4

Propositions and Attitudinal Objects

Propositions are abstract objects that play a particularly important role in contemporary philosophy of language. Propositions generally are considered mind- and language-independent objects that act as the primary bearers of truth and falsehood. The motivation for propositions comes from the various roles propositions are taken to play in the context of both language and mind, and it is these roles that impose the particular way in which propositions have been conceived, namely either as sets of truth-supporting circumstances or as structured propositions, configurations consisting of properties and objects (or meanings).

One of the most important roles of propositions is that of being the objects of propositional attitudes, such as belief, desire, and imagination, as well as the contents of speech acts, such as assertions and requests. The most common view, in both the philosophy of language and the philosophy of mind, is that propositional attitudes are relations between agents and propositions. Similarly, illocutionary acts are generally taken to involve both an agent and a proposition. Let me call this *the standard view*. This view appears to correspond to the linguistic form of attitude and speech act reports:

(1) a. John thought that Mary likes Bill.
b. John said that Mary likes Bill.

Thus, the *that*-clause is taken to stand for a proposition and the attitude verb to express a relation between agents and propositions.

The view about the role of propositions in propositional attitudes and speech acts goes along with a second important role of propositions: propositions are generally taken to act as the meanings or referents of sentences, both independent and embedded, such as the *that*-clauses in (1a, b).

The view also goes along with a third role of propositions, namely that of being the values of pro-sentential quantifiers such as *something*, that is, special quantifiers which occur in the place of *that*-clauses, as in (2a) and (2b), which are valid inferences from (1a) and (1b) respectively:

(2) a. John thought something.
b. John said something.

The view that special quantifiers such as *something* in the position of clausal complements range over propositions is generally considered inevitable (at least once a substitutional analysis of such quantifiers has been rejected).

Pro-sentential special quantifiers also display other important properties of propositions, such as their ability to bear truth values in (3) and their mind-independence and language-independence in the valid inference in (4) (assuming that John and Bill do not speak the same language):

(3) John said something that is true.

(4) John thinks that S.
Bill thinks that S.
John and Bill think the same thing.

If for these reasons propositions are attributed a central status in the semantics of natural language, propositions viewed as objects also carry a range of serious conceptual and empirical problems, as has been pointed out in some of the more recent philosophical literature.

In this chapter, I would like to show that propositions do not in fact play the role of objects of reference as the standard view maintains. *That*-clauses, I will argue, do not act as proposition-referring terms; in fact, they do not act as referential terms at all. Moreover, I will argue that special quantifiers taking the place of *that*-clauses do not range over propositions.

Propositions may be the referents of explicit proposition-referring terms such as *the proposition that* S, but what plays a more important role in the semantics of natural language are entities that I will call *attitudinal objects*. Attitudinal objects are for example "John's thought that S," "John's imagination that S," or "John's hope that S." They also include illocutionary objects of the sort "John's claim that S" and "John's question whether S." Attitudinal objects are not propositions in the sense of mind-independent, abstract objects. Rather they are concrete entities that depend on a particular intentional act and a particular agent. Yet like propositions, they have truth conditions or more generally satisfaction conditions (in the case of a desire, a hope, or a request, for example). Attitudinal objects are the referents of nominalizations of the sort *John's thought that* S, *John's hope that* S, or *John's imagination that* S. To clarify our intuitions about attitudinal objects, it will in fact suffice to pay close attention to the semantic behavior of such nominalizations.

There are also corresponding nominalizations for *kinds* of attitudinal objects, such as *the thought that* S, *the hope that* S, and *the imagination that* S. Kinds of attitudinal objects have as their instances particular attitudinal objects. Unlike the latter kinds of attitudinal objects can be shared by different agents.

Attitudinal objects and kinds of attitudinal objects are not only the referents of certain de-verbal nominalizations. A closer look at the properties of special quantifiers in place of *that*-clause complements of attitude verbs indicates that special quantifiers in

fact range over attitudinal objects or kinds of them, rather than propositions. This constitutes an important further piece of support for the Nominalization Theory of special quantifiers.

Attitudinal objects as entities are distinct from events, even though they bear all the features of concreteness of events and may be spatio-temporally coincident with mental events or speech acts. What distinguishes attitudinal objects from events is, most importantly, their ability to bear truth or satisfaction conditions as well as the particular way they enter similarity relations to each other. I will argue that attitudinal objects are best conceived of as tropes of a particular complex sort. While events themselves may be viewed as tropes, events need to be viewed as complex tropes of a very different sort.

Attitudinal objects arguably also act as the primary bearers of truth and falsehood and should in general take the place of propositions. However, pursuing an approach to sentence meaning and clausal complements based on attitudinal objects will go far beyond the scope of this book. I will rather restrict myself to focusing on the ontology of attitudinal objects, their status as being introduced by nominalizations, and a sketch of the semantics of *that*-clauses that naturally goes along with them. The latter will consist in a neo-Russellian account of attitude reports, which is based on an intentional notion of predication.

I will first discuss the standard notion of a proposition together with the Relational Analysis of attitude reports. After pointing out the conceptual and empirical problems for propositions, I will turn to a range of arguments in favor of attitudinal objects and present a neo-Russellian analysis of attitude reports that goes along with the notion of an attitudinal object. Finally, I discuss some similarities between measure constructions and attitude reports and their implications, in particular in view of the Measurement Theory of propositional attitudes (Matthews 2007).

1. Semantic motivations for propositions and the Relational Analysis of attitude reports

The notion of a proposition itself goes along with a particular semantic account of attitude reports and with a particular view of the nature of propositional attitudes. The latter is the view that propositional attitudes are relations between agents and propositions. This view seems to be reflected in the linguistic form of attitude reports. Thus, attitude reports such as (5a) seem to have the same logical form as sentences with noun phrases acting as ordinary singular terms such as (5b), and quantification over both sorts of objects seems possible in the same way as well, as in the inferences from (5a) and (5b) to (6a) and (6b) respectively:

(5) a. John believes that Mary is happy.
b. John likes the book.

(6) a. John believes something.
b. John likes something.

In (5a) and (5b), the clause *that Mary is happy* and the noun phrase *the book* seem to stand for entities—propositions in the first case and objects in the second case—which function as arguments of the relations expressed by the verbs *believe* and *like*. I will call the view that takes clausal complements and the embedding attitude verbs to play those semantic roles the *Relational Analysis*. In its most general form (as far as it is relevant for the purpose of our discussion), the Relational Analysis is based on the following two assumptions:[1]

(7) The Relational Analysis of attitude reports
[1] A *that*-clause embedded under an attitude verb stands for a proposition that acts as an argument of the attitude verb.
[2] An attitude verb taking a *that*-clause as complement expresses a relation between agents and propositions.

On the Relational Analysis, (5a) will have the logical form given in (8), where [*that Mary is happy*], the denotation of *that Mary is happy*, is the proposition that Mary is happy:

(8) believe(John, [*that Mary is happy*])

On the Relational Analysis, moreover, special quantifiers are naturally considered objectual quantifiers ranging over propositions.

There is another version of the Relational Analysis, which I will call *the Modified Relational Analysis*. On that version, the arguments of a *that*-clause-taking attitude verb need not all be propositions, but may be other, proposition-like objects of various sorts, such as facts and possibilities.[2] This would account for the observation that some attitude verbs do not allow for an inference such as from (9a) to (9b), whereas others allow for inferences such as from (10a) to (10b) or (11a) to (11b):

(9) a. John believes that S.
b. John believes the proposition that S.

(10) a. John noticed that S.
b. John noticed the fact that S/??? the proposition that S.

(11) a. John imagines that S.
b. John imagines the possibility that S/??? the proposition that S/??? the fact that S.

[1] There are also variants of the Relational Analysis on which attitude verbs take natural language sentences or sentences of a language of thought as arguments. What follows more or less holds for these views as well, though I will restrict myself to the view on which *that*-clauses stand for propositions.

[2] Such an analysis makes sense, of course, only if propositions are ontologically distinguished from facts and possibilities. For an ontological distinction between facts and true propositions, see Vendler (1972), Fine (1982a), and Asher (1993).

On the Modified Relational Analysis, *believe* takes propositions as arguments, but *notice* facts, and *imagine* possibilities. The Modified Relational Analysis will also play an important role in the discussion to follow. One major problem for the Relational Analysis and the Modified Relational Analysis will be that inferences such as those in (9)–(11) are not generally valid.

2. Conceptual problems for propositions

The standard notion of a proposition is that of a mind- and language-independent object that has truth conditions essentially. Two kinds of conceptions of propositions have been most influential. On the first conceptions, propositions are sets of circumstances (possible worlds or situations) in which the proposition is true, or equivalently functions from circumstances to truth values, mapping a circumstance to the truth value true just in case the proposition is true in that circumstance. On the second conception, propositions are structured propositions, which are most often taken to be sequences of the meanings of elementary constituents, such as concepts or properties and individuals. In a simple case, a structured proposition is a sequence like <LIKE, Mary, Bill> for the sentence *Mary likes Bill*. A more refined version might add modes of presentation m_1 and m_2 for John and Mary as constituents of a structured proposition, yielding a proposition of the sort <LIKE, <Mary, m_1>, <Bill, m_2>> (Schiffer 1987).[3] The first conception is associated with notorious problems in that it identifies propositions that are necessarily true or necessarily false.[4] The second conception avoids such problems by reflecting (to an extent) in the meaning of the sentence itself the syntactic structure of the sentence as well as the way the truth value of the sentence is compositionally obtained.[5]

There is a range of problems for both conceptions, however, that have been discussed in the philosophical literature, in particular by Jubien (2001) and more recently Soames (2010). Let me only briefly mention those problems without going into an in-depth discussion. The first problem is the *problem of arbitrary identification* (see also Moore 1999). This is a problem familiar from Benacerraf's (1965) discussion of natural numbers in the context of the philosophy of mathematics. The problem consists in that the choice of a formal object to be identified with a proposition is, to an extent, arbitrary. The problem arises for the first as for the second conception of

[3] For the individuation of attitudinal objects, the actual modes of presentation need not matter, but rather only the objects themselves. This is the case in (i), given that John and his son will have different modes of presentation of the numbers five and ten (cf. Schiffer 1990):

(i) John believes what his five-year-old son believes, namely that five plus five is ten.

[4] See Soames (2010) for a recent critique of that view.

[5] There is a third conception of propositions, namely as primitives. On Thomason's (1980) account, propositions taken as primitives are the basis for construing properties (as functions from individuals to propositions). On Bealer's (1982) account, primitive propositions are algebraically related to properties and their arguments as well as to other propositions.

propositions. Given the first conception, nothing in the general conditions that propositions need to fulfill could decide between identifying propositions as sets of circumstances or as functions from circumstances to truth values. Given the second conception, the problem is that a proposition such as, for example, the proposition that John is happy could be represented either as <H, John> or as <John, H>, the choice between which appears arbitrary: either pair could fulfill the relevant conditions.

Two further, related problems arise for structured propositions. One of them concerns the *truth-directedness* of propositions. The problem is that nothing in a mere sequence of entities could qualify it as a bearer of truth or falsehood. However, propositions were meant to be entities that have their truth conditions essentially. The second problem is known as *the problem of the unity of propositions*.[6] The problem arises specifically for the structured-propositions conception of propositions. It is the problem of what distinguishes a mere sequence of properties and objects from a proposition, an entity with particular truth conditions. The problem of the unity of propositions, like the problem of the truth-directedness of propositions, is a problem of the interpretation of a structured proposition, namely how to interpret the relation among the propositional constituents. A structured proposition simply does not have inherent truth conditions; rather the truth conditions of the structured proposition need to be externally imposed.

