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## Intensional Transitive Verbs and their “Objects”

We have seen that attitudinal objects play an important role in the semantics of attitude verbs. Attitudinal objects such as “John’s thought that S” or kinds of them such as “the thought that S” are precisely the sorts of things that special quantifiers such as *something* range over when they are the complements of attitude verbs. This conforms with the Nominalization Theory of special quantifiers. Given that theory, special quantifiers range over the same sorts of things that can act as the referents of the relevant nominalizations, such as *John’s thought that S* or *the thought that S*. These nominalizations describe the “products” of attitudes, rather than attitudinal actions or states.

This raises the question of the semantics of special quantifiers when they are the complements of intensional transitive verbs, that is, verbs like *need*, *look for*, *buy*, *own*, and *recognize*, intensional verbs that take NPs as complements, rather than clauses.

Intensional transitive verbs display the distinction between actions and products just like verbs that take clausal complements. Thus, there is a distinction between a state of needing and a need, an act of promising and a promise, an act of buying and a purchase, and an act of recognizing and a recognition. Given the Nominalization Theory, one would expect that special quantifiers should range over such products. We will see, however, that special quantifiers with intensional transitive verbs do not generally range over products (or kinds of them), but rather over more derivative entities. These are what I will call *variable satisfiers*. Variable satisfiers are entities that can be obtained from a product such as a particular need or promise and a concept (or a kind of product and a concept).

Variable satisfiers are a particular sort of variable object in the sense of Chapter 2. Variable objects are entities associated with a function, mapping circumstances to their manifestations in those circumstances. Variable satisfiers are variable objects associated with a function mapping a situation satisfying a product, let us say a particular need or promise, onto an object that in that situation fulfills the conditions imposed by the need or promise.

The generalization that special quantifiers with intensional transitive verbs range over variable satisfiers is supported by various empirical generalizations, in particular generalizations as to when two intensional verbs can share their “object,” that is, share the semantic values of special quantifiers in place of their complement.

Variable satisfiers are involved not only in the semantics of special quantifiers with intensional transitive verbs. To an extent, they can also be the referents of ordinary NPs, namely definite NPs of the sort *the assistant John needs*.

I will first discuss the role of special quantifiers in relation to three different semantically distinguished types of intensional transitive verbs. I then present the crucial generalizations about the “sharing” of objects by different intensional verbs and introduce the notion of a variable satisfier. Finally, I will discuss the applicability of the account to some further types of intensional verbs.

## 1. Intensional transitive verbs and special quantifiers

Transitive intensional NP verbs characteristically take NPs as complements that display a special, intensional interpretation.<sup>1</sup> *Need* is a typical example of an intensional transitive verb:

- (1) a. John needs a horse.

The complements of intensional transitive verbs are, like predicative and clausal complements, non-referential complements, and like predicative and clausal complements, they can be replaced by special quantifiers such as *something*, *everything*, *several things*, and *the same thing*, without change in the acceptability or the meaning of the sentence. Thus, the inference from (1a) to (1b) is valid:

- (1) b. John needs something.

Intensional transitive verbs also allow for special anaphora such as *that* (as opposed to “non-special” anaphora like *it*, *him*, or *her*):

- (2) John needs a very good secretary. Bill needs that/??? it/??? her too.

Let me call the entities that special quantifiers range over or special anaphora stand for with intensional transitive verbs *the objects of intensional transitive verbs*.

The main question this chapter is about concerns the nature of the objects of intensional transitive verbs. On standard approaches, special quantifiers with intensional transitive verbs range over intensional quantifiers or properties, and intensional transitive verbs take intensional quantifiers or properties as arguments. Such approaches would fall under the Abstract Meaning Theory of special quantifiers, which goes along with the Relational Analysis of the embedding verb. Intensional transitive verbs provide similar arguments against the Abstract Meaning Theory and in favor of the Nominalization Theory of special quantifiers as we have seen with copula verbs and with attitude verbs taking clausal complements. Moreover, intensional transitive verbs

<sup>1</sup> There are also intransitive verbs that allow for an intensional reading of a subject, for example *lack* and *is missing*. The discussion to follow will cover those predicates as well.

provide the same arguments against a Relational Analysis as we had seen with verbs taking predicative complements and verbs taking clausal complements.

However, special quantifiers and pronouns with intensional transitive verbs do not allow for a straightforward application of the Nominalization Theory of special quantifiers and pronouns. On the Nominalization Theory as it stands, special quantifiers with intensional transitive verbs should range over the kinds of entities that definite NPs with the corresponding nominalizations refer to, such as in (1b) “John’s need for a horse” or “the need for a horse.” That is, special quantifiers with intensional transitive verbs should range over the products of the event or state described by the verb. But special quantifiers with intensional transitive verbs do not in fact range over the products of the described state or event. Rather, they range over entities that play the role of possible satisfiers of those products or kinds of products. This means, for example, that *something* in (1b) does not range over entities like “the need for a horse,” but entities that one may describe roughly as “the satisfaction of the need for a horse.” I will call the entities that special quantifiers with intensional transitive verbs range over *variable satisfiers*.

### 1.1. *Verbs of absence and verbs of possession*

The particular behavior of special quantifiers with intensional verbs is one of the marks of truly intensional transitive verbs. In order to discuss the behavior of special quantifiers with intensional transitive verbs, let me start with a brief discussion of criteria for intensionality in the sense relevant for intensional transitive verbs of different types.

For the main part of this chapter, I will focus on four different kinds of intensional transitive verbs:

- [1] Verbs of absence such as *need* and *look for*
- [2] Verbs of possession (and transaction) such as *own*, *owe*, *buy*, and *sell*
- [3] Epistemic verbs such as *recognize*
- [4] Verbs of nomination such as *hire*.

These four kinds of verbs involve different criteria for intensionality and somewhat different, though related, semantic interpretations. The distinction into four kinds does not capture all intensional transitive verbs. At the end of this chapter, I will discuss two further classes of intensional transitive verbs, verbs of creation such as *paint* and *imagine* and verbs of perception such as *see*. Their semantics appears more fundamentally different from that of the four classes of intensional transitive verbs that this chapter focuses on.

Special quantifiers and pronouns play an important role for the criteria for intensional transitive verbs, but the criteria of intensionality for the four classes of intensional transitive verbs are somewhat different.

I will start with verbs of absence. There are two criteria that are sometimes mistakenly used as criteria for the intensionality of transitive verbs: apparent reference to non-existents and the failure of substitutivity of co-referential terms or co-extensional predi-

cates. According to those criteria, transitive verbs like *think of*, *worship*, and *admire* classify as intensional verbs.<sup>2</sup> These criteria, however, are not suited for the class of intensional transitive verbs of absence, nor are they suited for other intensional transitive verbs.

The mark of intensional transitive verbs of absence is a particular form of nonspecificity (Moltmann 1997, Zimmermann 2001, Forbes online). This form of nonspecificity can be indicated by the addition of *any will do*:<sup>3</sup>

- (3) a. John is looking for an assistant, any will do.
- b. John needs a horse, any will do.
- c. John wants a picture of Mary, any will do.

With verbs of absence, the complement contributes to the characterization of the *conditions of the satisfaction* of the “need,” the “search,” the “desire,” and so on, that is, the satisfaction of the product of the state or event described. The nonspecificity criterion indicates that it is, to an extent, arbitrary which object satisfies such a product.

The criterion of nonspecificity identifies as intensional also transitive verbs of possession and change of ownership, such as *own*, *possess*, *owe*, *offer*, and *buy*:

- (4) a. John owns half of the estate (but no specific half).
- b. John offered Mary a glass of wine (before opening the bottle).
- c. John just bought a case of wine (which will be delivered later that week).
- d. Mary accepted a glass of wine (before John poured her one).

Here the *any will do*-test is not applicable though. Verbs of possession are not satisfaction directed, but describe events or states that have, one may say, *realization conditions*. Any half of the estate will “realize” John’s ownership of half of the estate.

Clearly, for verbs of possession, apparent reference to non-existents and failure of substitutivity could not be considered criteria for their intensional status: the complement generally presupposes a non-empty domain of quantification, and substitution of co-extensional predicates certainly goes through.<sup>4</sup>

<sup>2</sup> It is in fact questionable whether verbs like *think of* and *worship* should classify as intensional transitive verbs, requiring a distinct semantics from that of extensional verbs. They might rather classify as extensional verbs able to take intentional objects as arguments, which can explain apparent reference to non-existents and failure of substitutivity (Moltmann 2008).

<sup>3</sup> This test does not apply to completion-related verbs of absence such as *lack* or *be missing*:

- (i) a. ?? The door lacks a handle, any will do.
- b. ?? A screw is missing, any will do.

The reason appears to be that verbs of completion are not satisfaction-directed like other verbs of absence. Verbs of completion express simply a comparison between a relevant state of “completeness” and the actual state of an object (or situation).

<sup>4</sup> There may be cases of reference to non-existents with *buy* or *sell*, for example in the context below:

- (i) John made the mistake of buying an apartment advertised on the internet, an apartment that did not in fact exist.

Also *owe* allows for that:

- (ii) John owes his son a meeting with Santa Claus (since this is what he promised him).

The nonspecificity characteristic of intensional transitive verbs goes along with the particular semantic behavior of special quantifiers and pronouns. Special quantifiers can range over objects common to two occurrences of intensional transitive verbs that describe distinct intentional acts by different agents, acts that moreover may have to be satisfied by different actual entities. This is the case for *the same thing* and relative clauses with *what* in the valid inferences below:

- (5) a. John is looking for an assistant.  
       Mary is looking for an assistant.  
       John and Mary are looking for the same thing.
- b. John bought what Mary bought.  
       Mary bought a house.  
       John bought a house.

