proposes an account of plural special quantifiers on which they count vindicating instances. Extending the idea to adjectival restrictions of special quantifiers should mean that such adjectives should likewise apply to vindicating instances, rather than semantic values. But of course this can’t be. If *John is something enviable* is true, then *enviable* is not predicated of a sentence like *John is happy*. If *Sue is something not uncommon* is true, *is not uncommon*, is not predicated of a sentence like *Sue is nervous*.

There is one sort of higher-order expression that adjectives do appear to apply to, namely embedded clauses:

(36) That it is raining is nice.

However, we will see shortly that adjectives are interpreted differently when applied to clauses in subject position and when acting as special quantifier restrictions, which means that special quantifiers just do not range over potential sentential contents (propositions).

6.2. Quantifier restrictions 2: relative clauses

Quantifier restrictions of the form of relative clauses are an even more serious problem for substitutional and higher-order analyses. There are two important generalizations.

[1] Special quantifiers can take relative clauses as restrictions whose empty position is syntactically and semantically incompatible with higher-order expressions or values. For predicative complements this is illustrated below:

(37) a. Mary *is* something [that I *admire e* a lot], courageous.

b. * I *admire* courageous.

(38) a. Bill *is* everything [Mary likes *e* in a man].

b. * Mary *likes* wise in a man.

In (37a) and (38a), the relative-clause operator does not bind a variable in predicate position

[2] Special relative clauses with a variable in predicate position can fill in a referential position:

(39) I *like* [what John has *become e*], very athletic.

(39 shows that free relatives like *what John has become* can have the status of referential NPs, rather than inheriting the higher-order status of the bound variable inside the relative clause.

The same observations can be made about clausal complements. Below we have a special quantifier in the position of a clausal complement, where the relative-clause operator binds a variable *e* in a position not accepting clausal complements:

(40) a. John *said* something I do not *like e*, that Sue is incompetent.

b. * I do not like that Sue is incompetent.

(41) a. John *claimed* something I object *to e*, that the problem is solvable.

- b. * I object *to e* that the problem is solvable.

Below, a free relative with a variable in place of a clausal complement appears in referential position:

- (42) a. Mary *likes* what John *said e*.
 b. * Mary *likes* that Sue is competent.

The two generalizations also apply to verbs of saying with direct quotes:

- (43) a. John *said* something Mary does not *like e*, ‘shit’.
 b. Mary does not *like* what John *said e*, namely ‘completely impossible’).

Say takes direct quotes as complements, but not so like (* Mary *like* ‘completely impossible’). But the mismatch does not affect the acceptability of (43a, b).

The first generalization manifests itself also with intensional transitive verbs. In the examples below, *something* takes the place of the complements of an intensional transitive verb, while the operator of the relative clause binds a variable in referential position:

- (44) a. John *needs* something that is hard to *get e*.
 b. John *needs* something that I have never *seen e* anywhere.

To summarize, special quantifiers range over entities to which first-order predicates can apply. Moreover, special relative clauses are able to stand for entities of which first-order predicates can be true. Special quantifiers thus are in a way higher-order and first-order at once.

6.3. No factivity and prosentential special quantifier restrictions

Adjectives may act as restrictions of special quantifiers in clausal positions and they may apply to clausal subjects. However, there is an important semantic difference that adjectives display in the two roles. Adjectives like *nice* and *unusual* trigger a factive reading of a subject clause, but not when restricting a special quantifier:

- (45) a. [That Bill is talented] is *nice*.
 b. Sue said something *nice*, [that Bill is talented].
- (46) a. That there is snow in Venice is unusual.
 b. Mary claimed something unusual, that there is snow in Venice

Whereas the subject clauses in (45a) and (46a) receive an obligatory factive interpretation, no factive interpretation of the clausal supplements is triggered in (45b) and (46b), where *nice* and *unusual* instead apply to something like a remark or a claim.

This same holds for verbs of evaluation and causation such as *caused an uproar* and *impressed everyone* in the examples below:

- (47) a. [That John won] *caused an uproar*.
 b. John said something that *caused an uproar*, that he won.
- (48) a. [That John had solved the problem] *impressed everyone*.
 b. Mary had *claimed* something that *impressed everyone*, that John had solved the problem.

Applied to subject clauses *caused an uproar* and *impressed everyone* triggers a factive interpretation, but not when occurring as the predicate of a relative clause restricting a special quantifier in sentential position.

The generalization thus is that predicates that trigger a factive reading with clauses fail to trigger such a reading when applying to special quantifiers in sentential position, which means that such quantifiers just do not range over sentential contents, but rather to things of the sort of claims and remarks.