Thus, there are fundamental problems with propositions when they are identified with abstract formal objects of whatever sort. The problem would not go away if a proposition was not actually identified with a formal object, but just taken to be represented by it and the formal object considered a "model" for the proposition. A model of an object should allow deriving the essential properties of the object. The truth-directedness and truth conditions of a proposition are part of the proposition's essential properties, but they could not possibly be derived from the kinds of entities proposed as structured propositions.

3. Empirical problems for propositions

3.1. The Substitution Problem

The Relational Analysis of attitude reports gives rise to two problems: the *Substitution Problem* and the *Objectivization Effect*, as I will call them. The substitution problem is the following. If *that*-clauses denote propositions, then they should share their denotations with NPs of the sort *the proposition that* S (at least given a philosopher's use of *proposition* aimed at describing the kinds of things denoted by *that*-clauses). However, it is not generally possible to replace a *that*-clause by *the proposition that* S (for philosophers and non-philosophers alike).[7] There are in fact only very few verbs that allow for a

[6] See Caskin (2008) for a recent discussion of the problem, also in its historical context.

[7] This observation has first been made by Prior (1971) and again more recently by Asher (1987) and Bach (1997).

replacement of a *that*-clause complement by *the proposition that* S. The list more or less consists of *believe, prove, infer, accept, assume, establish,* and *assert.* Thus, even though the inference in (12a) is valid, the ones in (12b–d) are not:[8]

(12) a. John believes/proves/infers/accepts/assumes/establishes/asserts that S.
John believes/proves/infers/accepts/assumes/establishes/asserts the proposition that S.
b. John thought that S.
John thought the proposition that S.
c. John wishes that he will win.
John wishes the proposition that he will win.
d. John hopes that S.
John hopes the proposition that S.

In fact, the conclusions of (12b–d) are semantically unacceptable.

In contrast to *that*-clauses, referential noun phrases allow for unlimited substitution in extensional contexts. If a particular tree is the referent of the utterance of *the tree*, then the inference below is valid for any predicate *P* that holds only of the tree:

(13) John saw the tree.
John saw the P.

The conclusion of (13) is acceptable (if perhaps pragmatically deviant) even with P being *is the referent of the utterance of "the tree."*

The reason why *the proposition that* S in the conclusions of (12b–d) is unacceptable cannot be a syntactic one, such as that the predicates would not admit NP complements. The same predicates do allow for special quantifiers and pronouns, expressions that behave like NPs in all purely syntactic respects:

(14) John thought/wishes/hopes something.

There are, however, attitude verbs that take *that*-clause complements, but resist any NP complement whatsoever, including special quantifiers. These include *remark, complain, care,* and *reason:*[9]

(15) a. John remarked/complained/cared/reasoned that S.
b. * John remarked/complained/cared/reasoned something.

[8] Note that these intuitions hold with whatever special meaning the speaker might have in mind when using the word *proposition.* They hold when *proposition* is used in what seems to be the colloquial sense, describing a content that has been maintained by someone to be true; and they hold when *proposition* is used in a technical philosopher's or semanticist's sense, referring to whatever the semantic content of a *that*-clause is or is taken to be.

[9] In the case of *complain* and *care,* the insertion of the preposition "about" makes the b-examples acceptable, but not so in the case of *remark* and *reason.*

However such syntactic resistance to NP complements is to be accounted for, this class of verbs needs to be sharply distinguished from the one giving rise to the semantic substitution problem illustrated in (12b–d).

Sometimes *that*-clauses can be replaced by full NPs other than *the proposition that* S. For example, past-oriented factive verbs such as *remember* generally allow for a replacement by *the fact that* S, as in (16a) (but not by *the proposition that* S, with the same reading of the verb). Moreover, negative future-oriented verbs like *fear* (with some effort) tolerate a replacement by *the possibility that* S, as in (16b), but neither by *the proposition that* S nor *the fact that* S, with the same reading of the verb:

(16) a. John remembered that it was raining.
John remembered the fact that it was raining.
b. John fears that it might be raining.
John fears the possibility that it might be raining.

This would motivate the Modified Relational Analysis, the analysis on which *that*-clauses may denote different kinds of proposition-like objects and *that*-clause-taking verbs differ in what kinds of propositional arguments they take: some verbs take propositions, others take facts, and yet others take possibilities as arguments. Setting aside what the differences between propositions, facts, and possibilities may be, the Modified Relational Analysis faces serious difficulties.

First, the Modified Relational Analysis can apply to only some of the cases exhibiting the semantic problem of substitution. Many attitude verbs do not allow any NPs other than special quantifiers to replace the *that*-clause complement. For example, the verbs in (12b-d), *think*, *wish*, and *hope*, do not allow for a replacement by *the fact that* S, *the possibility that* S, or any other full NP. Other verbs of this type are *conclude* and *imagine*. Not only do these verbs resist nominal constructions of the sort *the proposition that* S, but also most carefully chosen descriptions such as *the object that is also the object of Mary's claim* or most general and "innocent" quantifiers such as *some entity*. Thus, none of the following inferences is valid:

(17) John claimed that S.
John claimed the proposition that S/the content of the sentence S/the object that is also the object of Mary's claim/some entity.

In addition, epistemic factive verbs tend to resist replacement by an ordinary, that is, non-special, NP. Examples are *know*, *realize*, *notice*, and *see*. The following inference, to my ears, is hardly acceptable:

(18) John knows that he lost the game.
John knows the fact that he lost the game/some entity.

Special quantifiers and pronouns, though, can replace the clausal complement of those verbs, which means that those verbs do not resist NPs for syntactic reasons:

(19) John claimed/knows something.

The second difficulty for the Modified Relational Analysis is that it will have to deviate significantly from the original Relational Analysis. On the Modified Relational Analysis, *that*-clause complements could not have the semantic role of referential terms, being able to stand for some entity that would be a suitable argument of the embedding predicate. *That*-clauses cannot stand for different kinds of propositional arguments on their own (by either being ambiguous or somehow referring to propositional objects indirectly, via the proposition they refer to directly). Even if the predicate could in principle take different sorts of proposition-like objects as arguments when they are described by full NPs, the predicate determines how a clausal complement is to be understood. This is illustrated by the sentences below:

(20) a. John remembered that Mary has left.
b. John fears that Mary might leave.

The *that*-clause in (20a) can only be understood as standing for the fact, not the proposition or the possibility, that Mary left. Similarly, the *that*-clause in (20b) can only be understood as standing for the possibility, not the proposition, or the fact, that Mary might leave.

This *Unique Determination Property* of clausal complements, as I will call it, means that a *that*-clause stands for a particular kind of propositional object only in the presence of a particular embedding predicate and thus is referentially dependent. The *that*-clause therefore cannot act as an ordinary referential term, as the Modified Relational Analysis would have it.

Possible explanations of the Substitution Problem that might save the Relational Analysis or its modified version do not seem to go very far. First, a purely syntactic explanation is not available, since special quantifiers and pronouns, as mentioned, behave just like ordinary noun phrases in all syntactic respects.

Another explanation might draw an ontological distinction between "contents" on the one hand (denotations of *that*-clauses) and "objects" on the other hand (denotations of noun phrases), a distinction evocative of the Fregean distinction between objects and concepts. On this view, only objects could be referents of ordinary noun phrases, contents by nature eluding any access by description or (ordinary) quantification, since they are tied to the semantic function of a sentence.

One problem for such an explanation is like the one for the distinction between concepts and objects discussed in Chapter 3. If an entity is an argument of a true relation, whatever the category of the expression describing it, then it should be possible to describe that entity or quantify over it by using an ordinary noun phrase. Certainly, a philosopher or linguist appears to be able to refer to a mere content, and

since his descriptive or quantificational means are also part of the object language (or an extension of it), it is hard to see why such reference should fail when the content-referring term acts as a complement of the attitude verb. An ontological distinction between contents and propositional objects is less appealing anyway than the distinction between concepts and objects. The distinction between concepts and objects corresponds to an intuitive distinction between unsaturated and saturated entities, which the distinction between contents and objects lacks.

A potential type-theoretic explanation of the Substitution Problem with *that*-clauses faces the same problems as a type-theoretic explanation of the Substitution Problem with predicative complements discussed in Chapter 3. On a type-theoretic account, as proposed by Rosefeldt (2006), clausal complements and referential NPs, including *the proposition that* S, would be associated with different types: type $\langle s, t \rangle$ (which corresponds to a denotation that is a function from circumstances to truth values) and type e (which corresponds to a denotation that is an element of the domain of "objects"). Special quantifiers would have to be of the same type as sentences, and predicates would be specified for the type of the arguments they take. *That*-clauses on that account could not be substituted by referential NPs because the embedding verb requires arguments of type $\langle s, t \rangle$ rather than type e.

The problem with the type-theoretic explanation of the Substitution Problem is that the distinction between the domain of individuals (of type e) and the domain of other types (e.g. type $\langle s, t \rangle$) simply reflects the role of syntactic categories that take their denotations from those domains in the semantic composition of the sentence. Nothing prevents an expression of type e, that is, a referential NP, from taking an object as its denotation that also happens to be a function in the domain $D_{\langle s, t \rangle}$. The Substitution Problem, on the type-theoretic account, is simply traced to the fact that some predicates take only sentences or special NPs as complements, but not ordinary NPs.[10]

[10] Schiffer (2003) also suggests a syntactic explanation of the Substitution Problem. Schiffer compares the substitution problem with *that*-clauses to the impossibility of replacing the second NP in a close apposition as in (ia) by a co-referential description as in (ib):

(i) a. The Italian singer Pavarotti never sings Wagner.
b. * The Italian singer the greatest tenor never sings Wagner.

But the reason why substitution is not allowed in (ia) is that the second NP in close apposition is mentioned, rather than used (see Chapter 6). This is not the case for *that*-clause-complements of the relevant attitude verbs. Schiffer also compares the Substitution Problem with *that*-clauses to the impossibility of substitution of near-synonymous verbs in the dative shift construction:

(ii) a. Betty gave the donation her tiara.
b. * Betty donated the donation her tiara.

However, as Schiffer himself notes, this is because certain verbs resist the dative shift construction for formal reasons, reasons that would be irrelevant for constructions with *that*-clauses. Schiffer gives no indication what the formal reasons should be that prevent substitution of *that*-clauses by explicit proposition-referring terms.

3.2. *The Objectivization Effect*

The second problem for the Relational Analysis, the Objectivization Effect, is related to the first. The Objectivization Effect consists in that in many cases a replacement of a *that*-clause by a noun phrase triggers a different kind of reading of the predicate—and this happens in a way sufficiently systematic for it to be traced to the semantics of the constructions themselves. The invalid inferences below illustrate the Objectivization Effect:

(21) a. John expects that Mary will win.
John expects the proposition that Mary will win.
b. John imagined that Mary was alive.
John imagined the proposition that Mary was alive.
c. John remembers that Mary won.
John remembers the proposition that Mary won.

The invalidity of such inferences indicates that as soon as a clause *that* S is replaced by the construction *the proposition that* S, the content expressed by *S* comes to play a very different role in the meaning of the sentence. The content now plays the same role as ordinary objects acting as arguments of the verb, as in (22):

(22) a. John expects Mary.
b. John imagined Mary.
c. John remembers Mary.

