

Special Quantification: Substitutional, Higher-Order and Nominalization Approaches

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Introduction

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.

Quantifiers like *something* are special in that they do not lead to the Substitution Problem. Hence they can be called special quantifiers. 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.

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*). I called the latter the ‘Objectivization Effect’. The difference won’t matter for the purpose of this paper, and thus ‘Substitution Problem’ should cover both phenomena.

The phenomenon generalizes even further, namely to *_*NPs that do not act as singular terms in argument positions, in particular (definite and bare) plural and mass NPs. Non-singular referential NPs likewise 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.

There is an obvious analysis of special quantifiers that is particularly tempting in view of the recent interest in higher-order metaphysics (Williamson, 2003, Skiba 2020), and that is to regard special quantifiers as genuine higher-order quantifiers, that is, as quantifiers ranging over higher-order semantic values that singular terms cannot stand for, and that even in the metalanguage.² A somewhat similar analysis of special quantifiers is the substitutional analysis in the version proposed by Sainsbury (2008). On that view, 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; Thus, *something* in (1c) will range over ‘claims’, entities in the denotation of the nominalization of the attitude verb *claim*. What is important about this view, is that these entities are not to be taken as argument of the embedding predicate. That is, the verb *claim* in (1a) is not taken to denote a relation between agents and claims. Otherwise this would lead to the Substitution Problem as well: claims are entities, thus (1a) should entail the unacceptable *John claimed some entity*.

In this paper, I present a range of generalizations about special quantifiers that pose serious problems for higher-order and substitutional approaches 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. I will also outline a new semantics of special quantifier sentences, based on recent syntactic research that makes use of lexical decomposition in syntax, focusing on the case of attitude verbs but also indicating how the account generalizes to other cases. The Nominalization Theory is not incompatible with the higher-order approach in that it may make use of higher-order quantification as well.

² Such an analysis has most recently been defended by D’Ambrosio (2021), who emphasizes the need to go higher-order also in the metalanguage. See also Prior (1971), Rayo/Yablo (2001), Rosefeldt (2008), Trueman (2018) (for attitude reports), Jones (2016) (for predicates), and Zimmermann (2006) (for intensional transitives).

The paper will first clarify the empirical data: the range of special quantifiers and pronouns in English and related languages with their linguistic peculiarities, and the Substitution Problem with complements and with NPs in referential positions. It will then discuss higher-order and substitutional analyses with respect to five serious problems those approaches are facing. Finally, it will show how the Nominalization Theory deals with those problems and outline a new development of that theory with respect to the syntax-semantics interface.

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

I will take 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. Special quantifiers in English will then include quantifiers with the bound morpheme *-thing* such as *something*, *everything*, *nothing*, but also the quantifiers *much*, *a lot*, and *little*. Moreover it will 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 words*, *a few words*) as complements of verbs of saying can take the place of clausal complements or direct quotes without leading to the Substitution Problem, as we will see below.

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

In this paper, I will focus on the following types of nonreferential omplements dsplaying 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 an argument 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 thus is a major problem for the view (see for discussion). But there are also 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, Elliott, Moulton, Perry . I 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.

Below we see that not only special quantifiers but also *word*-NPs can take the place of clausal complements of verbs of saying without giving rise to problems of substitution:

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

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*). This can be traced to a lexical restriction of *word* to locutionary objects, as opposed to illocutionary and doxastic objects. Locutionary objects, roughly, are the (non-enduring) products of acts of saying, describable as ‘utterances’ or ‘tokens’.

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) or intensional quantifiers (Montague, Moltmann).

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) has received little attention in the literature. 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 less 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 of any other single connective entities), as on the standard account of the semantics of definite plurals that follows 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 singular ordinary NPs referring to sums or sets, but it can still be met with 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, it is just as in *John ate beans* has an existential reading due to the understanding of the verb with a kind-referring complement. () shows that a Substitution Problem arises with bare plurals or mass nouns are replaced by explicit kind-referring NPs, but not so when replaced by plural special quantifiers:³

- (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 (Oliver / Smiley, McKay 2008, Yi). 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).

³ 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),.

4. Linguistic properties of special quantifiers

4.1. Special quantifiers as light quantifiers

Special quantifiers are syntactically distinct from ordinary quantificational and pronominal NPs. This will be important for the proposal I will present at the end. First of all, let us note 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*.