6.4. Identity statements

Another problem for substitutional and higher-order approaches to special quantification again concerns clausal complements specifically. This is a problem shared with any semantic approach to attitude reports that posits propositions as arguments of attitude verbs, whether conceived as higher-order beings or as individuals. The observation is that statements of content-sharing using special quantifiers (*what*, *everything*) are acceptable only when the attitude verbs are the same or very similar in meaning. These data have been discussed at length in Moltmann (2003b, 2013), and I will give just some illustrative examples:

- (49) a. ??? John thought what Bill claimed, that Mary won the race.
 b. ??? John thought everything that Bill had imagined.
 c. ??? Joe hoped what Bill claimed, that it will rain.
 d. ??? Joe fears what Bill wrote, that it will rain.
- (50) a. John claimed everything that Bill claimed, that Mary won the race, that Sue did not compete, ...
 b. John thought what Bill thought, that Mary won the race.
 c. John claimed what Bill also asserted, that Mary won the race.

What these data indicate is that what is reported to be shared in such sentences is not a proposition, but an entity of the sort of a claim, a thought, a hope, an imagination, or a fear, that is, an attitudinal object or rather a kind of attitudinal object.

Verbs of saying (locutionary verbs) display similar constraints in that they do not permit sharing with illocutionary verbs, both when taking *that*-clauses and when taking direct quotes as complements:

- (51) a. ??? John said what Bill claimed, that Mary won the race.
 b. John said what Bill said, that Mary won the race.

Sameness of propositional content does not suffice for the acceptability of reports of sharing with locutionary and illocutionary verbs. This means that what is shared in reports of saying with *that*-clauses is not propositions, but entities of the sort of ‘sayings’ or ‘remarks’, that is, locutionary objects. Locutionary objects as entities produced by locutionary acts in the sense of Austin (1962) need to be distinguished from illocutionary objects of the sort of claims, which correspond to illocutionary acts. (51a) is unacceptable because the locutionary object produced by John cannot be identical to the locutionary object produced by Bill.

Reports of sharing are also impossible with verbs of saying and illocutionary objects when they take direct quotes as complements. Thus (52c) cannot be used to describe what is reported jointly in (52a) and (52b); likewise (53) is unacceptable:

- (52) a. John said ‘Who won the race?’
 b. Bill asked ‘Who won the race?’
 c.??? John said what Bill asked, ‘Who won the race?’.

(53) ??? John said what Bill asked, ‘Who won the race?’.

Direct quotes serve to give both a propositional content and the form of an utterance. But that alone is not what reports of sharing are about. The unacceptability of (52c) and (53) shows that for reports of sharing with verbs taking direct quotes as arguments, the identity of whatever direct quotes may contribute is not enough. Rather what matters is again the distinction between locutionary objects and illocutionary objects, though now with their respective phatic components.

Complements of intensional transitive verbs are not subject to the very same constraint in that, for example, (54a) and (54b) are acceptable:

- (54) a. John needed what he now has, a house.
 b. John needs what he is looking for, a computer.

That is (54a) does not require the identity of a ‘need’ with a ‘possession’ and (54b) the identity of a ‘need’ with a ‘search’. Yet the unacceptability of (55) shows that the mere identity of intensional NP-denotations does not suffice:

(55) ?? John is looking for what Bill recognized, a genius.

(55) is unacceptable because a search has nothing relevant in common with a recognition.

As is discussed in Moltmann (2013, chap. 5), the objects reported to be shared with intensional transitives like *need* and *look for* are not necessarily needs or searches, but rather entities that make up the ‘satisfaction’ of such objects, what one may refer to as ‘the satisfaction of the need’ or ‘the satisfaction of a search’. In (54a), a situation of John’s having a house (roughly) satisfies John’s past need and in (54b) a situation of the satisfaction of the need for a computer is (roughly) the same as a situation of the satisfaction of the search for a computer. More technically put, the shared objects here are ‘variable satisfiers’ of the need or the search, entities associated with a function from situations of satisfaction (of the need or search) to entities in those situations having the properties that satisfy the need or search (Moltmann 2013, chap. 5). Thus, in (54a), the variable satisfier will involve (possible) houses in situations satisfying John’s need, which is also a house John ‘has’. In (54b), it will involve (possible) computers in situations satisfying John’s need, which is also a (possible) computer in a situation satisfying John’s search.

6.5. Inferences with quantificational complements of intensional transitives

Another argument against substitutional and higher-order analyses concerns certain inference patterns with intensional transitives, first pointed out by Zimmermann (2006) and subsequently used as a motivation for the Nominalization Theory of special quantifiers in Moltmann (2013, chap. 5). Those inference patterns are equally problematic for any views on which the complement provides a quantifier or property as an argument of an intensional transitive verb.

First, unlike what substitutional and higher-order analyses predict, the inference from (56a) or (56b) to (56c) is invalid:

- (56) a. John needs at most two vaccines.
 b. John needs no vaccine.
 c. John needs something.

The substitutional analysis of the special quantifier *something* does not prevent *at most two vaccines* or *no vaccine* appearing in a vindicating instance. On the higher-order analysis, the special quantifier *something* should range over the entire domain of intensional quantifiers including downward entailing ones represented by *at most two vaccines* and *no vaccine*. Both analyses thus predict the inferences from (56a) and (56b) to (56c) to be valid. (53a) is compatible with (53b) and (53b) does not imply (53c).