The conclusion of (21a) means that John expects an abstract object (a proposition) and the conclusions of (21b) and (21c) that John's imagination or memory is that of an abstract object, just as (22a), (22b), and (22c) are about Mary. By contrast, the premises of (21a, b, c) report John's expectation, imagination, or memory as being only about Mary.

The fact that S also displays the Objectivization Effect, its value often acting like an object the attitude is directed toward rather than the attitude's content. Thus, the following inference is invalid:

(23) John heard that Mary entered the room.
John heard the fact that Mary entered the room.

The conclusion of (23) could be true only in a metaphysical fantasy in which facts are concrete objects of perception.

The Objectivization Effect cannot simply be traced to the presence of an NP as opposed to a *that*-clause as complement of the attitude verb. This is because the content-related reading is preserved when a special quantifier or pronoun replaces a *that*-clause complement:

(24) a. John expects (imagined/observed/heard/recognized) something.
b. John expects (imagined/observed/heard/recognized) that.

That-clauses and NPs of the sort *the proposition that* S thus display the following fundamental semantic distinction: the semantic value of a *that*-clause in general acts as a mere content of the attitude, whereas the semantic value of an NP like *the proposition that* S generally acts as an object the described propositional attitude is about or directed toward. The corresponding semantic shift that takes place when a *that*-clause is replaced by a non-special NP is what the Objectivization Effect consists in:

(25) The Objectivization Effect
Substitution of a *that*-clause by a (non-special) NP results in a reading the predicate exhibits when taking ordinary objects as arguments, so that in the case of an attitude verb, the complement specifies not the mere content of the attitude, but the object the attitude is about or directed toward.

The Objectivization Effect arises rather systematically with attitude verbs that accept referential complements. The semantic difference between the constructions of nominal and of sentential complementation that underlies it appears part of the knowledge of language of competent speakers and thus needs to be accounted for by a semantic theory. The Objectivization Effect indicates that reporting the mere content of a propositional attitude is precisely the purpose of the sentential construction and, moreover, that the *primary* means for reporting the mere content of a propositional attitude is the sentential construction.[11]

We can thus conclude that the Substitution Problem and the Objectivization Effect are serious problems for the Relational Analysis of attitude reports and the notion of a proposition that goes along with it.

4. Attitudinal objects

Before giving an account of the Substitution Problem and the Objectivization Effect, let me first introduce the notion of an attitudinal object, as a notion to be contrasted with the standard notion of a proposition as well as the more familiar notion of an event or state. While the notion of a proposition naturally goes along with the Relational Analysis of attitude reports, attitudinal objects naturally go along with a non-relational analysis of attitude reports as well as the Nominalization Theory of special quantifiers.

The present section serves to introduce attitudinal objects with their most important properties. Later, I will propose a formal ontological account of attitudinal objects based

[11] King (2007) proposes a syntactic account of the Objectivization Effect. For King, attitude verbs displaying the Objectivization Effect are polysemous: one of their meanings is triggered by CP-complements, the other by NP-complements. This account does not really explain the effect. It simply states what the effect corresponds to syntactically without saying why. Moreover, the syntactic correlation with NP-complements or CP-complements is not really what is at stake, since special quantifiers are also NPs.

on a particular notion of intentional predication, which will play a central role in the non-relational analysis of attitude reports that I will propose.

Attitudinal objects can best be approached by looking more closely at the semantic behavior of the relevant nominalizations referring to them, such as *John's thought that Mary likes Bill, John's claim that Mary likes Bill, John's hope that it will rain*, or *John's imagination of being a king*.

Attitudinal objects in first approximation are entities in between events and propositions. Like propositions, attitudinal objects of the doxastic or assertive sort intuitively have truth conditions:

(26) John's belief/claim is true/false/correct.

Moreover, they may be true even in worlds in which the attitudinal object does not exist:

(27) a. John's thought that S would be true even if he had not thought that.
b. John's claim that S would be true even if John had never made that claim.

Attitudinal objects thus involve a notion of being true "at" a world (which does not require the attitudinal object to exist in that world), rather than "in" a world (which would require the attitudinal object to exist in that world).[12]

Other attitudinal objects may not have truth conditions, but related sorts of conditions. "Bouletic" and "directive" attitudinal objects have conditions of fulfillment:

(27) c. John's desire to become a king was fulfilled.
d. John's request that he be invited was fulfilled.

Similarly, attitudinal objects that are decisions or alike have conditions of implementation or execution:

(27) e. John's decision to postpone the meeting was implemented.
f. John's command that people leave the building was executed.

Even imaginations may have corresponding conditions, let us say conditions of representational correctness. I will call such more general conditions the *satisfaction conditions* of attitudinal objects. The attitudinal or illocutionary force ensures the attitudinal object's aim for truth, fulfillment, implementation, or representational correctness.

Attitudinal objects obviously have truth or satisfaction conditions inherently. They are not externally imposed, as they would be if propositions were identified with sets or abstract formal structures.

[12] See Iacona (2003) for a recent discussion of the notion of truth at a world. Iacona argues that that notion undermines the need for mind-independent and language-independent propositions.

4.1. Characteristic properties of attitudinal objects

4.1.1. Involvement of force Attitudinal objects share truth (or satisfaction) conditions with propositions. However, they differ from propositions in many ways. Attitudinal objects, unlike propositions, are contingent: they exist only if the agent has in fact the relevant attitude or engages in the relevant attitudinal act in relation to the propositional content.

Furthermore, unlike propositions, attitudinal objects depend for their identity on a particular attitudinal or illocutionary force. This is reflected in the fact that identity statements such as the following are generally not judged true:

(28) a. ??? John's thought that it will rain is also his remark that it will rain.
b. ??? John's discovery that it will rain is his hope that it will rain.
c. ??? John's desire to leave is his decision to leave.
d. ??? John's claim that it will rain is his hope that it will rain.

This is in contrast to (28e), which is of course trivially true:

(28) e. John's thought that it will rain is John's thought that it will rain.

Thus, attitudinal objects are identical only if they share both content and force.

4.1.2. Similarity relations Attitudinal objects that are dependent on different acts can enter relations of similarity. Two attitudinal objects that depend on distinct acts, but have the same content and involve at least very similar attitudinal or illocutionary forces, intuitively count as "the same":

(29) a. John's thought is the same as Mary's.
b. John's desire is the same as Mary's.
c. John's claim was the same as Mary's assertion.

As was discussed in Chapter 2, *the same as* in natural language does not express numerical identity, but rather exact or close similarity. By contrast, the *is* of identity *does* express numerical identity and would be inapplicable to distinct attitudinal objects. Thus, the sentence below appears false:[13]

(29) d. ?? John's thought *is* Mary's thought.

4.1.3. Properties of concrete objects Attitudinal objects differ from propositions also in that they may have properties of concrete objects. First, predicates of perception are applicable to suitable attitudinal objects such as remarks or screams, but such predicates are not applicable to propositions:

[13] As was discussed in Chapter 2, the predicate *is identical to* can also express exact similarity:
(i) John's thought is identical to Mary's thought.

(30) a. John heard Mary's remark/scream that she needs help.
b. ??? John heard the proposition that Mary needs help.

Note that (30a) implies both the perception of the speech event and the comprehension of its content.

Attitudinal objects classify as concrete objects moreover in that they may enter causal relations. While it is not uncontroversial whether abstract objects fail to be causally efficacious, certainly causal predicates are problematic with propositions, but not with attitudinal objects, as illustrated by the contrasts below:

(31) a. John's claim that Mary won the race caused astonishment.
b. ?? The proposition that Mary won the race caused astonishment.
(32) a. The thought she might fail frightened Mary.
b. ?? The proposition that she might fail frightened Mary.

(31) and (32) make clear that propositional contents can be causally efficacious only in connection with an attitudinal or illocutionary force and an agent, not as pure propositions.

Attitudinal objects share their ability of entering causal relations with events, and as such, they will involve a particular agent. However, attitudinal objects do not play the very same causal roles as the corresponding events. For their causal role for mental states, not only the eventive aspect of attitudinal objects matters, but also their content:

(33) a. John's speaking delighted Mary.
b. John's speech delighted Mary.

Whereas (33a) can easily describe a case in which it is the manifestation of John's ability to speak that delighted Mary, (33b) strongly suggests that the content of John's speech was also the cause of Mary's delight.[14]

There is another sense in which attitudinal objects are concrete. Like tropes and events, attitudinal objects are generally more specific than the content of their description, that is, a term of the sort *John's belief that* S. In that respect, attitudinal objects differ from abstract objects that are facts or states, entities entirely constituted by the content of their canonical description, as was discussed in Chapter 2. The applicability of comparative predicates to attitudinal objects but not states is illustrated below:

[14] The following sentence sounds all right, even though it seems to state the possible sharing of an attitudinal object by different agents:

(i) John's thought that S might have occurred to Mary.

However, *John's thought that* S may in fact refer to a kind of attitudinal object, "the thought that S," with the specifier *John's* specifying that John "has" the thought that S.

(34) a. John's belief that it will rain is stronger than Mary's belief that it will not.
b. ??? John's believing that it will rain is stronger than Mary's believing that it won't.
c. ??? John's belief state is stronger than Mary's.

"John's belief that S" involves a particular degree of belief, but not so for "the fact that John believes that S" or "the state of John's believing that S," which are entities whose nature is "exhausted" by what is contributed by the content expressed by those terms. "John's belief that S" is concrete, in the sense that it is fully specific and involves a particular manifestation and thus a particular degree of belief.

The attitudinal or illocutionary force involved in attitudinal objects also influences the way evaluative predicates are understood. Evaluative predicates when applied to attitudinal objects are not understood as they would be with propositions; rather they also evaluate the attitudinal or illocutionary mode with which the propositional content is sustained. An illustration is the following contrasts:

(35) a. John's thought that nothing exists is unusual.
b. ?? The proposition that nothing exists is unusual.

(36) a. John's claim that Bill is incompetent is mean.
b. ?? The proposition that Bill is incompetent is mean.

(35a) says that the content of thought entertained by John is unusual, not an abstract semantic object, as in (35b).[15] Similarly, (36a) predicates meanness of a content claimed by John, not of an abstract object as in (36b).

A common view about terms for attitudinal objects is that they are ambiguous: they stand sometimes for propositions, sometimes for mental events or illocutionary acts.[16] However, given the observations presented so far, this view cannot be right. First, terms for attitudinal objects simply do not allow for the readings of predicates that the latter display with explicit proposition-referring terms. Thus, evaluative predicates with the terms in (35a) and (36a) cannot be understood as with explicit proposition-referring terms, and so for identity *is* or *the same as*. Moreover, readings of predicates that are typical with event-denoting terms are not freely available with terms for attitudinal objects, as we will see later. Finally, predicates typical of events and predicates typical of propositions can apply simultaneously to one and the same term:

[15] A simple *that*-clause with *unusual* can refer to neither a proposition nor an attitudinal object. (ia) cannot be understood as (ib) or as (ic), but rather requires a factive reading as in (id):

(i) a. That it is raining is unusual.
b. The proposition that it is raining is unusual.
c. The thought that it is raining is unusual.
d. The fact that it is raining is unusual.

[16] This view can be found, for example, in Pustejovsky (1995).

(37) a. John heard Mary's false remark that S.
b. John's obviously false claim that S caused astonishment.