In (5a), two premises involve one and the same object, which will then act as the semantic value of *the same thing* in the conclusion. This is possible even if it is clear that the search will be satisfied by different entities. Similarly, in (5b) *what Mary bought* obviously stands for the very same thing as is involved in John's buying a house.

The use of special pronouns and anaphora makes the same point:

- (6) a. John is looking for an assistant. Mary is looking for that too.  
       b. John owes Mary a bottle of wine. Bill owes her that too.

These potentially shared objects are the objects of intensional transitive verbs.<sup>5</sup> The objects of intensional transitive verbs more precisely are the objects that special quantifiers range over when taking the position of a complement of an intensional transitive verb. Of course, they are also the kinds of things that special anaphora stand for when acting as complements of intensional transitive verbs.

Another characteristic of verbs of absence, shared by the other three classes of intensional verbs, is the particular interpretation of quantificational complements (of the non-special sort). Generally, quantificational complements of intensional transitive verbs receive an "external" interpretation, that is, they do not generally specify part of the "content" of the state or event in question, but rather characterize situations in which the "need" or "search" is satisfied:

- (7) a. John needs at most two assistants.  
       b. John needs to have at most two assistants.
- (8) a. John promised exactly two papers.  
       b. John promised to write exactly two papers.  
       c. John promised that he would write exactly two papers.

<sup>5</sup> In Moltmann (2008), I called such objects "intentional objects." This is not a fortunate choice of a term, however, since "intentional objects" are traditionally taken to be the particular objects of object-related attitudes such as *think of* or *imagine*, that is, attitudes described by intentional verbs, not intensional verbs.

- (9) a. John bought at most two bottles of wine.  
 b. John offered Mary at least two bottles of wine.

(7a) says that in a situation in which John’s needs are satisfied, John has at most two assistants (which makes it compatible with John in fact not needing any assistant). By contrast, (7b) means, at least preferably, that in a world in which John’s needs are satisfied, John has at most two assistants (which makes it incompatible with John not needing any assistant). Similarly, (8a) means that in a situation in which John’s promise is satisfied, John writes exactly two papers (which allows him to write in fact three papers). By contrast, (8b) and (8c) mean that in a world in which John’s need is satisfied, John writes exactly two papers (and thus if John writes three papers he will no longer satisfy his promise).<sup>6</sup> Let me call the reading of the quantifiers in (7a) and (8a) the *external reading*, and the reading of the quantifiers in (7b), (8b) and (8c) the *internal reading*. Verbs of possession as in (9a, b) clearly allow only for an external reading.

### 1.2. Epistemic verbs

Epistemic intensional transitive verbs involve quite different criteria of intensionality. *Recognize* is an example of an epistemic verb that can be used intensionally, as below:

- (10) a. John recognized a great talent when talking to his wife.

The mark of the intensional status of epistemic intensional transitive verbs is not any form of nonspecificity, but rather failure of existential quantification and of substitutivity. Thus, (10a) does not imply (10b) or (10c):

- (10) b. John recognized his wife.  
 c. There is a great talent x, John recognized x.

*Count* is another, rather special, epistemic verb. It is used intensionally below:

- (11) John counted nine when counting the ten students.

*Count* has the peculiarity of requiring a numeral as its complement when displaying the intensional reading.

In addition, *find* has an intensional reading as an epistemic verb, for example below:

- (12) John found a great talent when talking to his wife.

Epistemic intensional transitive verbs do not display the relevant sort of nonspecificity because they do not involve any form of arbitrariness of satisfaction or realization. Instead, they involve predication of the property given by the complement in an epistemic act. This is why they exhibit failure of substitution of co-extensional complements as well as failure of existential quantification.

<sup>6</sup> The relevant contrast is stronger between (8a) and (8c), with a tensed clause, than between (8a) and (8b).

Some intensional verbs of absence can also be used as epistemic intensional verbs. This holds in particular for *look for*, for example in (13) when it precedes (12):

- (13) John is looking for a great talent.

In fact, the failure of substitutivity with psychological verbs of absence such as *look for* can be traced to the additional epistemic reading such verbs may carry.

Clearly, the complement of an epistemic intensional verb has a predicative function. However, unlike with a verb of nomination, it has a predicative function within an epistemic act. This means that what is predicated is not necessarily just a property, but may be something hyperintensional (a property together with a mode of presentation, let us say).

As with verbs of absence and of possession, a quantified complement of an epistemic intensional verb generally has an external interpretation specifying the number of particular epistemic acts that are performed, rather than a particular part of a constituent of the content of an epistemic state:

- (14) John recognized at least two great talents when doing the talent scout (in fact he recognized exactly three great talents).

### 1.3. Verbs of nomination

Verbs of nomination involve the attribution of a property as part of a change in status described by the verb. The verb *hire* has an intensional reading in (15a), meaning something like (15b):

- (15) a. John hired an assistant.  
b. John hired Sue as an assistant.

In addition, *find* can have an intensional reading as a verb of nomination:

- (16) a. John found an assistant.

(16a) is not equivalent to “there is an *x* and John found *x*”; rather John’s finding an assistant consists in John’s making someone his assistant.

This also holds for *look for*. More precisely, *look for* can have two intensional readings at once: as an intensional verb of absence and as an intensional verb of nomination, as below:

- (16) b. John is looking for an assistant.

*Look for* in (16b) is a verb of absence by allowing a certain arbitrariness of situations of satisfaction, and it is a verb of nomination in that each such situation involves the agent making someone his assistant.

The mark of the intensionality of verbs of nomination is certainly neither nonspecificity nor failure of substitutivity, but rather failure of existential quantification. That is, (16a) does not imply (16c):

- (16) c. There is an assistant  $x$ , John found  $x$ .

Again, like the complement of verbs of absence and epistemic verbs, quantificational complements of verbs of nomination exhibit an external interpretation:

- (17) John hired at least two assistants (in fact, he hired three).

Epistemic intensional verbs, verbs of nomination, as well as certain verbs of absence such as *look for* hardly allow a paraphrase using a clausal complement instead of an NP complement. This makes an analysis making use of an implicit clausal complement rather implausible. However, intensional transitive verbs may specify implicitly conditions on satisfaction or realization, and in that sense, they implicitly involve conditions of a clausal type.

The role of quantifiers in the complement of intensional transitive verbs also fails to give support for an analysis on which such verbs take properties as arguments (Zimmermann 1993). Given a more standard semantic view, we are then left with an analysis on which the complement of an intensional transitive verb provides a quantifier as the argument of the relation expressed by the verb. However, such an analysis meets a range of difficulties, as will be discussed in the next section.

## 2. The Relational Analysis of intensional transitive verbs

Let me start with standard analyses of intensional transitive verbs that can be found in the semantic literature. The most common semantic analyses of sentences with intensional transitive verbs fall under the Relational Analysis. On the Relational Analysis, the complement of a transitive intensional verb serves to provide an argument for the relation expressed by the verb.

Given the preceding discussion, there is only one version of the Relational Analysis that would have a sufficient generality of application to intensional transitive verbs, and that is one according to which the relation expressed by an intensional transitive verb takes an intensional quantifier as its argument (Montague 1973, Moltmann 1997). Let me call this the *Quantifier-Based Relational Analysis*—as opposed to the *Property-Based* and the *Proposition-Based Relational Analysis*.<sup>7</sup> On the Quantifier-Based Relational Analysis, (18a) has the logical form in (18b):

- (18) a. John needs a horse.  
b. *needs*( $j$ ,  $Q$ )

That is, complements (of the non-special sort) of intensional transitive verbs denote intensional generalized quantifiers, that is, functions from worlds to extensional

<sup>7</sup> In Moltmann (1997), I had distinguished a further class of intensional predicates, namely predicates of resemblance like *resemble*, *compare*, and comparatives. Such predicates do not accept quantificational complements, but only simple indefinite ones. As I had suggested in Moltmann (1997), they should receive a different semantic treatment, namely one on which they take properties as arguments.

quantifiers (semantic values of type  $\langle s, \langle \langle e, t \rangle, t \rangle \rangle$ ), or, on Montague's (1973) account, functions from worlds to functions from properties to truth values (that is, semantic values of type  $\langle s, \langle \langle s, \langle e, t \rangle \rangle, t \rangle$ ).

The Quantifier-Based Relational Analysis goes along with the view that special quantifiers such as *something* range over intensional quantifiers rather than individuals. This straightforwardly accounts for the validity of the inference from (18a) to (18c):

- (18) c. John needs something.

Similarly, special pronouns like *that* will stand for intensional quantifiers, rather than individuals.

In fact, on the Quantifier-Based Relational Analysis, quantifiers like *something* will be ambiguous when they act as complements of intensional verbs. They may not only range over the intensional quantifiers that are potential arguments of the intensional verb, but also act as first-order quantifiers and provide their own intension as an argument of the intensional verb. This reading generally arises when the special quantifier is restricted by an adjectival modifier or relative clause. Thus, while (19a) displays the interpretation on which *something* ranges over intensional quantifiers, (19b) displays the one on which *something against headaches* provides its intension as an argument of *need*, and a sentence like (19c) is ambiguous:

- (19) a. John needs something, namely a good secretary.  
 b. John needs something against headaches, anything will do.  
 c. John needs something.

Treating special quantifiers, on one interpretation, as ranging over intensional quantifiers raises serious difficulties, though. It predicts inferences such as the following to be valid:<sup>8</sup>

- (20) a. John needs at most one assistant.  
 John needs something.  
 b. John promised nothing of interest.  
 John promised something.