Moreover, (57e) does not follow from (57a, b):

- (57) a. John needs a visa to the US.
 b. Mary needs a visa to Russia.
 c. John needs a visa.
 d. Mary needs a visa.
 e. John and Mary need the same thing.

But both the substitutional and the higher-order analysis predict the inferences to go through.

There are two solutions that have been offered to the problem with intensional transitives. Zimmermann (2006) proposed that special quantifiers as in (56c) and (57e) range over properties that are the ‘exact match’ of the need, thus in (57) properties of being a visa to

Russia or a visa to the US. This means there is no such exact match that could make (57e) true. In Moltmann (2013, chap. 5), I argue that the invalid inferences support the view that special quantifiers with intensional transitives like *need* range over variable satisfiers, which are based on functions from situations of satisfaction (of the need) to objects displaying relevant properties in those situations (e.g. being a visa to the US obtained by John).

7. The Nominalization Theory of special quantifiers

7.1. The Nominalization Theory

The Nominalization Theory in its most general form can be formulated as follows:

(58) The Nominalization Theory of special quantifiers

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

Given the Nominalization Theory, special quantifiers range over the following sorts of entities in the various contexts in which they can occur. First, special quantifiers with attitude verbs range over *attitudinal objects* or kinds of them, entities like ‘beliefs’, judgments’, ‘thoughts’, ‘assumptions’, ‘decisions’, ‘intentions, and ‘hopes’, that is, the sorts of entities we refer to with nominalizations of attitude verbs. Attitudinal objects include illocutionary objects like claims and requests and locutionary objects like ‘sayings’ and remarks. Special quantifiers with copula verbs range over *tropes* (or modes) or kinds of them, entities we refer to with nominalizations of adjectives such as *happiness*, *sloppiness*, and *wisdom*.⁷ Special quantifiers with intensional transitives range over *variable satisfiers*, of the sort of things we could refer to with ‘the satisfaction of the need’ and ‘the satisfaction of the search’. Special quantifiers with verbs of saying taking direct quotes as complements range over phatic objects, what one may refer to as ‘whispers’, ‘screams’, ‘utterances’ etc.

The Nominalization Theory as such leaves open how special quantifiers are able to range over such entities and how those entities relate to the embedding predicate. What the theory

⁷ Copula verbs can also take NPs and then also permit special quantifiers:

(i) John became something interesting, a miniature painter.

I take such NPs to also be associated with tropes even if there are no nouns available denoting them.

clearly does not say is that the entities in question form arguments of the predicates: they should not not; otherwise this would lead to the substitution problem (?? *John claimed something*, ??? *John is happiness*, ??? *John said an utterance*).

There are two general options as to how special quantifiers manage to range over entities that a corresponding nominalization would stand for.

[1] Special quantifiers introduce a ‘new domain’ of entities that would not have been present in the semantic structure without the special quantifier.

[2] Special quantifiers pick up on the denotation of an underlying noun.

For attitude reports, the first option was pursued in my earlier work, which explored a neo-Russellian semantics of attitude verbs on which special quantifiers range over entities obtained from multigrade attitudinal relations, propositional constituent, and an agent, relational qua objects (Moltmann 2003a, b, 2014, 2013, chap. 4). The second option has been pursued in my more recent work on attitude reports (Moltmann 2021, forthcoming). That work adopts the view that *that*-clauses act as predicates of attitudinal objects. In the next section, I will present that view in a form that extends straightforwardly to the other contexts in which special quantifiers can appear. The presentation of the syntactic issues will be kept to a minimum, merely showing just what kind of syntactic structures are involved on which the compositional semantics of special quantification is based. The syntactic proposals are meant to be embeddable within properly developed syntactic theories. But for present purposes they are cast within a highly simplified form of syntax (‘simplified syntax’).

7.2. The nominalization theory of special quantifiers with attitude verbs

7.2.1. Attitude reports based on attitudinal objects

The semantics attitude reports I will use of is based on a form of lexical decomposition of attitude verbs in syntax, as proposed by Arsjenevic (2009) and for related analysis of modal sentences with *need* by Harves/Kayne (2012).⁸ On that analysis, an attitude verb like *claim* as

⁸ Harves / Kayne (2012) take the modal verb *need* to be derived from *have need?*. Hale/Kayser (2002) argue for lexical decomposition in syntax even for verbs like *walk*, which for them is derived from *take a walk*. For the use of such a syntactic analysis of attitude reports for a different kind of semantics, see Matthews (2020).

in (59a) is derived from an underlying complex predicate consisting of a so-called light verb and an attitudinal noun taking a relative clause, as in (56b):⁹

- (59) a. John claimed that S.
 b. John made claim that S.