We should rather conclude that the familiar ontology of propositions and events is simply insufficient to account for the semantic behavior of terms such as *John's thought that* S or *John's claim that* S. Rather these terms stand for objects of another category, namely attitudinal objects.

4.2. *Differences between attitudinal objects and mental or illocutionary events*

Attitudinal objects share causal properties as well as their dependence on an agent with mental events or states and speech act. However, attitudinal objects are not events, states, or acts.

A first linguistic indication of that is that NPs like *the event of John's thought that* S and *the event of John's claim that* S are in fact unacceptable, as opposed to *the event of John's thinking that* S or *the event of John's claiming that* S.

Events, states, and actions are the more familiar ontological categories in contemporary semantics and philosophy. They typically form referents of gerundive nominalizations such as *John's thinking, John's believing, John's claiming,* or *John's desiring,* but of course, they also fall under the corresponding sortals *event, state,* and *action.*

There are three major ontological differences between attitudinal objects and mental events or illocutionary acts. First, events, states, and actions cannot be true or false or more generally have satisfaction conditions. The lack of truth or satisfaction conditions of events, states, and actions is reflected in the inapplicability of the relevant predicates both to gerundive nominalizations and to event sortals:

(38) a. ??? John's thinking/claiming/believing that S is true.
b. ??? John's desiring/requesting/hoping is true.
c. ??? John's belief state is true.
d. ??? John's action (of claiming) is true.
e. ??? John's action (of requesting) was fulfilled.
f. ??? John's action of deciding was implemented/executed.

Not mental events or illocutionary acts, but particular mental or psychophysical products are the bearers of truth or satisfaction conditions. Such products have the status of bearers of truth or satisfaction in virtue of the truth-directedness of the corresponding predicational acts. But the fact that with an act an agent aims at truth or satisfaction does not mean that such an act is itself a bearer of truth or satisfaction conditions.

Another important difference between attitudinal objects and events concerns the way the two kinds of entities behave with respect to similarity relations. Attitudinal objects are treated as exactly similar if they share the same content as well as their attitudinal or illocutionary mode. For events involving different agents to be exactly similar, they have to share a lot more than just their content; they need to involve the

very same way of performing the activity. This is illustrated in the contrast between (39a) and (39b):

(39) a. John's speech was the same as Mary's.
b. ?? John's speaking was the same as Mary's.

For (39a) to be true, the content of John's speech needs to be the same as Mary's. However, (39b) would be true only if the way John spoke was the same as the way Mary spoke.

The same conditions are reflected in the difference in the understanding of *similar*:

(40) a. John's thought was similar to that of Mary.
b. John's thinking was similar to that of Mary.

(40a) expresses similarity of thought content, (40b) similarity of thought process.

There is a third major difference between attitudinal objects and events, which concerns their relation to time. It appears that the time of occurrence is accidental to attitudinal objects, but not so for the time of occurrence of mental events. For events in general, their temporal location is essential. Thus, while (41a) is perfectly natural, (41b) does not sound quite right:[17]

(41) a. John's thought might have occurred to him earlier than it did.
b. ?? John's thinking might have occurred earlier than it did.

The distinction between attitudinal objects and mental events or speech acts is in fact a more general one. At the beginning of the twentieth century, the Polish philosopher Twardowski (1912) argued for a fundamental ontological distinction between what he called *actions* and what he called *products*.[18] There are mental actions and products, physical actions and products, as well as psychophysical actions and products. Thinking and desiring are mental actions, thoughts and desires are mental products. Claiming and requesting are psychophysical actions, claims and requests psychophysical products. Thoughts, desires, claims, and requests are non-enduring products that exist only as long as there is the corresponding mental event. The distinction between actions and products also applies in the physical realm: walkings and screamings are physical actions, walks and screams are physical products. While observing that actions and products differ in the kinds of properties they have (including truth or satisfaction conditions), Twardowski characterizes nouns describing products as nouns "that do not bring to force the aspect of action, but bring to force a different aspect, the

[17] The attribution of counterfactual temporal properties appears possible with certain kinds of events. Wars could have taken longer than they did, demonstrations could have taken place at different times than they did, and a death might have occurred earlier than it did. Note, however, that all these cases may involve events as "products," not as "actions." Certainly, *demonstration* and *death* are product nominalizations, contrasting with *demonstrating* and *dying*.

[18] For a presentation of Twardowski's view in its historical context, see Bobryk (2009), Betti (2010), Dubucs and Miskiewicz (2010), and van der Schaar (2006).

'phenomenal' or 'static' aspect" (Twardowski 1912, pp. 104–5). In the particular case of a shout, as opposed to a shouting, he says "in speaking of the shout, we do in fact abstract from the activity of shouting, treating the shout as an acoustic phenomenon" (Twardowski 1912).[19]

In view of Twardowski's general distinction between actions and products, a further property can be added that distinguishes particularly physical actions from physical products. These are "gestalt" properties, or more generally properties that evaluate an entity as a whole. Physical products have gestalt properties but physical actions do not. Gestalt properties form the basis of the application of certain evaluative predicates. Evaluative predicates apply differently to physical actions and products: they can evaluate the former as a whole in the way they could not evaluate the latter. Consider the contrast between (42a) and (42b):

(42) a. Mary's dance was unusual.
b. Mary's dancing was unusual.

The evaluative predicate *unusual* in (42b) evaluates all the various "small" temporal parts of the dancing, but in (42a) it evaluates the dance as a whole and allows Mary's dance to have been unusual just because of the very beginning and the very end, a situation that could not be described by (42b).

An action and its product (as long as it is not a physical product) exist under the very same circumstances: a product exists as long as the corresponding action is taking place, and in any possible world in which there is an action, there will also be the product of the action. Moreover, an action and its product share their spatio-temporal location. Thus, if the distinction is an ontological distinction, this requires recognizing distinct spatio-temporally coinciding entities. That the distinction is an ontological one is plausible in view of the four distinguishing characteristics of actions and products, concerning satisfaction conditions, similarity relations, the relation to time, and gestalt properties.[20] Only an ontological account of the distinction should be able to explain those differences.

Attitudinal objects as the "products" of attitudes obviously are not suited as "objects" of attitudes. Attitudinal objects are entities that involve what the attitude verb would contribute itself: an attitudinal or illocutionary force. The only objects of propositional attitudes there will be are the entities the attitudes are about. The status of attitudinal objects is that of "products of attitudes" rather than "objects of attitudes." This corresponds well to their semantic role as introduced by nominalizing expressions.

[19] The distinction between actions and products that Twardowski draws obviously does not match the distinction that is common in linguistics between event and result nominalizations. Linguists generally take result nominalizations to refer only to the physical products of events.

[20] Note that actions and products are not necessarily spatio-temporally coincident, since the time of occurrence is essential for an action, but not for a product. A product could occur at a different time than it actually did, but not so for an action.

4.3. Kinds of attitudinal objects

Attitudinal objects as mind-dependent propositional objects raise an obvious problem, originally brought up by Frege, namely how it is possible that two agents could share the same propositional content. There are two potential solutions to this problem within the theory of attitudinal objects, and it appears that both solutions are needed for different purposes.

The first one is that when two agents share a propositional content, they are involved in attitudinal objects that are similar or even very similar. This is reflected in the use of *the same* when applied to different attitudinal objects:

(43) a. John's thought was the same as Mary's.
b. John's claim was the same as Mary's.

Attitudinal objects stand in the similarity relation expressed by *the same as* just in case their attitudinal mode and their propositional content (the propositional constituents in the relevant roles) are the same. Recall from Chapter 2 that this is just how *the same as* applies to distinct, though qualitatively identical or very similar, tropes.

However, it is necessary to make sense of the sharing of propositional contents by different agents in yet another way. What is shared may also be a *kind* of attitudinal object, a kind whose instances are particular attitudinal objects. This is the sort of entity that nominalizations of the sort *the thought that* S or *the claim that* S stand for. Such objects obviously can be shared by different agents:

(44) a. John and Mary share the thought that S.
b. The thought that S occurred to both John and Mary.
c. The thought that S was both John's and Mary's.

Kinds of attitudinal objects are the values of definite NPs of the sort *the thought that* S, but the latter show the same "kind term behavior" as bare plurals and mass nouns (Chapter 1):

(45) a. The thought that S is unusual.
b. John has never encountered the claim that S.
c. John needs the insight that S.
d. The thought that S has never occurred to anyone.
e. The belief that S is widespread.

(45a) displays a generic reading with an individual-level predicate (an evaluative predicate), (45b) an existential reading with an episodic predicate, (45c) a reading involving quantification over possible instances with intensional predicates, (45d) a reading triggering existential quantification over instances with existential predicates, and finally (45e) involves an instance-distribution predicate.

Kinds of attitudinal objects account not only for the sharing of propositional objects in sentences such as (44a, b, c). They also play a role in a range of sentences with special

quantifiers, as we will see in the next section. The terms for kinds of attitudinal objects are of the form of definite NPs (*the* N' *that* S), but they behave like bare plurals and mass nouns that have the status of terms.

Attitudinal objects that are mere "entertainings" allow for a reconstruction of the notion of a proposition, in one particular semantic role.[21] Propositions obviously do play a limited semantic role, as referents of noun phrases of the sort *the proposition that* S. The semantic value of such terms can now be identified with a kind of attitudinal object, namely the one whose force is that of "entertaining."

5. Attitudinal objects and special quantifiers in sentential position

Special quantifiers when they occur in the place of clausal complements have been one of the motivations for propositions: such quantifiers seem to range over propositions as mind- and language-independent entities that are bearers of truth and falsehood. However, a closer look at the semantic behavior of special quantifiers in sentential position indicates that such quantifiers in fact range over attitudinal objects or kinds of them, rather than propositions.

Let us start with the observation that just like special pro-predicative quantifiers (Chapter 3), special pro-sentential quantifiers cannot be substitutional. Special quantifiers in sentential position can relate, in the very same sentence, to a position that would not allow for *that*-clauses:

(46) a. John said something Mary had never thought about, namely that S.
b. John said something Mary did not like, namely that S.

(47) a. John imagined something I never thought about.
b. John promised everything I ever dreamed of (namely that S, that S', that S", . . .).

In (47a) *something* relates to a sentential position and a referential position that would not allow *that*-clauses (* *Mary never thought about that* S) and similarly for (47b) (* Mary *did not like that* S), (47a) (* *I never thought about that* S), and (47b) (* *I never dreamt of that* S). If what John imagined and what I never thought about is that I would become a dancer, then for (47a) to be true, the truth of the following would be required: *John imagined that I would become a dancer and I never thought about that I would become a dancer.* This sentence, however, is ungrammatical: *about* does not take clausal complements (though it may take as arguments entities like "the possibility that I might become a dancer"). Thus, *something* cannot be substitutional, requiring one and the same expression to fill in the two positions to which *something* relates. Quantifiers like *everything*

[21] The term "entertaining" for an attitudinal object with the most general force was chosen for lack of a better term in English. As a gerund, "entertaining" describes an "action" rather than a "product." In its application to products in the present context, "entertaining" should therefore be understood as a technical term.

and *something* care about objects only and not syntactic categories, and hence they must be objectual in nature.

Similarly, "propositional anaphora" like *that* need not respect the syntactic category of the antecedent. Thus, *that* in (47c) is acceptable even though *about* does not take *that*-clauses as complements:

(47) c. John believes that he might have Swedish ancestors. Mary never thought about *that*.