Neither (20a) nor (20b) is valid, however. The premise of (20a) could be true even if John does not in fact need any assistant at all, in which case it is not true that he “needs something.” Similarly, the premise of (20b) is compatible with John having made no promise at all, in which case it is not true that he “promised something.” Let me call this the *Problem of Negative Quantifiers*.<sup>9</sup>

<sup>8</sup> See Zimmermann (2006) for a discussion of such inferences in a somewhat different context.

<sup>9</sup> With some intensional verbs, for example *want*, the inference does go through. In my ears, the following inference is valid, on one interpretation of the premise:

- (i) John wants no distractions.  
 John wants something.

A somewhat related problem arises with the monotonicity properties that quantificational complements of intensional transitive verbs display, a problem discussed in great detail by Zimmermann (2006). Let me call this the *Monotonicity Problem*. The following two observations show the problem. First, with ordinary NPs, intensional verbs are upward monotone with respect to their intensional argument, that is, the inference in (21) is intuitively valid:

- (21) John is looking for a green sweater.  
John is looking for a sweater.

Second, with special quantifiers upward monotonicity no longer holds:

- (22) John is looking for a sweater.  
Mary is looking for a book.  
There is something John and Mary are looking for.

*Something* appears possible in this context only if the complements are the same in content:

- (23) John is looking for a sweater.  
Mary is looking for a sweater.  
There is something John and Mary are looking for.

The inference in (23) is valid, though, only if John and Mary are just looking for any sweater whatsoever.<sup>10</sup>

The Quantifier-Based Relational Analysis of intensional transitive verbs also faces the same two problems as the Relational Analysis of verbs taking predicative and clausal complements, namely the Substitution Problem and the Objectivization Effect. The invalidity of inferences with (24a) as premise and (24b) or (24c) as conclusion illustrates the Objectivization Effect:

The inference is valid because there is in fact a desire on the part of John, namely not to have any distraction. The verbs with which a negative quantifier characterizes the content of the actual state or act described appear to be just those that also take small clauses as complements. Perhaps this means that they require a clausal analysis at least on one interpretation (den Dikken et al. 1996).

<sup>10</sup> Zimmermann (2006) proposes an account within the Property-Based Relational Analysis to explain the peculiar monotonicity behavior of intensional verbs. On this account, the actual argument of an intensional verb like *look for* is not necessarily the property denoted by the NP complement, but may be a more specific property, the property that constitutes an “exact match” of the agent’s search. That is, if John is in fact looking for a green sweater and this is reported as *John is looking for a sweater*, a *sweater* will only partially characterize the object of John’s search. Only special quantifiers like *something* quantify over exact matches. This is reflected in the analyses below, where “look for” is the relation that is to hold between an agent and his “exact need”:

- (i) a. *John is looking for an N* is true iff  $\exists P(P \leq N \ \& \ \text{look for}(j, P))$   
b. *John is looking for something* is true iff  $\exists P \text{ look for}(j, P)$

We will later see that the Modified Nominalization Theory of special quantifiers accounts for the problem as well. It does so without having to use properties as the arguments of intensional transitive verbs and without having to posit two versions of an intensional transitive verb, one overt version applying to the overt complement and one underlying version taking what is the actual argument of the verb.

- (24) a. John needs a horse.  
 b. John needs some quantifier.  
 c. John needs the semantic value of *a horse*.

As we have seen, special quantifiers can replace the complements of intensional transitive verbs without leading to the Substitution Problem or the Objectivization Effect, just as in the case of predicative and clausal complements. This again indicates that intensional quantifiers as semantic values of the complement of intensional transitive verbs do not provide an argument of the relation expressed by the verb. It also shows that intensional quantifiers would not be available for special quantifiers to range over in the first place. As in the case of predicative and clausal complements, it means that (non-special) NPs as complements of intensional transitive verbs simply do not provide arguments (abstract meanings) of a relation expressed by the verb.

The Substitution Problem and the Objectivization Effect give support for the Nominalization Theory of special quantifiers. However, the Nominalization Theory will apply to intensional transitive verbs only in a modified way, namely as what I will call the *Modified Nominalization Theory*. Let us first see how the Nominalization Theory could apply to intensional transitive verbs and then look at a greater range of data that will motivate the Modified Nominalization Theory.

### 3. The Nominalization Theory of special quantifiers with intensional transitive verbs

#### 3.1. Evidence for the Nominalization Theory

The Substitution Problem and the Objectivization Effect are problems of the familiar sort for the Abstract Meaning Theory of special quantifiers with intensional transitive verbs. Further evidence against the Abstract Meaning Theory is the kinds of predicates applicable to the semantic values of special quantifiers or pronouns. Thus, the sentences in (25) are not equivalent to those in (26), which, even though grammatical, would give the wrong truth conditions:

- (25) a. John counted all he needed.  
 b. John enumerated the things he needed.  
 c. John described exactly what he needed.
- (26) a. John counted the quantifiers that . . .  
 b. John enumerated the quantifiers that . . .  
 c. John exactly described the quantifier that . . .

Quantifiers like *all (that) he needed*, *the things he needed*, and *exactly what he needed* clearly do not range over intensional quantifiers, the arguments of the verb *need* on the Quantifier-Based Relational Analysis.

These observations seem to support the Nominalization Theory of special quantifiers with intensional transitive verbs. The Nominalization Theory would also straightforwardly account for the Problem of Negative Quantifiers and the Monotonicity Problem: special quantifiers with intensional transitive verbs would not quantify over intensional quantifiers, but rather over things introduced by nominalizations (and thus representing an exact match). The validity of inferences with special quantifiers will thus depend entirely on the availability of things that would be semantic values of the relevant nominalizations.

The question is, however, how would the Nominalization Theory apply to special quantifiers with intensional transitive verbs? The answer that comes to mind first is that special quantifiers when acting as complements of intensional transitive verbs range over the kinds of things that the corresponding deverbal nominalization stands for. That is, *something* in *John needs something, namely a horse* ranges over things of the sort “John’s need for a horse” or else the corresponding kind “the need for a horse.” Special quantifiers with intensional transitive verbs would then range over the same sorts of “products” as in the case of clausal complement-taking verbs.

One indication that special quantifiers with intensional transitive verbs quantify over things like needs is the use of measure quantifiers and predicates. *A lot* as a special quantifier acting as the complement of *need* corresponds to the predicate *great* evaluating the corresponding “need,” making (27a) and (27b) roughly equivalent:

- (27) a. John promised a lot.  
b. John’s promise was great.

But there are apparent difficulties for the view that special quantifiers with intensional transitive verbs range over things like “needs.” Thus, the predicates *count*, *enumerate*, and *describe* in (25) do not seem to target things like “needs”; rather they apply to possible satisfiers of a “need.” The restrictions that special quantifiers with intensional transitive verbs allow confirm the point:

- (28) a. John needs something sweet.  
b. John promised Mary something exciting, a trip to China.

According to (28a), it is the satisfier of John’s need that is sweet, not the need itself, and according to (28b), it is the trip to China that is exciting, not the promise as such.

Admittedly, though, entities like needs are to an extent individuated by their possible satisfiers and appear to be able to carry certain properties of the satisfying objects. Thus, the sentences in (25) appear in fact equivalent to those below:

- (29) a. John counted all his needs.  
b. John enumerated his needs.  
c. John exactly described his needs.

Counting and enumerating and even to an extent describing can apply to products with respect to the relevant satisfiers or with respect to the correlated event. In fact, *count*, *enumerate*, and *describe* display two readings with products: one focused on the correlated events, and another focused on the satisfier. For example, regarding one and the same situation of someone buying one thing in one store and two things (at once) in another store, one may correctly count or enumerate two purchases or three. This holds to an extent also for *describe*: describing the purchase may mean describing the event or describing the things bought (or both).

Moreover, certain restrictions on special quantifiers with an intensional transitive verb like *need* may be understood as predicates of the corresponding “need,” even though they relate to the satisfiers of the need. This holds in particular for evaluative predicates like *unusual* below:

- (30) a. John needs something unusual, namely ten maids.  
 b. John’s need is unusual, namely his need for ten maids.

Thus, quantitatively or qualitatively evaluating a need or a promise may consist in quantitatively or qualitatively evaluating the satisfiers of the need or promise.

However, the inheritance of properties of satisfiers by the products described by intensional transitive verbs is obviously restricted. A great range of properties of a satisfier, for example properties of taste, color, or shape, cannot be attributed to the product of the described event or state (??? *a sweet need*, ??? *a red need*, ??? *a round need*). Moreover, we will see in the next section that there are conditions on the sharing of objects by different intensional transitive verbs that show that it is not generally the product that is shared, but rather possible satisfiers of the product. This does not mean that the Nominalization Theory of special quantifiers as such is wrong. But it shows that the Nominalization Theory needs to be modified in a certain way to allow special quantifiers with intensional transitive verbs not to range over the sorts of entities described by the deverbal nominalizations, but rather over more derivative sorts of entities.<sup>11</sup>

In the case of attitude verbs taking clausal complements, we had seen another sort of evidence against the Abstract Meaning Theory and in favor of the Nominalization Theory of special quantifiers, namely restrictions on the sharing of the propositional objects described by different attitude verbs. Intensional transitive verbs do not provide this sort of evidence for the Nominalization Theory. In fact, the conditions on the

<sup>11</sup> Conjunctions like (i) below might be considered problematic for this view:

- (i) John needs something strange and a sweater.

However, sentences like (i) hardly sound very natural. Moreover, the phenomenon of mixed conjunctions as in (i) itself is in fact a more general one, occurring with any non-referential terms, for example predicative complements and *that*-clauses:

- (ii) a. John became a baker and something else I cannot remember.  
 b. John said that he would leave and something very strange, which I cannot remember.

(i) thus is part of a more general phenomenon of conjunction of mixed types, rather than being a particular problem arising with intensional verbs.

sharing of objects by different intensional transitive verbs raise a range of complications, which require a significant modification of the Nominalization Theory when applied to special quantifiers with intensional transitive verbs.