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

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

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

[3] Special quantifier can be used to 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):

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

Kayne (2005) argued that *thing* is what he calls a *light noun*. More precisely, it is the overt version of the abstract light noun **THING**, which can remain unpronounced in the absence of an antecedent. The light noun **THING** is also present in special quantifiers in which **THING** does not appear overtly. Thus, we have *a lot* **THING**, *what***THING**, *what-THING*-ever. Special quantifiers thus are light NPs, NPs with a light noun as head.

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

(2010) furthermore argued, *where* is a determiner selecting the light noun PLACE. Thus *where* is *where*-PLACE, and likewise *there there*-PLACE, *what what*-THING, *that that*-THING, and *when when*-TIME.

Several peculiarities characterize light nouns. First of all, they remain silent without there being 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 and thus form a universal inventory. In addition, they have special movement properties and fail to have syntactic gender features, or rather their syntactic features strictly semantically determined (gender features, mass-count distinction) (cf. Moltmann 2022).⁴

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, a plate, and a fork.

But 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:⁵

- (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:

⁴ In Moltmann (2022), I argued that proper names 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. Given the conceptual semantics of light nouns PERSON, HOUSE will be count and TIME, PLACE, THING mass. As a consequence, *Berlin*, *France*, *2022*, and *two* are treated as mass nouns in German.

⁵ This was noted in Moltmann (2016, 2022) and in Sainsbury (2018).

(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 of paintings, of sculptures, and of drawings:

(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 group 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. This in itself is a significant result, since the existence of genuine plural quantifiers has sometimes been questioned in the literature (Linnebo).

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 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 / * John is happy something.

b. the proof that he won / * the proof something

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

(19) John is happy about something / * 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*, *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 propose the quantifier *somewhere* (*everywhere*, *nowhere*). But recall that on Kayne's view, *where* is a determiner selecting a light noun (*somewhere*-PLACE). Moreover, *somewhere* allows for adjective restrictions (*somewhere nice*), which would be incompatible with it being a non-nominal quantifier, since adjectives are first-order predicates. Syntactically non-nominal quantifiers appear to be highly restricted, 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. The formalization of (21a) will thus be as in (21b):

- (21) a. John remained happy.
 b. R j H

If an intensional transitive verb like *need* is to apply to an intensional quantifier, it is to 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 explains the Substitution Problem: only first-order predicates in the relevant position permit a 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 and mass reference and quantification (e.g. McKay 2008, McKay 2016). Then (23a) will be formalized as in (23b), where mx is an operator binding a plural variable and ‘ $\max xx[\text{students}(xx)]$ ’ is the description of the maximal plurality (as many) of students:

- (23) a. John counted some peas
 b. $C j \max xx[\text{students}(xx)]$

Given this account, 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 non-referential complement sentences above, which can thus be presupposed. The substitutional analysis in the way developed by Sainsbury (2018) then 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 (properties or contents not expressible in the language in question). Sainsbury addresses them by allowing vindicating instances not just to involve expressions, but also concepts, in 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, in particular relative clause pronoun *what* in description like *what John became*.

Sainsbury makes an interesting suggestion regarding plural special quantifiers, proposing that plural special quantifiers count vindicating instances. 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 vindicated 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.

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, Williamson, Rosefeldt 2008, Trueman 2018, d'Ambrosio 2021, and others). On the higher-order analysis, special quantifiers are 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. $\exists S CjS$

(29) a. John is something.

b. $\exists F Fj$

(30) a. John is looking for something.

b. $\exists Q LjQ$

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 '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:

(32) a. John ate something, beans,

b. $mm A j mm$

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 it 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 is* 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 approaches 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 Sainsbury (2018) takes note of the phenomenon, pointing out that ‘Adjectives are not existentially committing’ (p.), no account within the Substitutional Analysis is given. Sainsbury proposes an interesting account of plural special quantifiers which extends to adjectival restrictions of special quantifiers. Sainsbury proposes that plural special quantifiers as in *John ate two things, the beans and the peas* count vindicating instances. This then should mean that adjectives as restrictions of special quantifiers 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 the 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 clausal contents.