That is, special pronouns that are anaphoric to a *that*-clause may occur in referential positions. This means that such anaphora do not get their value by being replaced by the antecedent, but rather stand for objects closely related to the semantic value of the antecedent.

As mentioned, special quantifiers are usually considered support for the Relational Analysis. Special quantifiers, given that they are not substitutional, range, it seems, precisely over the potential arguments of attitudinal relations—either propositions or, on the Modified Relational Analysis, a variety of proposition-like objects. However, a number of further linguistic facts about special quantifiers show that what special quantifiers range over are in fact just the kinds of things the corresponding nominalizations stand for, that is, attitudinal objects or kinds of attitudinal objects.

First, special quantifiers allow for restrictions that express perceptual or causal properties:

(48) a. John said something Bill has never heard before.
b. John said something that made Mary very upset.

What Bill never heard before according to (48a) is not a proposition, but rather John's claim that S or better the claim that S (as something that John made). What made Mary upset according to (48b), is not a proposition, an abstract object, but whatever John said, John's claim. What *something* ranges over in (48a, b) thus is not propositions, but the kinds of things nominalizations such as *John's claim* stand for—that is, attitudinal objects, concrete objects that include the attitudinal mode expressed by the verb.

Furthermore, the reading that evaluative predicates display as restrictions of special pro-sentential quantifiers is just the kind of reading we had with attitudinal objects:

(49) a. John said something nice (namely that S).
b. John thought something very daring (namely that S).
c. John imagined something exciting.

An evaluative predicate such as *nice* as a special-quantifier restriction as in (49a) is not understood as a predicate of propositions (or a proposition-like object on the Modified Relational Analysis). Rather it is understood as a predicate of the kind of thing that a nominalization such as *John's claim that S* or *the claim that* S refers to. *Nice* in (49a) says

either that John's claim that S is nice or that *the* claim that S (which is also being made by John) is nice. What *nice* in (49a) does not and cannot mean is that the proposition that S, a semantic object, is nice (the latter could be nice even if what John said is not). Thus, *nice* in (49a) is predicated not just of a content, but a content "sustained" by the particular attitudinal mode (or perhaps some more general attitudinal mode) expressed by the predicate (and possibly a particular agent). Similarly, *daring* in (49b) is not predicated of the proposition that S, but rather either of John's thought that S or *the* thought that S (which is shared also by John). Finally, what is said to be exciting in (49c) is not a proposition, a semantic object, but rather John's imagination or *the* imagination of a content (or a content as imagined by John or "as one can imagine it").

There is a second set of data involving special quantifiers—more surprising, though somewhat less secure—that point in the same direction. These are sentences with a free relative clause expressing the sharing of a propositional content:

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

On the Relational Analysis, *what Mary believes* would stand for a proposition which is both an argument of the first and of the second occurrence of *believes*.

There is the following problem for the view that *what Mary believes* stands for is a proposition (or any of the proposition-like objects that a Modified Relational Analysis might postulate). With sufficiently different attitude verbs, speakers generally evaluate the construction in (50) as hardly acceptable or at least as a decidedly funny way of expressing the intended state of affairs. Thus, a number of speakers, at some stage at least, judge the following examples as unacceptable:

(51) a. ?? John remembers what Mary believes, namely that Bill was elected president.
b. ?? John wants what Mary believes, namely that Sue will study harder.
c. ?? John said what Mary believes, namely that it will rain.
d. ?? John believes what Mary imagined, namely that she would be a princess.

On the relevant reading, two independent states of affairs are described by a single sentence, for example in (51a) the state of affairs in which John remembers that Bill was elected president and the state of affairs in which Mary believes that Bill was elected president.

It is important to distinguish this reading from the indirect-question reading. On the latter reading, (51a) would be entirely acceptable, describing the state of affairs in which John remembers that Mary believes that Bill was elected president. It is also important to distinguish the relevant reading from the one available in (52a) on which it is equivalent to (52b):

(52) a. John believes what Mary said.
b. John believes Mary's claim.

In (52a), on the relevant reading, *believe* occurs as a two-place relational predicate, expressing a relation between agents and propositions (*John believes the proposition that* S) or objects like claims, as in (52b).

The data in (51) still fit with the Modified Relational Analysis, since *believe*, *remember*, *want*, *say*, and *imagine* would take different proposition-like objects as arguments. However, consider the predicates in (53a, b):

(53) a. ?? John believes what Bill asserted, namely that S.
b. ?? John remembered what Mary noticed (namely, that Bill had shut the door).

On the Modified Relational Analysis, these predicates would take the same proposition-like arguments (propositions for *believe* and *assert*, and facts for *remember* and *notice*). Yet they are impossible in the construction in question.

The predicates below cannot occur in the relevant construction at all:

(54) a. ??? John saw what Mary knows, namely that it is raining.
b. ?? John saw what Mary heard, namely that someone opened the door.

The attitude verbs in (54a, b) are epistemic in nature. Yet they cannot share a propositional content. They resist (on the relevant reading) full NP complements of the sort *the proposition that* S, *the fact that* S, or *the possibility that* S entirely, and thus the Modified Relational Analysis could not apply to them.

What is interesting about the data in (51) and (53) is that it is perfectly clear what the sentences would mean if they were acceptable (which might be one of the reasons why some speakers—especially those with standard philosophical training— tend to judge them acceptable).

Under what conditions is the construction in (50) possible? Strict identity of the attitude verbs is not required. At the same time, it is not sufficient that the verbs express relations of the same type, for example, epistemic relations, illocutionary relations, or doxastic relations. They also have to share their perceptual, epistemic, or communicative "mode." Attitude verbs that describe propositional attitudes of the same type with the same "mode," though with different "strengths," are in fact possible in the construction in question:

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

Thus, the data require a much finer distinction among different attitudinal objects than is captured by the distinction among propositions, facts, and possibilities. The entities that relative clauses, such as what John thought or what John claimed, stand for, are in fact attitudinal objects or rather kinds of attitudinal objects, entities of the sort "the thought that S" or "the claim that S."

Sharing of attitudinal objects can be expressed not just with relative clauses. Other constructions with special quantifiers or pronouns also serve that purpose and impose the same constraint:

(56) a. ??? John wants something that Mary believes, namely that S.
b. ??? John saw something that Mary knows, namely that it is raining.
c. ??? John saw something that Bill just learned, namely that it is raining.

(57) a. ?? There is something John believes and Mary remembers, namely that it will rain.
b. ??? There is something that John saw and Mary knows, namely that it is raining.

The expression of shared attitudinal objects thus provides further evidence for the Nominalization Theory of special quantifiers, the theory that special quantifiers and pronouns do not range over entities as potential arguments of the predicate, but rather introduce a new domain of quantification, consisting of just the kinds of things a corresponding nominalization would refer to.

Special pro-sentential quantifiers allow for a greater flexibility concerning the objects they introduce than special pro-predicative quantifiers. In particular, special pro-sentential quantifiers may introduce attitudinal objects that are more abstract or more general than the content of the attitude verb in question. In the extreme case, these attitudinal objects may be constituted just by the most general attitude, that of mere "entertaining." This is what, on the present view, underlies the peculiar status of the generalizations about the sharing of attitudinal objects. It was mentioned already that not all speakers accept the judgments given in (51), (53), and (54). Some speakers seem to accept all and some accept many of the examples after some exposure or against particular circumstances. The relevant readings become available in particular with the addition of adverbial modifiers and focusing:

(58) a. John finally said what Mary has always believed.
b. John said what Mary doubts (namely, that the meeting would be fruitful).

This variation is not a problem for the Nominalization Theory of special quantifiers as such. Rather the variation among available readings for different speakers can be traced to a general possibility for entities like attitudinal objects to vary as to how much of the contribution of the verb they will incorporate. Let me call this the *variability of attitudinal objects*.

Why are the examples in (58) acceptable? Here focus on the modifier or the predicate goes along with a more abstract attitudinal object being the topic of the sentence. That is, in (58a, b), the attitudinal objects that the special quantifier ranges over are more general than the attitudinal objects characterized by the verb. In (58a), the attitudinal object is one common to an act of saying and an act of believing.

What the nominalization function extracts in (58a) and (58b) is thus such a shared attitudinal object of entertaining. As a matter of fact, what is shared according to (58a, b) is a *kind* of attitudinal object. It is not John's entertaining that S or Mary's entertaining

that S, but the entertaining that S, that is, a "proposition" in the reconstructed sense of a proposition discussed in the preceding chapter.

The availability of a more general shared attitudinal object depends on various and variable factors, such as the information structure of the sentence (focus, presence of modifiers) as well particularities of individual speakers (such as perhaps their philosophical training). I will later propose that it formally corresponds to the availability of a semantic decomposition of an attitude verb into a more general attitudinal relation and a modifier of such a relation. The availability of a more general attitudinal object then depends on whether a speaker or the formal context allows for such a semantic reanalysis of the attitude verb or not. I will turn to the formal semantics of special quantifiers, and in particular the construction in (50), after developing the semantics of attitude reports with *that*-clauses in the next section.

To summarize, we have seen that special quantifiers do not provide evidence for proposition-like objects acting as arguments of attitude verbs. Rather they act as nominalizing expressions, inducing reference to attitudinal objects obtained from both the content of the attitude verb (or part of it), that is, an intentional predication relation, and a sentential content.

6. A neo-Russellian analysis of attitude reports

6.1. Intentional predication and the Russellian Multiple Relations Analysis

A central problem with propositions was how propositions if they are structured can as such be true or false and, given their structure and components, have the particular truth conditions they have. The source of the problem is that formal objects such as sequences of properties and objects simply cannot be truth-directed without intentionality, without an agent aiming at truth.[22]

The problem of the truth-directedness of propositions and the problem of the unity of structured propositions have a single solution and that is to view predication itself as an intentional relation, a relation relating an agent to a property and its arguments. That is, an agent predicating a property of objects is what makes up the "glue" among the propositional constituents and the aim for truth (or satisfaction) of the proposition itself. An agent is successful in predicating an n-place property of n objects just in case the property holds of the objects.[23]

Going along with the range of propositional attitudes, there will not be a single intentional predication relation, but a range of them. Propositional attitudes, on

[22] This also conforms with Dummett's (1973) view according to which truth values are not considered objects assigned to propositions, but rather the outcome of successful intentional acts or states such as successful assertions or beliefs. On Dummett's view, conditions on truth should go along with conditions on assertion, namely verification conditions.

[23] Recently, this approach to the problem of truth-directedness and the unity of propositions was pursued independently by a number of philosophers of language such as Jubien (2001), Hanks (2007a), and Soames (2010). See also Moltmann (2003a).

this view, will fundamentally be ways of predicating a property of its arguments. Only derivatively may propositional attitudes also be relations toward attitudinal objects or kinds of them.

Propositional attitudes as intentional predication relations may be composed of simpler intentional predication relations. In fact, following the traditional view about propositional attitudes in general, all intentional predication relations will be based on the most general relation of "entertaining." With "entertaining," an agent does not aim at truth, but simply considers the property holding of the objects in question. Again, following the traditional view, the relation of judgment is the most general relation aiming at truth; it consists in entertaining while approving of the property holding of the objects. The relation of belief, on that view, involves further conditions (such as perhaps that of maintaining a disposition to judge).