### 3.2. *Apparent problems for the Nominalization Theory*

If the objects of intensional transitive verbs were products of the described event or state, this would predict that intensional transitive verbs could share their object only if those verbs were identical or of the same type, as below:<sup>12</sup>

(31) John needs the same thing Mary needs, namely a house.

In (31), the *same thing* could stand for “the need for a house.”

This means that extensional and intensional verbs should not be able to share their object. However, actually, they are able to, given valid inferences such as (32a) and (32b):

(32) a. John buys whatever (the thing/those things) he needs.

John needs a car.

John buys a car.

b. John needed a car.

John bought a car.

John bought what he needed.

The validity of such an inference in fact seems to support a Montagovian account on which both intensional and extensional verbs take intensional quantifiers as arguments, with meaning postulates on intensional verbs ensuring the right truth conditions (Montague 1973).

Also, two quite different intensional verbs may share their object:

(33) a. John promised Mary only what she really needed, namely a car.

b. Mary needs what she lacks.

(34) a. John promised Mary what Sue really needs, namely a car.

b. John himself lacks what Mary needs.

Here the corresponding nominalizations could not refer to the same type of entity: a promise is not a need, and a need is not a lack.

Even though the conditions on sharing of the objects of different intensional verbs do not seem to support the Nominalization Theory, we will see that there is in fact a

<sup>12</sup> Intensional verbs of nomination like *hire* do not accept *the same thing* under the circumstances under which intensional verbs of absence do. Thus the following sentence is unacceptable:

(i) ??? John hired the same thing as Mary, namely an assistant.

The same also holds for epistemic verbs:

(ii) ??? Talking to Bill, John recognized the same thing as Mary, namely a genius.

significant range of data that reveal constraints on when objects can be shared by different verbs. These data ultimately support the Nominalization Theory once this theory is modified in a certain way.

### 3.3. *Extensional and intensional verbs sharing their object*

In fact, not all extensional–intensional verb pairs can share their object. The following inference, for example, is intuitively invalid:

- (35) Mary needs a book.  
       John read a book.  
       John read what Mary needs.

That this inference is invalid is actually not entirely right. There is a reading on which (35) is valid, though intuitions are a bit fluctuating. The reading in question involves coercion (and is in fact accompanied by the “feel” of coercion), namely semantic type shift from the semantic type of singular indefinites to the type of bare plurals. Bare plurals, recall, are semantically of the type of “kinds” in the sense of Carlson (1977). This means that the intensional type of *a book* in the first premise of (35) and the extensional type of *a book* in the second premise of (35) are shifted to the type of the bare plural *books*. Recall from Chapter 1 that bare plurals provide arguments for both extensional and intensional verbs, allowing for intensional, extensional, generic, as well as kind readings.

The type-shifting account of the validity, on one reading, of the inferences in (35) is supported by the validity, on any reading, of the corresponding inference with bare plurals:

- (36) Mary needs books.  
       John reads books.  
       John reads what Mary needs.

In general, intensional and extensional verbs do not permit inferences such as (35). Further examples illustrating the impossibility of sharing are those below:

- (37) a. ?? John drank what Mary needs, a glass of water.  
       b. ?? John destroyed what Mary was looking for, a bookshelf.  
       c. ?? Mary found what John had corrected, a mistake.

On the relevant readings on which they are unacceptable, (37a) should simply say “John drank a glass of water, and Mary needs a glass of water,” (37b) “John destroyed a bookshelf, and Mary built a bookshelf,” and (37c) “Mary found a mistake, and John corrected a mistake.” Those examples are acceptable of course on one reading, the one involving type coercion.

There is at least one intensional verb that cannot share its object with an extensional verb on any reading because it does not allow for type coercion. This is the verb *count*. *Count* has an intensional reading in examples like (38):

- (38) There were nine students in the class, but John counted ten students.

That the intensional *count* cannot share its object with an extensional verb can be seen from the following sentence, which can never mean something like “John counted ten people, and Mary met ten people”:

(39) ??? John counted what Mary met.

Why is (39) (as opposed to (37a, b, c)) never good? The reason is that type coercion in this case is impossible. No kind argument could be made available because intensional *count* requires a quantificational NP (with a weak quantifier) and does not accept bare plurals. Note that no intensional reading is available in (40):

(40) John counted men.

The case of intensional *count* constitutes a rather compelling argument for the coercion account of the validity of (35) and the acceptability of (37a, b, c) on the relevant reading.<sup>13</sup>

The second problem for the Montagovian account of the validity of (32a, b) is that extensional verbs do not allow for special quantifiers in the way intensional ones do. The following examples are unacceptable:

- (41) a. ??? John met what Bill is looking for, namely a rich heiress.  
b. ??? John talked to what Bill needs, namely an assistant.

The same observations can be made for kind-denoting NPs:

- (42) a. ??? John met what Bill met, local politicians.  
b. ??? John met something, namely local politicians.

That is, coercion is impossible with special quantifiers, which is the reason why a second reading of (42a–b), on which the examples are acceptable, is not available.

A third problem for the Montagovian account is that two extensional verbs cannot share their object if they involve distinct arguments:

- (43) a. ?? John ate the same thing that Bill ate, namely a piece of cake.  
b. ?? John bought what Bill destroyed, namely a car.

(43b) is not natural on a reading on which the car John bought is distinct from the car Bill destroyed. (Even such cases, though, allow for one reading, namely the reading based on type coercion, accompanied by the usual feeling of effort associated with

<sup>13</sup> One question the type-shifting account raises is, why is type-shifting of the type of a singular indefinite to the type of a kind-denoting bare plural not available in the context of proper kind predicates such as *widespread* or *extinct*? Thus the following examples are impossible:

- (i) a. ??? A lion is widespread.  
b. ??? A lion is extinct.

The reason might be the plural requirement of those predicates. Perhaps the kinds that singular indefinites may denote under type-shifting provide only individuals as instances, not collections.

coercion.) On that reading, (43a) is synonymous with “John read the same thing as Bill, namely books,” and (43b) with “John bought what Bill destroyed, namely cars.”

Given the restrictions on the sharing of objects with extensional and intensional verbs (setting aside readings with coercion), the question is, under what circumstances can extensional and intensional verbs share their object, rendering arguments like (32a, b) valid? Let us take the conclusion of (32b), repeated below:

(44) John bought what he needed, a car.

The main clause of (44) describes an act of purchase that results in a situation of John having a car. This situation is also a situation that satisfies “John’s need,” as described in the relative clause. “John’s need” is of course the product of the state of needing, the implicit argument of *need*. The concept of a situation satisfying the product of a state or event plays a crucial role in the condition on sharing.

Note, though, that in (44) the verb *buy* does not directly describe the appropriate situation, but rather describes an act that results in a situation satisfying the need.

Other cases of sharing with extensional and intensional verbs are of the same sort:

- (45) a. John has what he needs.  
 b. John now has what he lacked.  
 c. Mary got what she wanted.  
 d. John gave Mary what he had promised her, a book.

In (45a) and (45b), the extensional verb *have* describes directly situations satisfying the need and the lack respectively. In (45c), again the resulting situation of the event described by the extensional verb is a satisfier of the desire or promise. In (45d), the situation that satisfies the promise will have to be the more complex situation described by the main predicate, the situation of John giving Mary a book.

Thus, what underlies the sharing of objects of extensional and intensional verbs is that the situation described by the extensional verb (or resulting from the event described by the extensional verb) is a satisfaction situation of the product of the event or state described by the intensional verb.

In (45a–d), a particular situation specified by the extensional verb serves as a satisfaction situation of the product of the event argument of the intensional verb. However, sharing is possible also if the situation specified by the extensional verb is just of the *type* of a situation that satisfies the product of the event argument of the intensional verb. Here are some cases:

- (46) a. John bought what Mary really needs, a big car. (But John did not buy it for her.)  
 b. John has what every child needs, a stable home.  
 c. John got what his grandfather always dreamt of, namely a Ferrari.

In (46a), not the particular situation specified by the extensional verb is a satisfaction situation for John’s needs, but rather a situation that belongs to the same type as the situation that the extensional verb specifies. That is, it is not John’s having a big car that is a satisfaction situation of Mary’s need, but rather a situation that belongs to the type of situation in which someone or other has a car. In (46b), the situation of John having a stable home is of a type some instance of which satisfies any child’s need. (46c) also involves a type of situation: it is not John’s buying a Ferrari that could be the satisfaction situation of his grandfather’s dreams, but rather a situation of the same type, a situation that would have occurred at an entirely different time under different circumstances. For the sake of simplicity, I will ignore the role of time for satisfaction situations and formulate the semantics of special quantifiers while setting time-related concerns aside.

The conditions on when extensional and intensional verbs can share their object are thus the following:

- [1] The extensional verb specifies a situation that is (closely related to) a satisfaction situation of the product of the state or event described by the intensional verb.
- [2] The extensional verb specifies a situation that is of the type of situation that also satisfies the product of the state or event described by the intensional verb.
- [3] Coercion takes place, that is, type shift of special quantifiers from the type of semantic values of nominalizations to that of kinds. Kinds will then act as arguments of the two verbs.

#### 3.4. *Two intensional verbs sharing their object*

Also two different types of intensional verbs can share their object. The conditions are similar to those of an intensional and an extensional verb. Two intensional verbs can share their object when a possible satisfaction situation of the one will also be a possible satisfaction situation of the other, as in (47a, b):

- (47) a. Mary needs what she lacks, a car.
- b. John promised Mary only what she really needed, namely a car.