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, where the relative-clause operator does not bind a variable in predicate position:

(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.

[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.

Thus, 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. I *like* what John *said* *e*.
 b. * I *like* that Sue is competent.

The two generalizations also apply to verbs of saying with direct quotes (John said something I do not like, ‘shit’, *I did not like what John said, namely ‘completely impossible’*).

Finally, the first generalization manifests itself also with intensional transitive verbs. 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:

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

This means that 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 higher-order and first-order at once.

6.3. No factivity imposed by prosentential special quantifier restrictions

Adjectives may apply to clausal subjects. However, there is an important semantic difference with respect to when they act as special quantifier restrictions. Evaluative predicates like *nice* trigger a factive reading of a subject clause, but not when restricting a special quantifier:

- (44) a. [That Bill is talented] is *nice*.
 b. Sue said something *nice*, [that Bill is talented].

Whereas the subject clause in (44a) receives an obligatory factive interpretation, no factive interpretation of *that Bill is talented* is triggered in (44b).

This same holds for factive verbs such as *caused an uproar*, as below:

- (45) a. [That John won] *caused an uproar*.
 b. John said something that *caused an uproar*, that he won.

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

6.4. Identity statements

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

- (46) a. ??? John thought what Bill claimed, that it will rain.
 b. ??? John thought everything that Bill had claimed.
 c. John claimed what Bill claimed.
 d. John thought what Bill thought.
- (47) a. ??? Joe hoped what Bill claimed, that it will rain.
 b. ??? Joe fears what Bill wrote, that it will rain.

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

Verbs of saying display similar constraints. First of all, verbs of saying, locutionary verbs, do not permit sharing with illocutionary verbs:

- (48) John said what Mary claimed, that Bill won the race.

Moreover, the neutral verb *say* does not permit sharing with a verb of manner of speaking, and that with both clauses and direct quotes as complements:

- (49) a. ?? John screamed what Bill said, namely that Bill won the race.

- b. John whispered what Bill whispered, namely that Bill won the race.
- (50) a. ?? John whispered what Bill said, ‘wow’.
- b. John whispered what Bill whispered, ‘wow’.

For reports of sharing with verbs taking direct quotes as arguments, the identity of whatever direct quotes may stand for as referential terms is not enough. Rather what is shared are ‘utterances’, or, more precisely, the products of phatic acts, in the sense of Austin (1961), with a mere saying being a different act from a saying with a particular manner of speaking.

As is discussed in Moltmann (2013, chap. 5), complements of intensional transitive verbs are not subject to the very same constraint in that, for example, (51a) and (51b) are acceptable;

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

Yet the unacceptability of (52) indicates that still a similar constraint is in place:

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

The objects reported to be shared with intensional transitives are not attitudinal objects or kinds of them, 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’. More technically put, the shared objects are ‘variable satisfiers’ of the need or the search, roughly speaking, objects in situations satisfying the need (Moltmann 2013, chap. 5). Thus, in (51a), the variable satisfier will be a (possible) house in a situation satisfying John’s need, that is, a house John ‘has’. In (51b), it will be a (possible) computer in a situation satisfying John’s need, that is, a 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 motivations for the Nominalization Theory of special quantifiers in Moltmann (2013, chap. 5). Those inference patterns equally problematic also for any views

on which the complement provides a quantifier or property as an argument of an intensional transitive verbs.

First, unlike what substitutional and higher-order analyses predict, the inference from (53a) or (53b) to (53c) is invalid:

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

For a substitutional analysis it won't matter which quantifier takes the place to the special quantifier; for higher-order approaches, the special quantifier should range over the entire domain of intensional quantifiers, and thus both analyses do not preclude downward monotone quantifiers like *at most two vaccines* and *no vaccine*. But (53a) is compatible with (53b) and (53b) does not imply (53c).

Moreover, (54e) does not follow from (54a, b):

- (54) 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.

Both substitutional and higher-order analyses predict the inferences to go through.

There are two solutions that have been offered to the problem with intensional transitives. Zimmermann (2006) proposed that *something* as in (52a) quantifies over properties that are the 'exact match' of the need, thus properties of being a visa to Russian or a visa to the US in (52e). In (51c), there is no such exact match, at all. 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 of the need.