Formally, the view that propositional attitudes themselves are fundamentally intentional predication relations matches well Russell's (1912, 1913, 1918) Multiple Relations Analysis of attitude reports (Jubien 2001, Moltmann 2003b, Soames 2010). Russell (1912, 1913, 1918) argued that propositional attitudes are not binary relations between agents and propositions, but rather "multiple relations," relating an agent to the constituents of a propositional content. In the case of atomic sentences, the propositional constituents are properties and their arguments. Thus, in *John believes that Mary is happy*, a three-place belief relation is said to obtain among John, the property of being happy, and Mary. In the case of *John believes that Mary likes Bill*, the belief relation is a four-place relation, said to obtain among John, the loving relation, Bill, and Mary, as below:

(59) a. John thinks that Mary likes Bill.
b. think(John, LIKE, Mary, Bill)

Thus, there is no single belief relation, but several, depending on the form of the propositional content involved.

Russell's motivations for the Multiple Relations Analysis were very different from the present ones, and an intentionalist notion of content was certainly not one of them. Russell in fact did not take his analysis to provide a solution to the problem of the unity of propositions.[24] Russell, moreover, did not have particular linguistic data in mind to motivate his account. His motivations rather were of a metaphysical and epistemological nature. Russell had general reservations about representations as the intermediaries between an agent and the world, be they concepts, Meinongian objects, or propositions. The relation between an agent and the world, on Russell's view, is

[24] To the contrary, Wittgenstein convinced Russell that his analysis was in serious difficulty precisely because it appeared to face that problem. Wittgenstein's objection was the following. If attitude verbs can take any number of objects all of which have equal status, how is this to rule out propositional contents consisting just of individuals, and how does this ensure that in *John thinks that Mary likes Bill* the liking relation is understood so as to be predicated of Bill and Mary in a certain order? Russell later proposed a more complex solution to the problem.

direct, not mediated, and propositional attitudes ultimately relate an agent to objects he is acquainted with (particulars or universals).[25] For Russell, instead of propositions there were only three sorts of proposition-like objects: sentences (what Russell also sometimes called "propositions"), which are "incomplete symbols" (requiring an attitude verb for their completion), intentional acts or states (that is, multiple attitudinal relations relating a particular agent to propositional elements), and contents abstracted from intentional states (that is, those sequences consisting of a relation and its arguments for which there is an attitudinal relation relating them to an agent) (cf. Russell 1913, pp. 116 ff.).[26]

Russell's account of attitude reports has been subject to criticism and generally been discarded (see Sainsbury 1979). In particular, the account has been dismissed as being linguistically implausible, because attitude reports appear relational in nature, with the *that*-clause denoting a proposition as an argument of the relation expressed by the attitude verb. However, it appears that Russell's analysis has in fact significant linguistic plausibility once it is worked out in a certain way, relying on somewhat more sophisticated formal semantic means. In this book, I do not aim at a fully developed theory of sentence meaning within a neo-Russellian approach. Rather I have to restrict myself to indicating how such an account can be developed, so that it will not obviously run into the problems that arose for Russell's original account.

First, rather than taking attitude verbs to specify different attitudinal relations in contexts of different *that*-clauses, as Russell did, attitude verbs can be regarded as multigrade predicates (Oliver and Smiley 2006).[27,28] But the agent and the propos-

[25] In Russell's ontology, then, there was space only for facts, individuals, and properties, but not false propositions, which, unlike true propositions, could not be identified with facts and are not needed in a full description of the world. See Sainsbury (1979) and Griffin (1985) for a discussion of Russell's Multiple Relations Theory.

[26] Russell sometimes also appealed to mere intuition to motivate his account of attitude reports: "His [Meinong's] view is that there is an entity, namely the 'proposition' . . . , to which we may have the dual relation of assumption or the dual relation of belief. Such a view is not, I think, strictly refutable, and until I had discovered the theory of incomplete symbols, I was myself willing to accept it, since it seemed unavoidable. Now, however, it appears to me to result from a certain logical naïveté, which compels us, from poverty of available hypotheses, to do violence to instincts which deserve respect" (Russell 1913, Part II, Chapter I, p. 108). And "To me . . . it seems obvious, as a matter of inspection, that belief is a multiple relation, not a dual relation, so that belief does not involve a single object called a 'proposition'" (Russell 1913, Part I, Chapter V, p. 153).

[27] There are two problems for the view that attitude verbs denote different fixed relations in different syntactic contexts. First, since sentences may be of indefinitely many different logical forms, infinitely many belief predicates would have to be distinguished, which is at best implausible (cf. Sainsbury 1979). Moreover, the view is untenable in the face of cases like (ia) and (ib):

(i) a. John knows what Mary believes.
b. John believes everything Mary believes.

Since a speaker can utter (ia) without knowing what Mary believes (and thus without knowing the logical form of her belief content), he would not know which verb *believe* to use. In (ib), Mary may believe various things differing in the number of propositional elements that make them up. In this case, there is not any one verb *believe* that could have been used.

[28] Making use of multigrade predicates was not an option available to Russell; see Griffin (1985).

itional constituents will not play the same semantic role with respect to the attitude verb. Multigrade attitudinal predicates require a distinction between *places* and *positions*.[29] The relation expressed by *think*, for example, will be a relation that has two places, and it is multigrade in its second place. This means that *think* has an unlimited number of positions in its second place. On the neo-Russellian analysis, (60a) has the logical form in (60b), which minimally differs from (59b):

(60) a. John thinks that Mary likes Bill.
b. THINK(John; LIKE, Mary, Bill)

The distinction between places and positions reflects the fact that the subject argument plays quite a different role regarding the attitude verb than the propositional constituents given by the embedded sentence.[30] The constituents of the embedded sentence violate standard linguistic constraints of argumenthood with respect to the embedding attitude verb. For example, Chomsky (1981) imposes rather restrictive conditions on the relation between a predicate and the constituents providing arguments for it (what Chomsky calls "theta-role assignment"), amounting to the constituents being sister constituents of the predicate. It is clear that such constraints do not hold for the constituents of a *that*-clause that are supposed to provide arguments for the embedding verb.

Within the multigrade argument place of an attitude verb, there will be different positions for different roles: one distinguished argument position for a property, meant to be predicated of the other arguments, as well as further argument positions matching the argument positions of the property. Formally, the multigrade position of an attitude verb will have the very same argument structure as the instantiation relation, which takes a universal as well as a suitable number of objects relating at their places to the relevant argument positions of the universal. The agent standing in the attitudinal relation has as his aim the property in the distinguished position holding of the arguments in the other positions.

A given place in the multigrade position of an attitude verb may itself be multigrade, containing a distinguished place for a function, for example, and others for the arguments of the function—in case of functional terms. Multiple nestings of multigrade argument positions are not a problem formally, and can be accounted for by using multiple indexing (Taylor and Hazen 1992): each index corresponds to the position within a multigrade place, for subsequently deeper nested places (or "positions"). Thus, the argument positions of *think* that are used in (60a) are <1> (for John), <2, 1> (for the liking relation), <2, 2> (for Mary), and <2, 3> (for Bill).[31]

[29] For the distinction between places and positions of multigrade predicates see Oliver and Smiley (2004).

[30] Russell in (Russell 1918) criticized his (Russell 1912) view according to which *think* in (60a) would take *liked* as a complement in the same way as *liked* takes *Bill* as a complement. Russell in (1913, 1918) left it open in what way exactly *believe* involves the propositional constituents.

[31] The ordering among argument positions and places that such indexing establishes is not part of the nature of the multigrade relation itself, which, like relations in general, is a neutral relation in the sense of Fine (2000).

Obviously, the structure of the multigrade position matches a structured proposition, on a standard conception. However, a structured proposition rather than being considered a single object should in the present context be viewed as an ordered plurality of propositional constituents, in the sense of a plurality as "many," not as "one." More correctly, it should be considered a hierarchically ordered plurality, a "configuration" of elements as "many" in order to reflect the compositional semantic structure of more complex sentences. In order to simplify things, though, I will just talk about ordered pluralities for the rest of this chapter. An ordered plurality can itself be represented as a sequence using multiple indexing (Taylor and Hazen 1992). Thus (60a) may be represented by the sequence $\text{THINK}_{<1>}$, $\text{John}_{<2,\ 1>}$, $\text{LIKE}_{<3,\ 2,\ 1>}$, $\text{Mary}_{<4,\ 2,\ 2>}$, $\text{Bill}_{<5,\ 2,\ 3>}$, keeping track of the order of arguments as well as the depth of nesting.

Attitudinal relations do not have just an argument position that is multigrade; rather each place within that position may itself be multigrade. The reason is the possibility of multiply embedded attitude reports such as *John believes that Sue thinks that Mary likes Bill*. Here *believe* in its multigrade position takes the multigrade think-relation, Sue, and in a single position that is multigrade itself the liking-relation, Mary, and Bill. Again, formally, such complex argument structures can be represented by using in principle unlimited indexing of arguments (Taylor and Hazen 1992).

It is sharing of ordered pluralities of this sort in virtue of which attitudinal objects with different forces share the same content. Ordered pluralities of propositional constituents will also be involved in quantification with special quantifiers and in the specification of truth conditions for sentences. They can in fact be identified with the meanings of sentences, but as pluralities, not single propositions.[32]

The neo-Russellian Multiple Relations Analysis obviously accounts for the substitution problem for propositions since on that analysis, *that*-clauses do not stand for single objects, but for ordered pluralities of propositional constituents.

The neo-Russellian analysis provides a straightforward answer to the question of what it means for a *that*-clause to specify the mere content of an attitude rather than an object the attitude is about or directed toward. Specifying the mere content means that the target of the attitude is not an object, but rather the connection among propositional constituents, in particular the relation between a property and its arguments. Let us look at the examples below:

(61) a. John expects that Mary will win.
John expects the proposition that Mary will win.
b. John imagined that Mary was alive.
John imagined the proposition that Mary was alive.

[32] This would of course hold only for sentences taken apart from any "illocutionary force indicator." Together with a specific illocutionary force indicator, independent sentences can be taken to express properties of agents that represent illocutionary act types (see Section 6.2).

c. John remembers that Mary won.
John remembers the proposition that Mary won.

In (61a, b, c), the propositional attitudes described by premise and conclusion are the same; but their target is different. Intuitively, the difference between premise and conclusion in (61a) is that the expectation is fulfilled, according to the conclusion, by the presence of an object (a proposition), but according to the premise, by the holding of a property (the property of winning) of an object (Mary). In the conclusion of (61b), John's imagination consists in a mental representation of an object (a proposition), but in the premise of (61b) in the attribution of a property (being alive) to an object (Mary). According to the conclusion of (61c), what is reactivated in John's mind is the representation of an object (a proposition), but according to the premise it is the holding of a property (the property of winning) of an object (Mary).

Propositional attitudes expressed by verbs that display the Objectivization Effect target the relation between predicate and argument on the content-related reading in just the way they target an object (or perhaps the presence of an object) on the object-related reading. That is, the target of such a propositional attitude in the clausal construction is the relation between the embedded predicate and its arguments. By contrast, in the nominal construction, the target of the attitude is the object that the nominal complement refers to.

Since it appears that the primary way of describing a propositional attitude in terms of its content is the sentential construction, the Objectivization Effect reveals something about the nature of propositional attitudes themselves—not just the way we happen to describe them. The Objectivization Effect supports the view that propositional attitudes are, at least primarily, not relations to propositions, but ways of combining propositional constituents—more precisely, ways of predicating properties of objects.