In (47a), a situation satisfying Mary’s “lack” will also be a situation satisfying Mary’s need. In (47b), a situation satisfying John’s promise would be a situation in which John gives Mary a car. In fact, such a situation is not exactly one that satisfies Mary’s need, but rather a situation normally resulting from a situation of that sort, a situation in which Mary has a car.

Instead of sharing specific possible satisfaction situations, the two intensional verbs may also share just a type of situation, different instances of which would satisfy the products of the event arguments of those verbs. This is the case below:

- (48) a. John himself lacks what Mary needs, a car.
- b. John promised Mary what she demanded, a new car.
- c. John promised Mary what Sue really needs, namely a car.

In (48a) the type of shared situation is someone's having a car. This is also the shared type of situation in (48b), though here an instance of that type is not itself a satisfaction situation of the promise, but rather the result of a situation satisfying the promise (someone giving Mary something).

Sharing is possible also with other intensional verbs. Here are some examples of sharing with two epistemic verbs:

- (49) a. John found what Mary found, a great talent.  
 b. When talking to Julie, John recognized what Mary recognized, a great talent.

Of course, satisfaction situations for all epistemic states are different from the satisfaction situations discussed so far in that they consist in an epistemic act of predicating a property of an object. As a result, epistemic verbs cannot share their objects with non-epistemic intensional verbs:

- (50) a. John needs what Mary recognized, a great talent.

Also, *look for* used as an epistemic verb can share its object with epistemic *find*:

- (50) b. Having talked to his wife about mathematics for the first time, John found what he was looking for, a great talent.

In (50b), it is the situation of recognition resulting from the finding that is a situation satisfying the search.

Also two verbs of nomination can share their object:

- (51) a. John hired what Bill hired, a good secretary.

In particular, *find* and *look for* as verbs of nomination can share their object:

- (51) b. John found what he was looking for, an assistant.

In (51b), the situation resulting from the nomination is a situation satisfying the search.

As expected, a verb of nomination cannot share its object with an epistemic verb:

- (52) ?? John found what Bill recognized, a great collaborator.

This is, of course, because verbs of nomination involve satisfaction situations of a very different type than epistemic intensional verbs.

Also, intensional verbs of possession can share their object, either by sharing a particular satisfaction situation or a type of satisfaction situation:

- (53) a. He accepted what I offered him (namely a glass of wine; but before I could pour him one, a fire broke out).  
 b. On the internet, John bought what Bill bought, a bottle of wine.  
 c. John already owns what Mary just bought, namely half of the estate.

Intensional verbs of possession can also share their object with verbs of absence:

- (54) John offered Mary what she needed, a drink. (But she actually never got one.)

Here a situation of satisfaction of the offer (John’s giving Mary a particular glass of wine) normally results in a situation of Mary’s having a drink, which is a satisfaction situation of Mary’s need.

It appears that the ability of verbs of possession to have an intensional reading is also what allows extensional and intensional verbs to share their object. Looking at the various acceptable examples of extensional and intensional verbs sharing their object, it appears that in all those cases the extensional verbs themselves are verbs of possession (such as *buy*, *give*, and *have*), that is, verbs that in principle can have an intensional (nonspecific) reading. By contrast, no sharing seems possible with verbs that lack an intensional reading, such as *read*, *drink*, and *destroy*:

- (55) a. ?? John read what he wanted, a good book.  
 b. ?? John drank what he needed, a glass of wine.  
 c. ?? John destroyed what Bill had promised Mary, a statue.

In all of the examples discussed, the situations at play belonged to a limited set. They were either situations of someone “having” an object or someone giving another an object, or else predicational situations, involving some notion of recognition or nomination. This might suggest that the possible shared situations are strictly limited to situations of this type. However, it appears that finer distinctions among situations need to be drawn. Thus, sharing does not really seem possible below:

- (56) a. ?? John recognized what Mary found, a great talent.  
 b. ?? John owns what Mary needs, a bicycle.

Again, there is a second reading of these examples, on which they involve type coercion. On that reading, (56a) is synonymous with (56c):

- (56) c. I own white horses, and Mary found white horses.

Given these observations, we can generalize that the cases in which sharing of the objects of intensional transitive verbs is possible, without coercion, are those in which the two verbs would not only share the same indefinite NP, but either possible (or actual) satisfaction situations or else a type of satisfaction situation.

What do special quantifiers with transitive intensional verbs then actually range over? It would be inadequate to take special quantifiers themselves to range over sets of satisfaction situations or types of them. One reason is that two intensional verbs sharing their object always interest themselves in the same entity in a satisfaction situation and not others. Thus, they cannot share entire situations themselves. For example, if John needs what Mary needs, namely the solution to a problem, then the satisfaction situations for John’s and Mary’s needs have to contain both solutions and problems. But what satisfies both John’s need and Mary’s need is having a solution, not having a

problem. Second, the modifiers that special quantifiers may take always act as predicates of individuals (satisfaction objects) and not satisfaction situations. The example below is an illustration of the point:

(57) John wants something luxurious, namely a Bentley.

Thus, the entities that special quantifiers with intensional transitive verbs range over are object-like, not situation-like. They are what I call *variable satisfiers*, variable objects whose manifestation in a given satisfaction situation is an object that has certain properties in that situation, properties that would be partially specified by a complement of the verb. Two intensional verbs share their object just in case they share a variable satisfier.

A variable satisfier may depend on a particular product or on a kind of product. The first case illustrated by (47b) is repeated below:

(47) b. John promised Mary what she really needed, a car.

Here, a satisfaction situation of John's promise (of a car) is a satisfaction situation of Mary's need (of a car). In any such satisfaction situation, there is a car that Mary has (possibly as a result of John having given it to her). The shared variable satisfier here depends on both John's promise and Mary's need. The variable satisfier is the variable object that in any satisfaction situation  $s$  has as its manifestation a car that Mary has.

A variable satisfier that depends on a kind of product is illustrated by (48a), repeated below:

(48) a. John (himself) lacks what Mary needs, a car.

What John and Mary share according to (48a) is a variable satisfier that depends on both "the lack of a car" and "the need for a car," two product kinds. This variable satisfier has a manifestation in any situation  $s$  satisfying an instance of one or the other product kinds, namely a manifestation that is a car that some agent has in  $s$ .

#### 4. A semantic analysis of intensional transitive verbs with special quantifiers

The semantics of intensional transitive verbs based on the notion of a variable object can now be developed more formally. For that purpose, let us first focus on entities like "John's need of a horse." Just as an attitudinal object such as "John's thought that  $S$ " is the (non-enduring) product of an act of thinking, "John's need of a horse" is the (non-enduring) product of a state of needing. The action-product distinction applies with intensional transitive verbs in just the same way as it applies with clausal complement-taking verbs. Both attitudinal objects and objects like "John's need for a horse" have satisfaction conditions.

There is one major difference, though, between attitudinal objects and the products associated with intensional transitive verbs. It concerns the role of the syntactic

complement. With intensional transitive verbs, the complement does not generally specify a propositional constituent, but rather gives a partial characterization of a satisfaction situation of the product of the event or state described. I will assume that the complement of an intensional transitive verb has as its only semantic function that of characterizing the satisfaction situations of the products of the event argument of the verb.<sup>14</sup> Intensional transitive verbs may then simply be taken to express a two-place relation between events and agents.

Let me call a *pure verb of absence* a verb of absence on a use on which it does not also have an interpretation as an epistemic verb or a verb of nomination. Then a pure verb of absence together with its complements has as its denotation the sort of property given below, where  $\models$  is the relation that holds between a situation and a product that the situation exactly verifies and ‘H’ symbolizes the ‘have’-relation.<sup>15</sup>

(58) The interpretation of pure verbs of absence

For a pure verb of absence V, a quantificational determiner Q, and a nominal N',  
 $[V Q N'] = \lambda i \lambda d [\exists e(V_i(e, d) \ \& \ \forall s(s \models \text{prod}(e) \rightarrow Qx(N'_s(x) \ \& \ H_s(d, x)))]^{16}$

<sup>14</sup> In the case of psychological verbs of absence, the complement may actually specify a propositional constituent involved in the mental act or state, in addition to giving a partial characterization of the satisfaction situation. Thus, psychological verbs of absence may involve opacity in the way modal verbs of absence like *need* do not. For the example, the inference from (ia) to (ib) is not valid, but it would be with *need* in place of *want*:

- (i) a. John wants eyeglasses.  
 b. John wants spectacles.

<sup>15</sup> Without the use of products with their satisfaction situations, transitive intensional verbs of absence would require an analysis parallel to Hintikka’s analysis of doxastic and epistemic verbs, as modal operators ranging over accessible worlds:

- (i)  $x \text{ needs } Q N'$  is true in  $w_o$  iff for every world  $w$ ,  $w_o R_{\text{need}, j} w$ , for some property  $P \in [Q N']$ ,  $\{y \mid \langle x, y \rangle \in H(w)\} = P(w)$ .

The accessibility relation  $R_{\text{need}, j}$  relates worlds in which the agent  $j$ ’s needs are satisfied to the world considered actual. However, to give justice to the interpretation of quantificational complements, possible worlds would have to be replaced by situations (Moltmann 2008).

Richard (2001) takes a different approach to account for downward monotone quantifiers, adding a subset to a given accessible world, a subset that will contain the entities the agent “has” when his needs are satisfied.

<sup>16</sup> This account is still not entirely satisfactory. One reason is the “conjunctive force” of disjunctive complements, discussed by Forbes (2006), as below:

- (i) John needs a sweater or a jacket.

On the relevant reading, (i) says that John’s needs can be satisfied by both a sweater and a jacket. This does not come out from the analysis in (58); since on that analysis (i) is not a valid conclusion from (ii):

- (ii) John needs a sweater.