7. The Nominalization Theory of special quantifiers

7.1. The Nominalization Theory in its general form

Here is the Nominalization Theory in its most general form:

(55) The Nominalization Theory of special quantifiers

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

This means the following for the domain of special quantifiers 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 ‘claims’, ‘thoughts’, ‘assumptions’, that is, what we refer to with nominalizations of attitude verbs. Special quantifiers with copula verbs range over *tropes* or kinds of them, entities we refer to with nominalizations of adjectives such as *happiness, sloppiness, wisdom*.⁶ Special quantifiers with intensional transitives range over *variable satisfiers*, of the sort of things we refer to with the nominalization of such verbs, needs searches etc. Special quantifiers with verbs of saying taking direct quotes as complements range over phatic objects or *utterances* – what one may refer to as ‘sayings’, whispers, screams etc.

What the Nominalization Theory as such leaves open is how special quantifiers are able to range over such entities, and how the entities relate to the embedding predicate. What the view clearly does not say is that the entities form *arguments* of the predicates: they do not; otherwise this would lead to the substitution problem (?? *John claimed many claims, ??? John is happiness, ??? John said an utterance*).

There are two 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.

The first option was pursued in my earlier work on attitude reports, which explored a neo-Russellian semantics of attitude verbs and on which special quantifiers range over entities obtained from multigrade attitudinal relations, propositional constituent, and an agent, namely relational qua objects (Moltmann 2003a, b, 2014, 2013, chap. 4). The second option has been

⁶ 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 associate with

pursued in my more recent work (Moltmann 2021), within a view on which *that*-clause act as predicates of attitudinal objects, making use of syntactic proposals by Kayne (2010), Harves/Kayne (2012), and Arsjenevic (2009). In the next section, I will briefly sketch that view, without, though, developing a detailed syntactic analysis of special-quantifier constructions as such.

7.2. The nominalization theory of special quantifiers with attitude verbs

The semantics attitude reports I propose is based on a form of lexical decomposition of attitude verbs in syntax, as on the syntactic analysis of attitude reports of Arsjenevic (2009) and the related analysis of modal sentences with need of Harves / Kayne (2012).⁷ On that analysis, an attitude verb like *claim* as in (56a) is derived from an underlying complex predicate consisting of a so-called light verb and a noun taking a clausal modifier, as in (56b):

- (56) a. John claimed that S.
 b. John made (the) claim that S.
 c. John made [claim [that [~~claim~~ +ass] S]]
 d. John claim-made ~~claim~~ [that [[_{force} ~~claim~~ +ass] S]]

Light verbs, verbs with at most minimal lexical content, include *have*, *be*, *make*, and *give*. Arsjenevic, takes the noun *claim* to originate from inside a force projection of the embedded clause, where it has to agree with a feature such as [+assert] as head of that projection. It subsequently moves into the object position of the transitive light verb *make* and then adjoins to the light verb. The result *claim-make* will surface as the verb *claim*. Given that analysis, the semantic interpretation of (56a) will be based on the underlying structure in (56b)

In the underlying structure of (56a) in (56b), the *that*-clause has the status of a relative clause, though one with a feature that requires agreement with the attitudinal noun (which makes it obligatory).

⁷ 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).

Given such an analysis, all attitude verbs in general are derived from complex predicates consisting of a light verb-noun, with the *that*-clause acting as a relative clause modifying the noun.⁸

Special quantifiers as complements of attitude verbs require a further assumption, which rests on the special syntactic status of light nouns. The proposal is that the light noun *-thing* forms a compound with the nominal from which the attitude verb is derived. (55a) then is derived from (55b):

- (55) a. John claimed something.
 b. John claim-made [~~some claim~~-thing]
 c. The denotation of [claim-thing] = the denotation of [claim_N]

Unlike the light noun *THING*, ordinary nouns are assumed not to be able to form such compounds. That is, [*claim-proposition*] and [*claim-object*] are ungrammatical.