A final question to ask is, how should the neo-Russellian analysis account for the observation that with some verbs a clausal complement *that* S can be replaced by *the proposition that* S, with others by *the fact that* S, and yet with others by *the possibility that* S? Such inferences will be a matter of the particular nature of the multigrade relation in question as well as the existence of a corresponding two-place predicate. On the neo-Russellian analysis, the *that*-clause complement always provides multiple arguments, not a single argument for the (multigrade) relation expressed by the verb. However, attitude verbs may have a relational variant, taking propositions, facts, or possibilities as arguments. *John notices that* S implies *John noticed the fact that* S simply because the truth of the former presupposes the existence of "the fact that S" and the multigrade predicate *notice* has a two-place variant, which denotes a relation between agents and facts.

6.2. *Complex sentences*

The Multiple Relations Analysis faces particular challenges when it comes to more complex sentences. The main problem is how to avoid that an embedded disjunction such as (62a) or an embedded conditional such as (62b) implies that John believes that S:

(62) a. John believes that S or S'.
b. John believes that if S, then S.

In (62a, b) predication in the belief-way can target only the highest connectives, *or* or *if-then*, not the predicate of the embedded sentences S or S'. The predicates of the embedded sentences could be the target only of the most general intentional predication of entertaining. This problem, known in the philosophical literature as the Frege-Geach problem, is a well-known problem for expressivism. I will not discuss the problem in detail, but mention only two options that present themselves within the present neo-Russellian analysis.[33] First, one might consider connectives such as *or* and *if-then* multigrade predicates taking attitudinal objects of entertaining as arguments in any of their places. Alternatively, one might take connectives to be multigrade also with respect to each of their argument places, so that the propositional constituents given by the embedded sentences will fill in the various positions within any of those argument places. This requires imposing conditions to the effect that only the highest predicate or connective will involve the specific predication relation expressed by the verb, whereas the lowest predicates or connectives will be involved only in the most general predication relation of entertaining. On the first view, (62a) will have the analysis in (63a); on the second view, its analysis will look as in (63b):

(63) a. believe(John; OR, f[WIN, Mary], f[WIN, Bill])
b. believe(John; OR, WIN, Mary; WIN, Bill)

The same two options carry over to expressions that may be considered sentential operators, such as modal and temporal operators. The general condition is that a particular propositional attitude expressed by an attitude verb will target only the highest predicate, operator, or connective in the sentences, specifying the mode in which it is to be predicated of its arguments. Operators and connectives themselves will provide the connection among lower-level propositional constituents.

The neo-Russellian approach shares a number of issues concerning complex sentences with structured propositions approaches. This means that whatever one's preferred version of the theory of structured propositions, it will be applicable to the neo-Russellian approach as well. This includes the treatment of quantifiers, variables, and complex predicates.[34]

[33] In his written work, Russell himself did not say much about how sentences other than atomic ones are to be accounted for.

[34] For example, quantifiers on either approach may be taken to express higher-order functions, functions mapping a property to a truth value. In the case of *John thinks that everyone is happy*, the *that*-clause provides the sequence of a quantifier and a property. It is straightforward to extend this account to sentences with more than one quantificational argument with particular scopal relations, by using generalized quantifier theory, where different generalized quantifiers are assigned to subject and object NPs with a particular scope-order (Keenan and Faltz 1985).

The semantics of independent sentences will be similar to that of embedded ones. Independent sentences as such specify a sequence of propositional constituents; but together with, let's say, the declarative mode, they specify a property of agents as in (64), for a content $<C_1, \ldots, C_n>$ and the multigrade assertion relation ASSERT:

(64) $\lambda x[\text{ASSERT}(x, C_1, \ldots, C_n)]$

That is, by asserting *Mary is happy*, an agent will predicate of Mary, in the assertive mode, the property of being happy.

I have taken the meanings of sentences, in simple cases, to consist in sequences (ordered pluralities) of properties or relations and their arguments. This is in what the present neo-Russellian account shares with a common version of the structured propositions account. However, in the present case, the fact that the constituents are arguments of a multigrade attitudinal relation will ensure that the sequence forms the content of an attitudinal object that is truth- or satisfaction-directed and has the right truth conditions. This is what the multigrade attitudinal relation guarantees, but what would have to be imposed on a structured proposition from the outside. Based on the truth conditions of attitudinal objects, truth conditions can be assigned indirectly to the sequence denoted by a sentence and in fact to the sentence itself:

(65) A sentence S expressing the sequence $<C_1, \ldots, C_n>$ is true in a circumstance c iff for any kind of attitudinal object t with $C_1, \ldots, C_n$ as propositional constituents, t is true (satisfied) in c.

Note that by making use of kinds of attitudinal objects, a sentence has truth conditions even if the structured proposition expressed by it has never been the content of a particular attitudinal object.

6.3. Other sentence-embedding predicates

The neo-Russellian analysis does not necessarily apply to all attitude verbs, that is, some attitude verbs may not express multigrade predication relations. An example is emotive factives such as *be glad, be angry*, and *is surprising*. Emotive factives generally allow for a replacement of *that* S by *(about) the fact that* S:

(66) a. Mary is glad that S.
b. Mary is glad about the fact that S.

(67) a. That S is surprising.
b. The fact that S is surprising.

This makes a quasi-relational analysis plausible according to which the *that*-clause in the context of the complement or subject position of an emotive factive verb serves to describe a fact that will then act as an argument of the predicate. Epistemic factives like *know, realize*, and *see*, by contrast, do exhibit the Objectivization Effect and thus are not

up for a quasi-relational analysis.[35] With those verbs, the predication relation that is expressed would be subject to the general factive condition that the predicate actually holds of the arguments. Other attitude verbs such as *agree*, *convince*, and *deny* may involve more than one act of predication.

The neo-Russellian analysis of attitude reports raises the question how sentences should be analyzed that are embedded under predicates that are generally not considered predicates expressing intentional predication relation, for example *is true*, *imply*, or *contradict*. I will restrict myself to only a few remarks on the issue. In some cases, embedded clauses do not actually display the Substitution Problem and the Objectivization Effect. Again, the behavior of *that*-clauses with respect to substitution should be taken into account. *Is true* does allow substitution of a subject clause by *the proposition that* S, which again is suggestive of a quasi-relational analysis according to which the *that*-clause in that particular context serves to describe a proposition to which the truth predicate then applies (in, of course, the sense of "proposition" as the most general kind of attitudinal object). This also holds for *that*-clauses in the subject or complement position of *imply* or *contradict*. However, the same does not hold for the predicate *is possible*, which does not allow substitution of the *that*-clause by *the proposition that* S, but only by a special quantifier:

(68) a. That S is possible.
b. The proposition that S is possible.
c. Something is possible.

(68a) and (68b) are not equivalent: *is possible* with a *that*-clause means "is possibly true," and with a referential term "possibly exists." A deflationary account of truth would obviously avoid positing propositions as referents of *that*-clauses and as arguments of truth-related predicates. Then the question is what to do about special quantifiers and pronouns in place of *that*-clauses. Here the Nominalization Theory is not of much help: there is no attitude involved in the sentence on the basis of which an attitudinal object could be introduced—though, of course, special quantifiers in such contexts may range over "propositions" in the sense of the most general kinds of attitudinal objects.[36]

6.4. *Empirical evidence for the neo-Russellian view: plural terms for propositional contents*

On the neo-Russellian account, attitude verbs are multigrade predicates (with respect to their object argument position). Multigrade predicates, like plural predicates, take pluralities as arguments, though these will be ordered pluralities. Ordered pluralities, I have argued, form the denotations of *that*-clauses. The purpose of this section is first to

[35] Russell (1913), though, took epistemic verbs of perception to express relations taking facts as arguments—as did Vendler (1972).

[36] Recall that such exist even if no one has entertained the propositional content in question.

show that ordered pluralities may form the arguments of predicates in natural language in general. Furthermore, it will present particular linguistic evidence for the status of the object argument of attitude verbs as a plurality.

Besides attitude verbs, there are other kinds of multigrade predicates in natural language, and they in general allow for both lists (which denote ordered pluralities) and plurals. The predicate *add* is one such predicate. It takes a list as a complement in (69a) and a plural NP in (69b):

(69) a. John added two and two and three.
b. John added these numbers.

Add in (69a) is a multigrade predicate rather than a plural predicate because in its second, multigrade place, the same entity may occur as an argument twice.

The view that clausal complements have the status of plural arguments is quite a non-standard view; but there is some linguistic evidence for it, namely the ability of certain *that*-clause-taking verbs to accept plural NPs as complements instead of a *that*-clause. For example, *say* in English allows for the plural *those words* as complement, instead of a *that*-clause.

(70) John said those words.

In (70), *those words* stands for a plurality of words in a certain order, not an unordered plurality. (In fact, it is likely to stand for words in the particular structural configuration of a sentence.)

Natural languages sometimes distinguish different plural forms for ordered and unordered pluralities. For example, in German, *Wort* "word" has two plural forms: *Wörter* for the unordered plurality and *Worte* for the ordered plurality. The plural *Worte* means as much as "sentence or sentences," that is, "words in a particular order with a particular sentential structure and meaning." Thus, the order of the words matters in (71a), but not in (71b):

(71) a. Hans hat diese Worte verwendet. Maria hat sie auch verwendet.
"John has used those words. Mary has used them too."
b. Hans hat diese *Wörter* verwendet. Maria hat sie auch verwendet.
"John has used these words. Mary has used them too."

An important observation is that unlike *Wörter*, *Worte* can be the complement of verbs that otherwise only accept *that*-clauses and special NPs, such as *sagen* "say":

(72) a. Hans sagte diese Worte.
"John said those words."
b. ??? Hans sagte diese *Wörter*.
"John said those words."
c. Hans sagte, dass es regnet.
"John said that it is raining."

d. ??? Hans sagte diesen Text.
"John said that text."
e. Hans sagte etwas.
"John said something."

Moreover, *Worte* and *that*-clauses can flank a predicate of identity, which is not possible with *Wörter* and a *that*-clause:

(73) a. Seine letzten Worte waren, dass alles vergeben ist.
"His last words were that everything was forgiven."
b. ??? Seine letzten *Wörter* waren, dass alles vergeben ist.
"His last words were that everything was forgiven."

Worte is a plural NP both syntactically and semantically (and not, let us say, an NP of the same semantic status as a singular collective NP). Thus, *Worte* allows for predicates that take only plural complements, such as *voneinander unterscheiden*, "*distinguish from each other*" (Chapter 1, Section 6):

(74) Maria konnte seine Worte nicht voneinander unterscheiden.
"Mary could not distinguish his words from each other."

Thus, there are at least some plural expressions in some languages that can play exactly the semantic role of *that*-clauses.[37]

There is further evidence for the plural status of clausal complements. It comes from semantic selectional requirements, more precisely the Accessibility Requirement, as discussed in Chapter 1. Recall that the Accessibility Requirement says that predicates making reference to the parts of an argument (but not the whole) require pluralities as arguments and cannot take single objects. The Accessibility Requirement manifests itself with clausal complements as follows. Predicates that care about the internal structure of a propositional content or the manner of its presentation and not just its truth conditions in general allow only for *that*-clauses as arguments and not for proposition-referring NPs. These are predicates like *think* (expressing occurrent thought), *write*, *shout*, and *whisper*.

(75) a. John thought/wrote/shouted/whispered that S.
b. ??? John thought/wrote/shouted/whispered the proposition that S.