It appears that the disjunctive complement in (i) must provide more than a necessary condition on the satisfaction situations. In some way, it must also provide a sufficient condition to yield the conjunctive force. At the same time, though, the disjunctive NP as such does not generally provide necessary and sufficient conditions on satisfaction situations. If John needs a sweater or a jacket, then it may be that his need is satisfied only if he has a warm sweater or a warm jacket. That is, the obvious solution to the problem of disjunctive complements is in conflict with the account of upward monotonicity (Section 2) that (58) provides. A proper discussion of disjunctive complements of intensional transitive verbs will have to await another occasion.

Here *prod* is the function mapping an event or state to its product.

(58) has a further advantage in that it accounts for two different readings that (7a), repeated below, may display:

- (7) a. John needs at most two assistants.

On one reading, let me call it the *exact-match reading*, John's needs are satisfied just in case John has at most two assistants, be it zero, one, or two. On the second reading, there is a particular number *n* of assistants, be it zero, one, or two, and John needs to have *n* assistants. Let me call this the *partial-characterization reading*. On the exact-match reading, *at most two assistants* represents the exact need (at least as regards to how many assistants of a particular sort, if any, are needed). On the partial-characterization reading, *at most two assistants* gives only a partial characterization of the exact need. The analysis in (58) as such captures both readings.

Special quantifiers with intensional transitive verbs, we have seen, do not generally stand for the entity that the corresponding nominalizations refer to, that is, the products of the event or state described. Rather they stand for objects derived from such products, namely variable satisfiers. Variable satisfiers serve the satisfaction of a particular product or else the satisfaction of a kind of product. In the former case, the variable satisfier depends on the particular product of the event argument of the verb. In the latter case, it depends on the kind of product one of whose instances is the product of the event argument of the verb. For example, "the need of a horse" is the kind of intentional object any of whose instances *e* is such that for some agent *d*, *e* = *d*'s need of a horse. As a kind term, *the need for a horse* is to be understood in the way discussed in Chapter 1, namely as a term plurally referring to the various possible instances (just like the terms for a kind of attitudinal object *the thought that S*).

A variable satisfier depends not only on a product or a kind of product. A variable satisfier can be obtained from the product or a kind of product only together with the restriction provided by the complement of the verb. Thus, in the case of *John needs a horse*, the variable object will depend both on "John's need" and the concept expressed by *horse*.

Variable satisfiers dependent on the products described by verbs of absence can then be characterized as follows, where again  $\models$  is the relation that holds between a situation and a product just in case the situation exactly satisfies the product, and  $\text{ag}(e)$  is the agent of *e*:

- (59) a. The variable satisfier of a product described by a verb of absence  
 For a product *e* and a concept *C*,  $\text{var-sat}_{\text{abs}}(e, C) =$  the variable object *o* such that for any situation *s*,  $s \models e$ ,  $\text{manif}(o, s) = \lambda x[C_s(x) \ \& \ \text{HAVE}_s(\text{ag}(e), x)]$ ; undefined otherwise.

Here I assume that *need* involves the general relation HAVE expressed by *have*. In (59a), "ag(*e*)" stands for the "agent" or "subject" of *e*.

A variable satisfier based on a kind of product, such as “the need for a horse,” is a variable object that has manifestations in any situation satisfying an instance of the kind. Thus, for verbs of absence we have:

- (59) b. The variable satisfier of a kind of product described by a verb of absence  
 For a kind of product  $e$  and a concept  $C$ ,  $\text{var-sat}_{\text{abs-kind}}(e', C) =$  the variable object  $o$  such that for any product  $e'$ ,  $e' \text{ I } e$ , and any situation  $s$ ,  $s \models e'$ ,  $\text{manif}(o, s) = \lambda x[C_s(x) \ \& \ \text{HAVE}_s(\text{ag}(e'), x)]$ ; undefined otherwise.

Here  $\text{I}$  is the instantiation relation that holds between a particular and a kind (which itself may be understood as the relation “is among” that holds between an individual and a plurality, if kinds are conceived as pluralities).

Variable satisfiers do not depend for their identity on the products described by intensional verbs. Rather, occurrences of different intensional transitive verbs may easily share a variable satisfier. Moreover, variable satisfiers based on kinds of products are independent of any particular agent and thus can be the shared object of occurrences of intensional transitive verbs involving different agents.

Variable satisfiers are associated with a partial function mapping situations to entities that are satisfiers in those situations. They are associated with a partial function because many situations may not contain a satisfier. Using situations allows a single world to contain several satisfiers, namely in different situations.

Variable satisfiers may also involve pluralities as manifestations. This is the case with plural complements in sentences of the following sort:

- (60) John needs something, namely two assistants.

In (60), *something* would range over variable satisfiers whose manifestations consist in pluralities of two assistants that John has in the relevant satisfaction situation. For such cases, the definite descriptions used in (59a, b) should be replaced by plural descriptions.

Pluralities as manifestations of variable satisfiers are also needed for quantificational NPs like *at most two assistants* in (7a), repeated again below:

- (7) a. John needs at most two assistants.

On the exact-match reading, the variable satisfier has manifestations as pluralities of one or two assistants. On the partial-characterization reading, it has manifestations as pluralities of  $n$  assistants for some number  $n$  equal to or less than two.

Let us turn to the formal semantic analysis of special quantifiers with intensional transitive verbs. The analysis will be parallel to the analysis of special quantifiers with attitude verbs. That is, a special quantifier like *something* will have a scope as well as a nominalization domain, as in (61b) for (61a):

- (61) a. John needs something.  
 b.  $\text{something}_j$  John  $[_{jk}$  needs  $t_k]$

The nominalization domain can receive two different interpretations, involving either satisfiers based on a particular product of the described event or state or satisfiers based on a kind of product:

- (62) a.  $[\text{ik } V \text{ tk}] = \lambda i \lambda x \lambda d [\exists e \exists C (V_i(e, x) \ \& \ d = \text{var-obj}_{\text{abs}}(\text{prod}(e), C))]$   
 b.  $[\text{ik } V \text{ tk}] = \lambda i \lambda x \lambda d [\exists e \exists C (V_i(e, d) \ \& \ d = \text{var-obj}_{\text{abs-kind}}(\text{prod}_{\text{kind}}(e), C))]$

Here  $\text{prod}_{\text{kind}}$  is the function that maps a particular event  $e$  to the product kind  $k$  such that a product  $e'$  is an instance of  $k$  just in case it is the product of an instance of the kind to which  $e$  belongs.

Let us apply this account to some cases. In the following example, the shared object can be a satisfier of particular products:

- (63) John needs what he lacks.

In (63), the shared object is a variable satisfier both relative to John's need and a concept  $C$  and relative to John's lack and the concept  $C$ .

In the sentences below, the shared object will be a satisfier that depends on a kind of product:

- (64) a. John needs what Mary needs.  
 b. John found what he needed.  
 c. John found what Mary needed.  
 d. John has what Mary needs.  
 e. John gave Mary what she needed.

In (64a), the variable satisfier of both John's need and Mary's need depends on a common kind of product that is a need. In (64b), the satisfier that is shared will be defined for the situation resulting from John's finding, which is in fact also a satisfaction situation for John's need. However, a variable satisfier for John's need will be defined for all the possible situations satisfying John's need, not all of which will be situations resulting from John's finding. Only the type of product of a finding would be able to share a variable satisfier with a product of a need. Also in (64c–e) the variable satisfier will have to depend on kinds of products.

We still have not accounted for the possibility that a variable satisfier may depend on the product of the state resulting from the event described by the verb rather than the product of the described event itself. This requires greater flexibility in the interpretation of the nominalization domain. Thus, (62a) should be replaced by (62c), where  $r_c$  is a suitable function determined by the context  $c$  mapping an event to a closely related one:

- (62) c.  $[\text{jk } V \text{ tk}] = \lambda i \lambda x \lambda d [\exists e \exists C (V_i(e, x) \ \& \ d = \text{var-obj}_{\text{abs}}(\text{prod}(r_c(e)), C))]$

Let us then turn to intensional transitive verbs whose complement plays a predicational role in situations of satisfaction, namely verbs of nomination and epistemic verbs. As we

have seen, such verbs involve satisfaction situations in which the complement of the verb will specify a property to be predicated of some object in a situation of satisfaction. This leads to two other sorts of variable satisfiers.

Nominal verbs will involve variable satisfiers of particular products and of kinds of products of the following sort:

- (65) a. The variable satisfier of the product described by a verb of nomination  
For a product  $e$  and a concept  $C$ ,  $\text{var-obj}_{\text{nom}}(e, C) =$  the variable object  $o$  such that for any situation  $s$ ,  $s \models e$ ,  $\text{manif}(o, s) = \iota x[\text{MAKE}_s(\text{ag}(e), x, C)]$ ; undefined otherwise.
- b. The variable satisfier of the kind of product described by a verb of nomination  
For a kind of product  $e$  and a concept  $C$ ,  $\text{var-sat}_{\text{nom-kind}}(e, C) =$  the variable object  $o$  such that for any product  $e'$ ,  $e' I e$ , and any situation  $s$ ,  $s \models e'$ ,  $\text{manif}(s, o) = \iota x[\text{MAKE}_s(\text{ag}(e'), x, C)]$ ; undefined otherwise.

Similarly, for epistemic verbs the variable satisfiers depending on a particular product and on a kind of product will be as follows:

- (66) a. The variable satisfier of the product described by an epistemic verb  
For a product  $e$  and a concept  $C$ ,  $\text{var-obj}_{\text{epist}}(e, C) =$  the variable object  $o$  such that for any situation  $s$ ,  $s \models e$ ,  $\text{manif}(o, s) = \iota x[\text{RECOGNIZE}_s(\text{ag}(e), x, C)]$
- b. The variable satisfier of the kind of product described by an epistemic verb  
For a kind of product  $e$  and a concept  $C$ ,  $\text{var-sat}_{\text{epist-kind}}(e, C) =$  the variable object  $o$  such that for any product  $e'$ ,  $e' I e$ , and any situation  $s$ ,  $s \models e'$ ,  $\text{manif}(s, o) = \iota x[\text{RECOGNIZE}_s(\text{ag}(e'), x, C)]$ ; undefined otherwise.