Light verbs are verbs with at most minimal lexical content and include *make*, *have* and *give*. In the derivation of (59a) from (59b), the NP *claim* moves into the specifier position of the light verb *make* (or adjoins to it):¹⁰

- (60) a. John made [_{NP} claim [that [+assert] S]]
 b. John [_{SPEC(VP)} claim]_i [_{V'} made [_{NP} e_i [that [+assert] S]]]

The result *claim-make* will surface as the verb *claim*. Given that derivation, the semantic interpretation of (59a) will be based on the underlying structure in (60a):

- (60) c. $\exists x(\text{make}(\text{John}, x) \ \& \ \text{claim}(x) \ \& \ [\textit{that S}](x))$

The denotation of *that S* and of just *S* will be considered a property of content bearers: the property that holds of a content bearer *x* in case, roughly, *x* is the same in content as *S* (Moulton, 2017, Moltmann 2014, 2021, forthcoming).

In (60a), the *that*-clause has the status of a relative clause, which raises the issue of why the *that*-clause is not optional as is generally the case with relative clauses. One way of accounting for the obligatoriness of the *that*-clause is to assume that the clausal modifier bears a feature such as [+assert] selected by the attitudinal noun (see Arsjenevic 2009). This will also be reflected in the logical form of attitude reports below where *claim that S* will be treated as a complex predicate.

The view that attitude verbs in general are derived from complex predicates consisting of a light verb and an attitudinal noun applies even if the overt nominalization is derived from the verb, as in the case of *thing – thought*. In that case, the attitude verb is derived from a more

⁹ Following Harves / Kayne (2012), I will take the definite determiner *the* not to be present in the underlying structure of (59a).

¹⁰ There are two syntactic views of how incorporation of a noun into the verb may be achieved, by movement into SPEC(VP) or by adjunction, the difference is unimportant in the present context.

abstract nominal root (which would be entirely in line with developments in syntax such as distributive morphology).

7.2.2. The semantics of special quantifiers with attitude verbs

In the semantic proposal I will present, the light noun *-thing* as part of *something*, *everything*, *that*, and *what* will play a central role, namely as what is called a ‘classifier’. Light nouns serve to classify things, either just as entities (THING) or as entities of a particular type (PERSON, TIME, PLACE). In their general classificatory semantic function, light nouns are on a par with classifiers in languages lacking a mass-count distinction such as Chinese as well as nouns like *piece* or *amount* in English (*a piece of bread*, *an amount of water*). The ability of THING to act as a classifier is important for the semantics of attitude reports with special quantifiers. Let us take the attitude report below:

(61) John claimed something disturbing.

The idea is that in the structure underlying (61), the light noun *thing* acts as a classifier selecting an NP headed by nominal root *claim*, as in (62), where ‘CIP’ stands for ‘classifier phrase’:

(62) John make [QP some [CIP thing [NP claim] disturbing]]

The NP *claim* then moves into specifier position of the VP (or adjoins to the VP):

(63) John [_{SPEC(VP)} claim]_i [_V makes [QP some [CIP thing [NP ~~claim~~] disturbing]]]

This allows *claim* to incorporate into the verb, resulting in the verb *claim*.

The interpretation of (61) will be based on the underlying structure in (63), in which the special quantifier ranges over claims. The restriction *disturbing* of *something* will then be predicated of a claim. This immediately accounts for the fact that the Substitution Problem arises with ordinary NPs, but not light NPs. (64a) and (64b) are impossible because the full nouns *thing* and *proposition* do not act as classifiers selecting NPs and thus won’t provide a position for *claim* to originate in:

- (64) a. * John claimed some thing.
 b. * John claimed some proposition.

Claim will be a predicate true of attitudinal objects that are claims as well as kinds of them. I will also assume that *something* involves implicit quantification over sentential contents that can act as predicates of attitudinal objects and modifiers of *claim*. Then the logical form of (61) will be as below:

(65) $\exists x \exists X (\text{make}(\text{John}, x) \ \& \ \text{claim-}X(x) \ \& \ \text{THING}(x, X) \ \& \ \text{disturbing}(x))$

Here *claim (that) S* is formalized as a complex predicate ‘claim -X’, to reflect the obligatoriness of *that*-clauses with the verb *claim*. The complex predicate *claim- X* is to be understood in terms of predicate conjunction: *claim-X(x)* iff *claim(x)* and *X(x)*. Thus, special quantification with attitude verbs involves both singular objectual quantification and higher-order quantification into predicate position.

Let us next turn to free relatives with attitude verbs that are complements of first-order predicates such as (42a) repeated below:

(66) Mary likes what Sue claimed.

For present purposes, I will adopt the view of that free relatives are ordinary relative clauses restricting a silent maximality operator *max*. *What*, as was mentioned, selects the light noun *THING*. Thus, the underlying structure of (66) will be (67a), which will be interpreted as in (67b):

- (67) a. Mary likes [what-THING Sue made ~~what-THING~~ claim].
 b. $\text{like}(\text{Mary}, \text{max } x[\exists X(\text{make}(\text{Sue}, x) \ \& \ \text{claim-}X(x) \ \& \ \text{THING}(x, X))])$

Reports of sharing of the content of attitudes as below involve kinds of attitudinal objects rather than particular attitudinal object, that is, the sorts of things we refer to as ‘the claim that S’, rather than ‘John’s claim that S’:

- (68) a. John claimed everything that Mary claimed.
 b. John claimed what Mary claimed.