The same analysis can apply to verbs of saying with direct quotes as complements, once direct quotes are predicates of phatic objects (utterances), specifying their phonetic, phonological, morpho-syntactic and / or perhaps conceptual. Thus, (58a) would be derived from (58b), with the logical form in (58c):

- (58) a. John said ‘wow’.
 b. John made [say]_N ‘wow’
 c. $\exists d(\text{make}(\text{John}, d) \ \& \ \text{saying}(d) \ \& \ [‘\text{wow}’](d))$

Special quantifiers again would involve a compound of the light noun *-thing* with the nominal root:

- (59) a. John said something.
 b. John say-make some ~~say~~-thing.

The approach also permits an analysis of *word*-NPs with a verb of saying. First we can assume that the noun *word* applies only to locutionary objects, utterances of a sort. Then (60a) will be analysed along the lines of (60b, c):

⁸ This would hold even if the overt nominalization is derived from the verb, as in the case *think – thought*, in which case the attitude verb is derived from an abstract noun ‘THINK’.

- (60) a. John said a word.
 b. John say-make a [say-word].
 c. $\exists d(\text{make}(\text{John}, d) \ \& \ [\text{say-word}(d)])$

Again, the assumption is that *word* permits forming a compound with the nominal root *say*, but not so for *noun* or *expression*. Thus, whereas [say-word] is acceptable, [say-noun] and [say-expression] are not. Semantically, *word*-compounds will express properties of particular types of utterances or phatic objects, depending on the noun of saying with which they combine.

7.3. Further applications

How does the Nominalization Theory apply to predicative complements of copula verbs? Here the Nominalization Theory best combines with implicit quantification over concepts as higher-order beings, filling in two positions, as in (61b): the position of the first component of a compound with *-thing* and the position of an adjunct to the copula. If ‘X’ is a second-order variable, we will will get the logical form in (61c):

- (61) a. John is something.
 b. John e-is some e thing.
 c. For some X, John X-is some X-thing.

Let us take the concept HAPPY as the value of X, then HAPPY-is is interpreted just like is happy, and the denotation of [HAPPY-thing] will have the very same as the denotation of *happiness*. The special quantifier itself thus will quantify over tropes or kinds of tropes. The assumption will be that the light noun *-thing* can form a compound with predicates, but not the noun *property* or *object*, that is, [HAPPY-property] will be unacceptable.

Here is sketch as to how the account could apply to intensional transitives. Let us distinguish intensional transitive *need*₂ from clause-embedding *need*₁. Then (62a) would be derived from (62b), with *need for a computer* standing for a variable satisfier of the need, and (63a) would be derived from (62b) and (62c), with *need* originating as part of a compound formed with *-thing* and subsequent incorporation into the copula *be*:

- (62) a. John needs₂ a computer.
 b. John have need₂ for a computer.
- (63) a. John needs₂ something.
 b. John have some need₂-thing.
 c. John need-have some need₂-thing.

Special quantifiers in place of definite plurals will involve reification of a plurality (as many), along the lines of (64c) for (64b):

- (64) a. John counted the beans.
 b. John counted something.
 c. For some xx, John counted some xx-thing.

The plurality, however, also needs to be an argument of count. A suggestion of how that is possible is that the plural variable would also be in the position of the supplement *the beans* as in (65a), so that we will have (65b) as the logical form of (64b):

- (65) a. John counted something, the beans.
 b. For some xx, John counted some xx-thing, xx.

Being in the position of a supplement, the variable ‘xx’ provides the argument of *count*. By contrast, *something* ranges over reifications of values of ‘xx’.

Of course, these proposals need to be elaborated in detail, in particular concerning the syntactic assumptions they involve. To do this will have to be left for another occasion.

8. Conclusions

Special quantifiers display a very particular semantic behavior and are also distinct from ordinary quantifiers by being light quantifier, containing an overt or silent light noun *THING*. Though higher-order metaphysics provides a compelling account of the Substitution Problem with nonreferential complements, it is unable to account for the range of semantic properties of special quantifiers, as is the substitutional analysis proposed by Sainsbury. The semantic peculiarities 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. I have outlined a new account of the compositional semantics of special quantifiers based on the presence of light noun THING in special quantifiers and based on a general approach of lexical decomposition in syntax. The analysis can straightforwardly be extended *word*-NPs, special NPs that can take the place of clauses and direct quotes when they are complements of verbs of saying. If this is on the right track, it means that a semantic analysis of philosophically important linguistic phenomena such as special quantifiers cannot proceed without taking recent work in syntax seriously.

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