Thus, depending on the kind of verb in question, there will be three distinct functions mapping a product of the described event onto a variable satisfier, as well as corresponding functions applying to kinds of products. This means that at least six different interpretations of the nominalization domain of a special quantifier with an intensional transitive verb need to be distinguished. In addition to (62c), we will have (62d) and (62e) for the interpretation involving particular products (not kinds):

- (62) d.  $[_{jk} V t_k] = \lambda i \lambda x \lambda d [\exists e \exists C (V_i(e, x) \ \& \ d = \text{var-obj}_{\text{nom}}(\text{prod}(r_c(e)), C))]$   
e.  $[_{jk} V t_k] = \lambda i \lambda x \lambda d [\exists e \exists C (V_i(e, x) \ \& \ d = \text{var-obj}_{\text{epist}}(\text{prod}(r_c(e)), C))]$

The logical form of (63a) will then be as in (63b); the one of (64a) as in (64b), and the one of (65a) as in (65b):

- (63) a. John needs something nice.  
b.  $\exists d \exists e \exists C (V_i(e, \text{John}) \ \& \ d = \text{var-obj}_{\text{abs}}(\text{prod}(r_c(e)), C) \ \& \ \text{nice}(d))$

- (64) a. John promised Mary something that she needed.  
 b.  $\exists d \exists e \exists C(\text{promise}(e, \text{John}) \ \& \ d = \text{var-obj}_{\text{abs}}(\text{prod}_{\text{kind}}(r_c(e)), C) \ \& \ \exists e' \exists C'(\text{need}(e', \text{Mary}) \ \& \ d = \text{var-obj}_{\text{abs}}(\text{prod}_{\text{kind}}(r_c(e')), C'))]$
- (65) a. John lacks something that Mary needs.  
 b.  $\exists d \exists e \exists C(\text{lack}(e, \text{John}) \ \& \ d = \text{var-obj}_{\text{abs-kind}}(\text{prod}_{\text{kind}}(r_c(e)), C) \ \& \ \exists e' \exists C'(\text{need}(e', \text{Mary}) \ \& \ d = \text{var-obj}_{\text{abs-kind}}(\text{prod}_{\text{kind}}(r_c(e')), C'))]$

In (64a) and (65a), *something* has a nominalizing function both with respect to the main verb and with respect to the embedded verb. By contrast, in (63a), it has a nominalizing function with respect to the main verb only; the relative clause here acts as an ordinary restriction on the special quantifier.

Formulating an explicit compositional analysis of intensional transitive verb constructions with special quantifiers within these lines is rather straightforward, and thus need not be elaborated.

## 5. Explicit reference to variable satisfiers

It appears that variable satisfiers also act as referents of certain definite NPs. These are definite NPs with relative clauses containing an intensional verb as predicate, as in the following sentences with intensional transitive verbs of absence and of possession:

- (67) a. The house John needs must be huge.  
 b. The bottle of wine John bought on the internet was very expensive.

Definite intensional NPs, as one may call the construction, may also involve predicational intensional transitive verbs, such as epistemic *look for* and nominational *need* in the sentences below:

- (68) a. The great talent John is looking for will be able to do the task with ease.  
 b. The assistant John needs has to be fluent in French.

Characteristically, definite intensional NPs with verbs of absence generally require a modal in the main clause. This is illustrated by the unacceptability of the following sentences:<sup>17</sup>

<sup>17</sup> There is a similar construction to the one in (67a, b), but which needs to be sharply distinguished from it:

- (i) a. What John needs is a huge castle.  
 b. The thing John needs is a huge castle.

Two features distinguish sentences like (ia, b) from those involving reference to variable satisfiers. First, in sentences like (ia, b), the expression in post-copular position must be an NP. Thus, (ia) is unacceptable on the same intensional reading:

- (ii) ??? What John needs is huge. (Meaning “what John needs is a huge castle.”)

Second, sentences like (ia) and (ib) not only fail to require a modal in the main clause, but would be bad with a modal:

- (iii) a. ?? What John needs must be a huge castle.  
 b. ?? The thing John needs must be a huge castle.

- (69) a. ?? The book John needs is about Churchill.  
 b. ?? The castle John is looking for is huge.  
 c. ?? The great talent John is looking for can perform the task without problem.

The notion of a variable object gives a straightforward semantic account of definite intensional NPs. On that account, discussed in more detail in Moltmann (2012), *the house John needs* in (67a) stands for the variable object *o* whose manifestation in any situation satisfying John’s need is a house John has in that situation. The predicate *must be huge* is then true of the variable object *o* in case *huge* is true of the manifestation of *o* in any situation *s* that satisfies John’s need. That is, the sentence says that in any situation *s* that satisfies John’s need, the manifestation of “the house John needs” in *s*, that is, the house John has in *s*, is huge in *s*.

Definite intensional NPs also allow for certain predicates without a modal, namely predicates such as *count*, *enumerate*, and *describe*:

- (70) a. John counted the papers he promised.  
 b. John enumerated the things he bought on the internet.  
 c. John described the assistants he needs.

Such predicates apply to variable objects directly, rather than to their manifestations in particular circumstances, as predicates with a modal would.

At first sight, the construction of intensional definite NPs looks as if it involves reference to the very same variable satisfiers that are the semantic values of special quantifiers and pronouns with intensional transitive verbs. However, there are two major differences.

First, definite intensional NPs are not restricted to intensional transitive verbs, but are equally available with intensional verbs that take clausal complements:

- (71) a. The book John needs to write must have a lot of impact.  
 b. The assistant John wants to hire must be fluent in French.  
 c. The paper John must write has to be 20 pages long.

The sentences in (i) are of an entirely different type: they are specificational sentences (Higgins 1973), just like the sentences below:

- (iv) a. What John does not want is walk home.  
 b. The thing John does not want is walk home.

In these sentences, special NPs play the particular role of the subjects of specificational sentences (Higgins 1973, Sharvit 1999). Specificational sentences, it is commonly agreed, do not express predication nor in fact identity among individuals. Instead, they express either a question–answer relationship or an identity among intensional objects (meanings) (Chapter 2, Section 3.1). Whatever their correct general analysis, it is clear that in specificational sentences the subject asks for (or provides a way of identifying) the variable satisfier, and the post-copular NP has the function of partially describing that satisfier.

Furthermore, definite intensional NPs cannot denote the shared object of intensional verbs involving different agents:

- (72) a. ?? Mary needs the assistant that John needs.  
 b. ?? Mary wants the castle John is looking for.

The only reading that (72a) and (72b) allow is one on which the definite NP specifies a type of object (“type of assistant,” “type of castle”), rather than a particular variable object.

However, intensional definite NPs can act as complements of intensional transitive verbs involving the same agent:

- (73) a. John really needs the assistant he is looking for.  
 b. John found the assistant he needed.  
 c. John found the great talent he was looking for.

The difference in the semantic interpretation of special NPs with intensional transitive verbs and the semantic interpretation of intensional definite NPs must reside in that the latter involve variable satisfiers dependent on the product of the described event as a particular, whereas the former may involve variable satisfiers that depend on a kind of product. This difference will have to be traced to the semantics of special quantifiers and pronouns with intensional transitive verbs as opposed to the semantics of definite intensional NPs with intensional verbs of whatever sort.

The compositional semantics of definite intensional NPs is not straightforward, and a formal compositional analysis needs to be left for another occasion. Below is simply an indication of the overall interpretation of a definite intensional NP:

- (74) [*the e John needs to write e book*] = the variable object *o* such that for some *e*,  $\text{need}(e, \text{John})$ , for any situation *s*,  $s \models \text{prod}(e)$ :  $\text{manif}(o, s) = \iota x[\text{book}_s(x) \ \& \ \text{write}_s(x, \text{John})]$

That is, *the book John needs to write* stands for a variable object that is dependent on the product of the event argument of the embedding verb *need*, which is what the interpretation of the relative clause itself will have to depend on.

## 6. Other intensional transitive verbs

We have seen that among intensional transitive verbs, verbs of absence and of possession, epistemic verbs, and verbs of nomination all involve as a central part of their semantics particular sorts of situations, which play the role of satisfaction or realization situations. On these situations the variable satisfiers are based that special quantifiers range over when acting as complements of the intensional transitive verbs discussed so far. There are two classes of intensional transitive verbs that do not seem to involve situations in that way, namely verbs of representation and perception verbs.

6.1. *Verbs of representation*

Examples of verbs of representation are *draw*, *paint*, *represent*, and *imagine*. The complement of a verb of representation may or may not represent an actual object. However, two verbs of representation may share their objects whether or not their complement would represent an actual object. On either reading, whether John meant to represent a particular woman or not, the inference below is valid:

- (75) John painted a beautiful woman.  
       Bill painted a beautiful woman.  
       John painted the same thing as Bill.

However, clearly, on the non-representational use, no situations of realization or accurateness are involved. Nonetheless, verbs of representation behave like intensional transitive verbs with respect to the interpretation of quantified complements and the possibility of forming definite intensional NPs:

- (76) a. John painted at least three trees. (In fact, he painted four.)  
       b. The woman he painted looks sad.

Two verbs of representation may under suitable circumstances share their object, namely if the two representations produced are of the same type:

- (77) a. John painted what he had imagined, namely a beautiful castle.