(68a) can be derived from an underlying structure as in (69a), with subsequent phrasal movement of the two occurrences of *claim* as in (69b), which permits *claim* to be incorporated into *make* in the embedded clause as well as *make* in the matrix clause:

- (69) a. John make [_{QP} every [_{CIP} THING [_{NP} claim]]] [that Mary make
[THING claim]]]
 b. John [_{SPEC(VP)} claim [_{V'} make [_{QP} every [_{CIP} thing [_{NP} ~~claim~~] [_{CP} that[Mary [_{SPEC(VP)} claim
[_{V'} make [_{CIP} THING ~~claim~~]]]]]]]]]

That is, the NP *claim* moves into the specifier position of the VP in both the main clause and in the embedded clause and incorporate into the verb.

(68a) can then be interpreted as below:¹¹

- (70) $\forall x(\exists X(\text{make}(\text{Mary}, x) \ \& \ \text{claim-}X(x) \ \& \ \text{THING}(x, X)) \rightarrow [\exists X(\text{make}(\text{Sue}, d) \ \& \ \text{claim-}X(x) \ \& \ \text{THING}(x, X)])$

I will mention that there is an alternative analysis of attitude reports that is based on attitudinal objects, but which will not involve syntactic decomposition of attitude verbs. On that view, pursued in Moulton (2015), the attitude verb takes an attitudinal object as an implicit argument and the clausal modifier acts as a predicate of that argument, as below:

- (71) a. John claimed that S.
 b. $\exists x(\text{claim}(\text{John}, x) \ \& \ \text{that } S(x))$

Special quantifiers will then just range over attitudinal objects that are to be arguments of the attitude verb:

- (72) a. John claimed something disturbing.
 b. $\forall x(\exists X(\text{claim}(\text{John}, x) \ \& \ \text{THING}(x, X) \ \& \ \text{disturbing}(x))$

¹¹ The meaning of (68b) is almost the same as (68a). However, the syntax of free relatives is more complex and in fact controversial, and so I set reports of sharing with set relative clauses aside.

Such an analysis won't make use of light nouns as classifiers, but only of their reifying force, mediating between sentential content and attitudinal object. The main drawback of this analysis, though, is its difficulties explaining the Substitution Problem (Moltmann forthcoming, chap. 5).

7.3. Special quantifiers in other contexts

7.3.1. Special quantifiers with intensional transitives

The same semantic analysis of special quantifiers applies to special quantifiers as complements of intensional transitive verbs. Thus intensional transitive need will likewise derived from an underlying complex predicate have need. However the nominal root for intensional transitive *need*₂ needs to be distinguished from the nominal root *need*₁ for the clause-taking verb;

- (73) a. John needs₂ a computer.
 b. John have need₂ for a computer.

Special quantifiers with transitive intensional verbs, as was mentioned, do not range over attitudinal objects, but rather variable satisfiers, entities that correspond to functions from situations of satisfaction (e.g. of the need) to (possible) entities in those situations; thus in (73a) a function mapping a situation satisfying John's need to a computer John 'has' in that situation. If the noun *need*₂ is taken to stand for variable satisfiers, the derivation of (74a) will be as in (74b, c):

- (74) a. John needs₂ something.
 b. John have [QP some [CIP thing [NP need₂]]]
 c. John [_{SPEC(VP)}need₂] [V· have [QP some [CIP thing [need₂]]]].

Unlike special quantifiers with clause-taking verbs which involve implicit quantification over sentential contents, intensional transitives involve implicit quantification over nominal contents, say properties or generalized quantifiers. The logical form of (74a) then is as below:

- (75) SOME $x(\exists X(\text{have}(x, \text{John}) \ \& \ \text{need-}X(x) \ \& \ \text{THING}(x, X))$

In (75), the relation conveyed by *THING* will now obtain also between a variable satisfier and the concept conveyed by *need*₂.

7.3.2. Special quantifiers and quotation

The semantics of attitude verbs with special quantifiers can easily be extended to reports of saying with direct quotes as complements (phatic *say*).¹² I will adopt the same underlying structure for verbs of saying as for attitude verbs, consisting of a light verb such as *make* and an abstract nominal root that I will call ‘SAID’ (Moltmann, forthcoming). Thus, (76a) would be derived from (76b) as in (76c):

- (76) a. John said ‘wow’.
 b. John made [[_{NP}SAID] ‘wow’]
 c. John [_{SPEC(VP)} SAID] [_V made [[_{NP}SAID] ‘wow’]]

Direct quotes will be taken to be predicates of utterances or ‘phatic objects’, the things denoted by the nominal SAID_{phat}, distinct from that of locutionary *say* (taking *that*-clauses). Direct quotes act as such predicates by specifying the phonetic, phonological, morpho-syntactic and perhaps conceptual content of a phatic object. The logical form of (76a) will then be:

- (77) $\exists d(\text{make}(\text{John}, d) \ \& \ \text{SAID}_{\text{phat}}(d) \ \& \ [\text{‘wow’}](d))$

Special quantifiers then involve implicit quantification over linguistic material (quotes), which ‘X’ then ranges over in the logical form of (78a) in (78c):

- (78) a. John said something.
 b. John [_{SPEC(VP)} SAID_{phat}] make [_{QP} some[_{CIP} thing[SAID]]]
 c. $\exists x \exists X(\text{make}(\text{John}, x) \ \& \ \text{THING}(x, X) \ \& \ \text{SAID}_{\text{phat}}\text{-}X(x))$

THING here obtains between a phatic object and the linguistic material that it represents.

¹² This analysis of quotation has been motivated and developed in greater detail in Moltmann (forthcoming).

The same semantics can apply to *word*-NPs as special quantifiers with verbs of saying. The noun *word(s)* will be considered a classifier of locutionary and phatic objects only, applying to the abstract nominal root SAID_{loc}. Then (79a) will be analysed along the lines of (79b), which leads to the logical form in (79c):¹³

(79) a. John said a few words.

b. John [_{SPEC(VP)} SAID_{phat}] make a [_{QP} a few [_{CIP} words [_{NP} SAID_{phat}]]]

c. A FEW $x\exists X(\text{make}(\text{John}, x) \ \& \ \text{SAID}_{\text{loc}}\text{-}X(x) \ \& \ \text{WORD}(x, X) \ \& \ \text{make}(\text{John}, d))$

With locutionary *say*, ‘X’ will stand for sentential material, and ‘WORD’ denotes a relation that obtains between a locutionary object and sentential material in case the locutionary object shares its content with the sentential material (and in that sense instantiates the sentential content).

The fact that *say* taking *words*-NPs does not give rise to the substitution problem is accounted for because *word(s)*, unlike *noun* or *expression*, can act as classifiers able to apply to SAID_{loc}.

7.3.3. Special quantifiers with copula verbs

Special quantifiers in the position of the predicative complement of a copula verb apply to object-correlates of properties, allowing for first-order predicates to act as restrictions. At the same time, they must range over properties as higher-order beings as well, since the latter will serve to saturate the copula verb:

(80) a. John is wise.

b. John is something admirable.

Admirable in (80b) applies to a trope (John’s wisdom) or a quality (or kind of trope) (wisdom), both of which are denotations of the nominalisation *wisdom*.

When applied to special quantifiers in predicate position, the Nominalization Theory again combines with implicit higher-order quantification, this time over properties. The

¹³ The logical form in (79c) disregards the plural *words* for the sake of simplicity. But in fact there are reasons to take the plural seriously and make use of a plural variable in order to represent an ordered plurality of rhetic acts (or objects). See Moltmann (2017, forthcoming).

reifying role of the light noun **THING** with special quantifiers in predicate position consists in conveying a relation between an individual x that is property-correlate and a property X (**THING**(x , X)). (80b) will have the following logical form:

(81) $\exists d \exists X (\text{is}(\text{John}, X) \ \& \ \text{THING}(d, X) \ \& \ \text{admirable}(d))$

As a property-correlate x can be either an individual trope (John's wisdom) or a kind of trope (wisdom), both of which qualify as property correlates of the property expressed by *wise*. They both instantiate the property given the Aristotelian view that it is tropes (modes) that instantiate properties. Qualities (or kinds of tropes) relate to the property by generic instantiation, involving all possible and actual modes that are particular instances of the property.

Also the count quantifier **MANY** in (82a) will range over tropes or kinds of them, as in (82b):

(82) a. John is many things
 b. $\text{MANY}_x \exists X (\text{THING}(x, X) \ \& \ \text{is}(\text{John}, X))$

Kinds of tropes are involved in reports of sharing such as (83a):

(83) John is everything that Mary is.

(83) has an underlying structure as roughly in (84a) and the logical form in (84b):

(84) a. John is [_{QP} every [[_{CIP} thing] [that Mary is **THING**]]]
 b. $\forall x (\exists X (\text{is}(\text{Mary}, X) \ \& \ \text{THING}(x, X)) \rightarrow \exists X (\text{is}(\text{John}, X) \ \& \ \text{THING}(x, X)))$

(84a) involves a silent occurrence of **THING** in the embedded clause. There are two options for permitting that syntactically: **THING** is either associated with *that* viewed as a relative pronoun (Kayne 2005) or forms part of a complex implicit relative clause operator.

7.3.4. Special quantifiers in place of plural and mass NPs

Special quantifiers in place of definite plurals and mass nouns will obviously involve reification, of a plurality or a quantity or portion as a single thing. Let us focus on the case of pluralities, as in the inference from (85a) to (85b):

- (85) a. John counted the beans.
 b. John counted something.