This also holds if the two agents are distinct:

- (77) b. John and Mary imagined the same thing, a trip to China.

What is said to be shared according to (77a) and (77b) is the type of object that the imagination or painting purports to represent.

This raises the question whether and how the account developed so far can be carried over to special quantifiers with verbs of representation. Situations have played a central role in the semantics of intensional transitive verbs so far discussed. However, this is not the case for verbs of representation. Clearly, verbs of representation describe either an act meant to represent an actual object or an act that pretends to do so. However, verbs of representation are directed toward an object (as described by the complement), not a situation (involving a relation to an object described by the complement). This is confirmed by intuitions about when sharing is not possible. Verbs of representation cannot share their object with a verb of absence, an epistemic verb, or a verb of ownership:

- (78) a. ??? John painted what Mary needs/recognized/owns/described, namely a castle.  
       b. ??? John imagines the thing that Mary needs/recognized/owns/described, namely a castle.

(Though, of course, there is one reading where these examples are acceptable, involving type-coercion.)

The objects of representational intensional transitive verbs thus appear to be representations or kinds of them. An ordinary NP complement has the function of partially characterizing such representations. Object representations themselves may be enduring entities in the case of acts of painting or drawing or non-enduring entities in the case of imagining. The object of a verb of representation will thus be the product of the event or state described by the representational verb or else the kind of product obtained from the kind of event or state described.

Intensional definite NPs with a verb of depiction such as *the women John painted* will refer to a particular representational object, not a type.

### 6.2. Perception verbs

Another class of intensional transitive verbs is perception verbs like *see*. An intensional reading of *see* is what makes the following sentence acceptable:

(79) John saw a ghost.

The NP complements of perception verbs on the intensional reading do not describe the external object that may be perceived, but rather the way the perceived object appears (allowing for perceptual illusion) or perhaps describes a mere appearance (in the case of perceptual hallucination).

The Relational Analysis of transitive intensional perception verbs might posit sense data as the arguments of perception verbs, so that the complement would have the role of characterizing sense data.<sup>18</sup> However, sense data are philosophically highly controversial.<sup>19</sup> Without going into detail, the problems concern first the perceptual relation itself, which, it is generally argued, relates the agent directly to the world, rather than being mediated by another objectual level of sense data. Second, they concern the status of sense data as objects. In a number of ways, sense data do not behave like ordinary objects with respect to the properties they may be attributed (sense data may be underdetermined and underspecified with respect to properties normally attributable to objects, and they may have contradictory properties).<sup>20</sup>

<sup>18</sup> This is the view of a number of philosophers notably Ayer. Austin (1962) denies that *see* has a proper intensional use on which its complement may describe an object that does not exist. For the notion of a sense-datum, see Moore (1953), Chapter 2.

<sup>19</sup> See in particular Austin (1962) for a critique.

<sup>20</sup> There is also the view that the complement of perception verbs acts semantically like an adverbial, modifying the event of perception. This is the so-called *Adverbial Theory* of perception (Chisholm 1957, Tye 1984, 1989, Audi 1998). The Adverbial Theory denies that appearances act as intermediary objects between perceiver and object perceived. Instead, it takes complements as apparently specifying appearances to form part of a complex predicate together with the perception verb. Thus, in *the chair looks green, looks green* would act as a complex predicate, as would *see a ghost* in (79). Sometimes, as the name suggests, such complements are taken to act like adverbials, qualifying the experience (rather than being descriptions of sense data) (cf. Tye 1984, 1989, Audi 1998). That is, (79) would be analyzed as something like “John saw ghostly.” Linguistically, this seems rather problematic. Adverbials like *yesterday* and *quickly* generally can be taken to express properties

The complement *a ghost* in (79) rather seems to play the role of a predicate in some predicative act involved in the perceptual experience itself. Without elaborating such a non-relational analysis, let us just say that given such an analysis of intensional perception verb constructions, the complements will play a predicative role, rather than the role of providing an argument (a sense datum) for a perceptual relation.

A notion somewhat related to that of a sense datum does play a role in the semantics of intensional perception verbs, though. In particular, special quantifiers as complements of perception verbs seem to range over entities related to sense data. Thus, the sorts of restrictions that special quantifiers with perception verbs allow appear to match the two sorts of properties that sense data are supposed to have:

- [1] Sense data share properties of the object they purport to represent (expressed by predicative complements of verbs of appearance)—as long as these properties are sensory and non-sortal.
- [2] Sense data have their own causal and temporal properties.

The contrast below indicates that special quantifiers with transitive perception verbs allow for restrictions expressing sensory properties, but not sortal properties if there is no actual object perceived:

- (80) a. John saw something yellow and round.
- b. ?? John saw something that was a yellow ball.

(80a) may of course also describe a case of perceptual illusion or hallucination.

Moreover, special quantifiers with verbs of perception accept restrictions expressing causal properties:

- (81) John saw something that disturbed him (namely a ghost).

However, the reason why the semantic values of special quantifiers with perception verbs allow for such predicates may be a different one than that they would range over sense data. Given the unmodified Nominalization Theory, special quantifiers with transitive intensional perception verbs should range over products of acts of perception. Nominalizations describing products of acts of perception appear in the sentences below:

- (82) a. John had a sensation.
- b. Mary gave the impression of a young girl.

Given the unmodified Nominalization Theory, those entities would also be the semantic values of special quantifiers when acting as complements of intensional transitive verbs of

of events (as on a Davidsonian view), whereas it is quite unclear how *green* in *the chair looks green* or *a ghost* in *John saw a ghost* could be viewed as a property of events. It is certainly not the perception that is green or ghostlike.

perception. Recall from Section 3.1 that products of intensional transitive verbs like *need* and *buy* may be individuated in part on the basis of possible satisfiers (for example for the purpose of counting). This may also hold in the present case: the product of an act of perception may carry certain properties attributed in the perceptual act, in particular sensory properties. In fact, the philosophical literature on perception itself frequently makes use of NPs like *a blue sensation* or *a blue impression*. The philosophical literature generally uses the noun *sensation* as a general term for sense data. *Sensation* is in fact a product nominalization describing the products of acts of perception.<sup>21</sup> As products of acts of perception, sensations may be able to carry properties attributed to what would be satisfiers of such acts. Note, however, that not all product nominalization of perception verbs accepts modifiers representing what is perceived (*a blue perception* is rather bad).

Additional evidence in favor of the Nominalization Theory of special quantifiers with perception verbs comes from the observation that special quantifiers may stand for objects shared by different occurrences of perception verbs with different agents:

- (83) a. John saw the same thing as Mary, namely a ghost.  
 b. John and Mary had the same visual illusion of a ghost.

Given the Nominalization Theory, this means that with perception verbs, special quantifiers, as always, may range over kinds of products rather than ranging over particular products. Sense data, by contrast, would not be things shareable that way.

It seems then that the notion of a product of an act of perception gives some justice to intuitions in favor of sense data. However, unlike sense data, perceptual products as the semantic values of nominalizations and nominalizing (special) quantifiers would not play a direct role in perceptual relations. Rather, they are introduced by nominalizing expressions as derivative entities, as the products not the objects of perceptual acts.

It is not clear, however, that special quantifiers with perception verbs really do range over products. There is one serious difficulty for the view that they do. One major difference between the notion of a sense datum and the notion of the product of an act of perception is that the product of an act of perception should have satisfaction conditions, such as conditions of perceptual accurateness, whereas this does not hold for sense data as they are commonly understood. Certainly, predicates of correctness are applicable to product nominalizations (*a correct impression*, *a correct perception*). However, they do not make much sense with special quantifiers as complements of perception verbs, on the relevant reading. Thus, (84b) is hardly possible as a continuation of (84a):

<sup>21</sup> Moore considered the noun *sensation* ambiguous between describing events of perception and describing sense data and therefore rejected it as a term for sense data. Moore (1953) himself took sense data to be independent of acts of perception. For Moore, they seem to be tropes perceivable by an agent.

On the present view, the noun *sensation* is unambiguous. It always describes the “products” of acts of perception, that is, mind-dependent entities (or kinds of them) with representational properties.

- (84) a. In the distance, John saw a woman with blond hair.  
 b. ?? John saw something correct.

Thus, we must conclude that the unmodified Nominalization Theory does not straightforwardly apply to special quantifiers with perception verbs.

## 7. Conclusion

This chapter has explored the application of the Nominalization Theory to special quantifiers when they are complements of intensional transitive verbs. We have seen that it applies with most of the intensional transitive verbs, though some modifications of the theory were needed. With intensional transitive verbs of absence and of nomination and with epistemic intensional transitive verbs, special quantifiers do not range over the sorts of things that the corresponding nominalizations could refer to, but rather over more derivative entities, namely variable satisfiers. The latter are entities that depend on the product of the event or state described by an intensional transitive verb (or the corresponding kind). This was not a problem for the Nominalization Theory as such, but simply required a modification of that theory to allow special quantifiers to range over variable satisfiers. Variable satisfiers, we have seen, play another semantic role independently of special quantifiers, namely as the semantic values of certain types of definite NPs with intensional relative clauses.

The distinction between actions and products holds for intensional transitive verbs in the same way as it did for clausal-complement-taking attitude verbs. However, the complement of intensional transitive verbs plays quite a different role in the characterization of such products from the clausal complement of an attitude verb. The complement of an intensional transitive verb in general characterizes satisfaction situations of the product of the event or state described. It does not serve to specify the propositional constituents of the content of a propositional attitude.

The products associated with intensional transitive verbs are otherwise just like the products of propositional attitudes. They are concrete objects that may be causally efficacious, yet they are not events or states. Unlike events or states, they have representational properties, in particular satisfaction conditions or similar conditions of verification or realization.