Just using plural logic, (85b) would be formalized as in (86), where ‘xx’ is a plural variable:

- (86) For some xx, John counted some xx-thing.

But *something* may have count status, ranging over pluralities as single things, as in the valid inference from (87a) to (87b):

- (87) a. John counted the beans and the nuts.
 b. John counted two things.

Again, the reifying force of **THING** is at play, this time introducing a collection as one on the basis of a plurality, a collection as many. Thus (87b) will have the following logical form, where again ‘xx’ is a plural variable ranging over several things at once (pluralities as many):

- (88) $\text{TWO } x \exists xx(\text{THING}(x, xx) \ \& \ \text{count}(\text{John}, xx))$

The same semantics applies to mass NPs. Mass NPs range over portions or quantities, but not as single things (McKay 2016). Thus the reifying force of **THING** is again at play as in the formalization of (89a) in (89b), where *m* is a variable ranging over portions:

- (89) a. John forgot two things, the rice and the bread.
 b. $\text{TWO } x \exists m(\text{THING}(x, m) \ \& \ \text{forgot}(\text{John}, m))$

8. The reifying force of the light noun **THING and the formal compositional semantics of special quantifiers**

The proposed semantics of special quantifiers in the different contexts in which they may occur has invoked the reifying force of the light noun *THING*. The light noun *THING* was taken to express various sorts of two-place relations between objects and ‘non-objects’ – properties, pluralities, and (mere) quantities. The relations that *THING* conveys with embedding predicates are summarized below:

(90) a. Attitude verbs

Relation between attitudinal objects or kinds of attitudinal objects and sentential contents.

b. Intensional transitive verbs

Relation between variable satisfiers and nominal contents

c. Phatic verbs of saying

Relation between utterances (phatic objects) and quotes

d. Copula verbs

Relation between tropes or qualities and properties (as second-order beings)

e. Plurals

Relation between pluralities as one and pluralities as many

f. Mass NPs

Relation between quantities ‘as one’ and quantities as neither ‘one’ nor ‘many’

These various relations all relate an object correlate to something that fails to have the status of an object and in that sense can be considered relations of reification or ‘nominalization’ (on an extended semantic understanding of the term).

How are the logical forms of sentences with special quantifiers obtained compositionally? In what follows, I will outline a compositional semantic analysis of special quantification based on generalized quantifier theory, setting aside formal details that do not bear directly on special quantification itself.

In generalized quantifier theory, the denotations of quantificational determiners like *every* and *some* are functions from properties (quantifier restrictions) to sets of properties:

(91) a. $[every] = \lambda A \lambda B [\forall x (Ax \rightarrow Bx)]$

b. $[some] = \lambda A \lambda B [\exists x (Ax \& Bx)]$

The light noun *thing* in *everything* and *something* does not serve as a restriction of the quantifier, but rather ensures, roughly, reification inside the scope of the quantifier. This means that the denotation of *every* does not apply to the denotation of **THING**, but rather the other way around. The reifying light noun *thing* will denote a function from generalized quantifiers to generalized quantifiers, mapping a function from properties to properties of (first-order/second-order/plural/mass) properties to a function from properties to properties of first-order properties only. Let us use ‘X’ as a non-first order variable able to range over the domains of properties, pluralities, as well as quantities and distinguish ‘**THING**’ as standing for a relations between objects and properties/pluralities/quantities from **THING**, the syncategorematic meaning of *thing*, the function from quantificational determiner denotations to quantificational determiner denotations. Then we have:

(92) a. For a quantificational determiner Q (a function from properties to properties of (possibly non-first-order) properties),

$$\mathbf{THING}(\lambda A \lambda B [Q(A)(B)]) = \lambda A \lambda C [Q(A, B) \ \& \ C = \lambda x [\exists X (B(X) \ \& \ \mathbf{THING}(x, X))]]$$

b. For a quantificational determiner D,

$$[D \ \mathit{thing}] = \mathbf{THING}(D) = \lambda A \lambda C [[D](A)(\lambda x [\exists X (C(X) \ \& \ \mathbf{THING}(x, X))]]]$$

That is, **THING** maps a function from first-order properties to properties of possibly non-first-order properties to functions from first-order properties to properties of first-order properties, through the reifying force of **THING**.

The denotation of *everything* thus remains that of a quantificational determiner:

$$(93) [every \ \mathit{thing}] = \mathbf{THING}([every]) = \lambda A \lambda C [[EVERY](A)(\lambda x [\exists X (C(X) \ \& \ \mathbf{THING}(x, X))]]] \\ = \lambda A \lambda C [\forall x (A(x) \ \rightarrow \ \exists X (C(X) \ \& \ \mathbf{THING}(x, X)))]$$

In contrast to **THING**, *admirable* in *something admirable* acts as an ordinary restriction of the quantificational determiner *some*:

$$(94) [something \ \mathit{admirable}] = \mathbf{THING}([some])([admirable]) = \lambda C [SOME([admirable]) \\ (\lambda x [\exists X (C(X) \ \& \ \mathbf{THING}(x, X))])]]$$

Let us start with special quantifiers with copula verbs. The denotation of (91a) can be obtained on the basis of (91b) as in (9&c), adopting quantifier raising and the view that the silent relative clause operator associates with another silent occurrence of **THING**:

(95) a. John is everything Mary is.

b. [Everything [O_i Mary is **THING** e_i]] John is e **THING**

c. **THING**([Every])([O_i Mary is **THING** e_i])(John is e **THING**) =

[[every]($\lambda x[\exists X(\text{be}(\text{John}, X) \ \& \ \text{THING}(x, X))]$)($\lambda x[\exists X(\text{be}(\text{John}, X) \ \& \ \text{THING}(x, X))]$)

= [$\forall x(\exists X(\text{be}(\text{Mary}, X) \ \& \ \text{THING}(x, X) \ \rightarrow \ \exists X(\text{be}(\text{John}, X) \ \& \ \text{THING}(x, X))]$]

The logical form of sentence with a plural NP as in (96a) will also be straightforward, as in (96b), making use of the view that the restriction here is just the universal first-order property:

(96) a. John forgot two things (the beans and the peas).

b. **THING**(**TWO**)($\lambda x[x = x]$, $\lambda yy[\text{forgot}(\text{John}, yy)]$) = **TWO**($\lambda x[\exists yy(\text{forgot}(\text{John}, yy) \ \& \ \text{THING}(x, yy))]$)

The same account obviously applies to mass NPs, using *maqq* quantification. Note that ultimately a single variable ‘*X*’ needs to be used to range over pluralities as well as quantities (for examples like *John forgot two things, the bread and the beans*).

Let us then turn to attitude reports, reporting the sharing of content:

(97) John claimed everything Mary claimed.

The underlying structure of (97) will be as below, with another silent occurrence of **THING** in the embedded clause, selected by the relative-clause operator:

(98) John claimed every **THING** O_i Mary make a **THING** claim.

Everything, we have seen, ranges over claims, but it will involve at the same time implicit existential quantification over sentential contents. With attitude reports **THING** obtains between an attitudinal object and a sentential contents in case the attitudinal object bears that content as its content. Thus, the logical form will be as in (99):

(99) [*every Mary make THING claim John make THING claim*] =
 [[EVERY]($\lambda x[\exists X(\text{make}(\text{Mary}, x) \ \& \ [\text{claim } X](x) \ \& \ \text{THING}(x, X))]$)]($\lambda x[\exists X(\text{make}(\text{John}, x) \ \& \ [\text{claim } X](x) \ \& \ \text{THING}(x, X))]$)
 = [$\forall x(\exists X(\text{make}(\text{Mary}, x) \ \& \ [\text{claim } X](x) \ \& \ \text{THING}(x, X) \ \rightarrow \ \exists X(\text{make}(\text{John}, x) \ \& \ [\text{claim } X](x) \ \& \ \text{THING}(x, X))]$)]

The very same analysis applies to verbs of phatic saying, except of course that ‘X’ is then understood to range over quotes. Here the formalization of an example where THING occurs only in the embedded clause:

(100) a. John likes everything Mary said.
 b. John likes every THING Mary make SAID (‘nice’, ‘great’, ‘wow’).
 b. $\forall x(\exists X(\text{make}(\text{Mary}, x) \ \& \ [\text{SAID } X](\text{Mary}, x) \ \& \ \text{THING}(x, X) \ \rightarrow \ \text{like}(\text{John}, w))$

Thus, special quantifiers permit a unified compositional semantics, once one allows ‘THING’ to convey the various reifying relations that were mentioned.

9. Conclusions

The phenomenon of special quantification is a philosophically important phenomenon, which bears on philosophy of mind and language (the objects of attitudes and acts of saying, the nature of quotation), on metaphysics (the ontological status of properties, pluralities, and quantities), and philosophical logic (motivations for higher-order quantification and higher-order metaphysics)

The paper has argued that though higher-order metaphysics provides a compelling account of the Substitution Problem with non-referential complements, it is unable to account for the range of characteristic semantic properties of special quantifiers. This also holds for the substitutional analysis as recently revived by Sainsbury. The semantic characteristics of special quantifiers instead motivate the Nominalization Theory, on which special quantifiers range over the same sorts of entities that a corresponding nominalization (or underlying noun) stands for. The paper has presented a new, unified formal semantic analysis of special

quantifiers in the various contexts in which they occur. The analysis has made use of both singular objectual quantification and non-singular quantification and attributed a crucial role to the light noun *THING*, which forms an overt or silent part of special quantifiers. That analysis could also extend to *word(s)*-NPs, special NPs that can take the place of clauses and direct quotes as complements of verbs of saying. Given that analysis, special quantifiers involve non-singular quantification implicitly, but act themselves as singular first-order quantifiers ranging over object-correlates of what the non-singular quantifiers may range over.

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