By contrast, predicates like *believe* and *assert*, which focus on the content only, allow for both *that* S and *the proposition that* S.

We can thus conclude that there is significant linguistic evidence for *that*-clauses having the status of plural arguments and attitude verbs being multigrade predicates.

[37] Of course, it remains to be explained why not all attitude verbs allow for a plural NP representing propositional constituents. In fact most attitude verbs don't:

(i) ??? John thought/believed/suspected/hoped/feared those propositional constituents/those concepts.

7. The ontology of attitudinal objects

Let us now turn to the ontology of attitudinal objects. Coming from a proposition-based approach, one might conceive of "John's belief that S" as a qua object in the sense of Fine (1982), namely as the proposition that S qua being believed by John. Such a qua proposition would inherit certain properties from the base proposition ("the proposition that S"), in particular its truth conditions, though the attitudinal component (the property of being believed by John) will also be an essential feature. However, attitudinal objects have the advantage of allowing us to dispense with the notion of a proposition together with the various problems that go along with it. I will propose an account of attitudinal objects not making use of propositions. On that account, attitudinal objects are tropes involving the notion of intentional predication introduced in the last section. This account will do justice to the concreteness of attitudinal objects as well as the ways in which attitudinal objects differ from events. Both events and attitudinal objects will be conceived in terms of tropes: they will both be complex tropes, but of very different kinds.

Generally, tropes are referents of de-adjectival nominalizations. Therefore, it may not initially be plausible that attitudinal objects, which are referents of deverbal nominalizations, are tropes. However, there are deverbal nominalizations that do describe tropes, for example *weight* and *smile*. *Weight* and *smile* clearly are predicates of tropes, not events. Thus, the view that attitudinal objects as referents of deverbal nominalizations are tropes is not entirely unmotivated.

In Chapter 2, I had argued that events are best conceived as second-level relational tropes, namely as instances of temporal transition relations involving first-level tropes in times. Given this account of events, it is clear why events cannot have truth conditions. Temporal transitions are just not true or false. There is nothing truth-directed about temporal transitions. It can also be explained why events on this conception do not enter relations of close similarity when they have the same content and are of the same type. Different events with different agents will certainly involve transitions among many qualitatively different tropes, and those first-level tropes will ensure distinctness. Finally, the present account explains why the time during which an event takes place is constitutive of the event. If relations of temporal transition make up an event, this implies that the relevant periods are also constitutive of the event.

On the present view, both attitudinal objects such as "John's thought that S" and events such as "John's thinking that S" are tropes, but complex tropes of quite different sorts.[38]

The idea is that what distinguishes attitudinal objects from events is that they are instantiations of a multigrade attitudinal or illocutionary relation. This explains the way

[38] I will leave out the category of states, such as "John's believing that S." States, as we have seen in Chapter 2, are on a par with facts rather than with tropes and events. Consequently, they require a very different ontological account, one that assimilates them to facts. See Chapter 2, Section 8. See also Moltmann (forthcoming (a)).

evaluative predicates are understood: evaluative predicates when applied to attitudinal objects care also about the attitudinal or illocutionary force and not just the propositional constituents.

One might then take attitudinal objects to be relational tropes instantiating a multigrade attitudinal or illocutionary relation. That is, "John's belief that Mary likes Bill" would be the instantiation of the multigrade belief relation in John, the liking relation, Mary, and Bill. However, this view faces several problems. First, it makes the wrong predictions about perceptual properties: perceptual properties predicated of an attitudinal object can target only the agent, never a propositional constituent. Thus, the agent and the propositional constituents cannot be on a par, both being bearers of the trope that is an attitudinal object. For example, if Joe heard John's remark that Mary hit Bill, this can never mean that Joe heard Mary hit Bill. An even more serious problem for the view is that it gets the similarity relations wrong that attitudinal objects display. If "John's belief that Mary likes Bill" is the instantiation of the belief relation in four entities (John, the liking relation, Mary, and Bill), then such a relational trope should be exactly similar to "Mary's belief that Joe kissed Sue," which is an instance of the same multigrade belief relation. However, this is clearly wrong. "John's belief that Mary likes Bill" can bear exact similarity only to a belief with the same content (though possibly a different agent), such as "Joe's belief that Mary likes Bill."[39]

A better way of conceiving of attitudinal objects as instances of attitudinal or illocutionary multigrade relations is as what I will call *quasi-relational tropes*. Quasi-relational tropes are monadic tropes instantiating object-dependent properties based on relations. The examples below illustrate the difference between relational and quasi-relational tropes:

(76) a. the relation between John and Bill
b. John's relatedness to Bill
c. Bill's relatedness to John

Whereas (76a) stands for a relational trope, (76b) and (76c) stand for quasi-relational tropes. There are also more specific terms that stand for quasi-relational tropes, for example *John's fatherhood*. Relations in general give rise to both relational tropes and (possibly various types of) quasi-relational tropes (and of course with three or more place-relations, a mixture of both).

Attitudinal objects, I propose, are quasi-relational tropes that are instantiations in an agent of complex properties of the sort λx[believe(x; LIKE, Mary, Bill)]. This explains straightforwardly the sorts of properties attitudinal objects may have. As quasi-relational tropes, two attitudinal objects are "the same" just in case they involve the same attitudinal mode and the same propositional constituents. Perceptual properties will

[39] A further problem for the view is that it treats all propositional constituents as bearers of a relational trope ontologically on a par, as objects in the world. However, some propositional constituents may be considered concepts, which means, entities one might not want to assign the status of actual objects.

target only the one bearer of the trope, the agent. As instances of intentional predication relations, attitudinal objects will obviously be truth-directed (or satisfaction-directed). Furthermore, propositional constituents will not necessarily obtain the status of objects: propositional constituents may be concepts, occupying a position in the multigrade place of the attitude verb specifically marked for such concepts. Finally, it is explained why the time of occurrence is only accidental to an attitudinal object. An attitudinal object as the instantiation of an attitudinal property in an argument need not involve the time of that instantiation as an essential component. In the case of events, by contrast, times were the bearers of the relational trope itself and thus essential components.

This account of attitudinal objects can be extended to physical products. A walk or a scream would be the instantiation in an agent of the property (of an agent) to have particular physical properties at subsequent times. In a very simple case, such a property may be of the form $\lambda x[\exists t\, \exists t'(P^t(x)\ \&\ Q^{t'}(x)\ \&\ t \prec t')]$, for contrary properties P and Q and "$t \prec t'$" meaning "t immediately precedes t'."

The account also explains why gestalt properties are unproblematic with products, but problematic with actions. There is no problem for an agent (of a product) to instantiate a time-related property involving an interval as a whole. However, gestalt properties involving the interval as a whole can hardly play a role in actions as instances of temporal transition properties in subsequent times.

8. The semantics of terms for attitudinal objects

Attitudinal objects, I have argued, can be viewed as instances of complex object-dependent properties. Thus "John's belief that Mary is happy" is the instantiation of the property of standing in the belief relation to happiness and Mary in John. For giving the formal semantics of such terms, a few more remarks are necessary.

I will now make use of the Davidsonian event semantics for verbs (which I have not adopted so far for the sake of simplicity). This means that *believe* will in fact have an additional argument position for events. Formally, the interpretation of *John's belief that* S will be either as in (77a) (describing a particular attitudinal object) or as in (77b) (describing a kind of attitudinal object, which also involves John):

(77) a. $[\![\textit{John's belief that S}]\!] = f([\![\text{John}]\!], \lambda x[\exists e\ \text{believe}(e, x, C_1, \ldots, C_n)])$, where $\prec C_1, \ldots, C_n \succ = [\![S]\!]$

b. $[\![\textit{John's belief that S}]\!] = \iota x[x = f_{kind}(\lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ R([\![\text{John}]\!], f_{kind}(\lambda y[\exists e\ \text{believe}(e, y, C_1, \ldots, C_n)]))]$

Here $[\![\ ]\!]$ is the translation function. I take f to be the function mapping an individual and a property onto the trope that instantiates the property in the individual (or makes it true that the individual falls under the concept). Note that properties as used in this context should simply be understood as concepts, not in a realist sense. R is the relation that holds between an individual and a kind that has an instance of which the individual

is the subject. F_{kind} is the function mapping a property to the kind of objects that are instances of the property.

Note that f(John, $\lambda x[\exists e$ believe(e, x, $C_1, \ldots, C_n)]$) should be the very same entity as the product of the belief state e such that "believe(e, John, $C_1, \ldots, C_n$)".

The truth conditions or more generally satisfaction conditions of attitudinal objects (with the simple kinds of content so far discussed) can now be given as follows:

(78) An attitudinal object f(a, $\lambda x[\exists e$ R(e, x; $C_1, \ldots, C_n)]$), for an agent a, propositional constituents $C_1, \ldots, C_n$, and an attitudinal relation R, is true (satisfied) at a world w iff $<C_2, \ldots, C_n> \in [C_1]^w$.

As mentioned in Section 6.2, a sentence expressing a sequence of propositional constituents can be assigned truth (or rather satisfaction) conditions derivatively, on the basis of the satisfaction conditions of the corresponding attitudinal object. This is stated more formally as below:

(79) A sentence S expressing the sequence $C_1, \ldots, C_n$ at a world w and a time t is true in a world w' iff for any kind of attitudinal object e, $e = f_{kind}(\lambda x[\exists e$ $R(e, x, C_1, \ldots, C_n)]$), for some multigrade (positive) attitudinal relation R, e is true (satisfied) at W'.

Inferences among sentences could be accounted for as follows: A sentence S expressing a sequence of propositional constituents $C_1, \ldots, C_n$ at a world w implies a sentence S' expressing the propositional constituents $C'_1, \ldots, C'_m$ at a world w iff for any world in which S is true, S' is true, which means, for any attitudinal objects e and e', $e = f(d; \lambda x[\exists e^* R(e^*, x, C_1, \ldots, C_n)])$ and $e' = f(d; \lambda x[\exists e^* R(e^*, x, C'_1, \ldots, C'_m)])$: for any world w', if e is true (satisfied) at w', then e' is true (satisfied) at w'.

9. The semantics of special quantifiers in sentential position

We can now turn to the formal semantics of special quantifiers in sentential position, as quantifiers ranging over either attitudinal objects or kinds of attitudinal objects. The semantic analysis of special pro-sentential quantifiers will be very similar to that of special pro-predicative quantifiers in Chapter 3. First, special pro-sentential quantifiers have both a scope and a nominalization domain, the part of the sentence on which the introduction of the new entities, the attitudinal objects, is based. The nominalization domain now includes both the object position and the attitude verb. Second, special pro-sentential quantifiers will require quantification over propositional constituents $C_1, \ldots, C_n$ as well as attitudinal objects. Finally, the sentence will involve quantification over events (Davidsonian event arguments). The result is the analysis of (80a) as in (80c) based on the Logical Form in (80b):

(80) a. John claimed something interesting.
b. something interesting$_i$ (John claimed t_i)
c. $\exists x \exists n \exists C_1, \ldots, C_n (x = f(\text{John}, \lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ \text{interesting}(x) \ \&\ \exists e\ \text{claim}(e, \text{John}, C_1, \ldots, C_n))$

For an interpretation involving quantification over kinds we will have:

(80) d. $\exists x \exists n \exists C_1 \ldots C_n (x = f_{\text{kind}}(\lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ \text{interesting}(x) \ \&\ \exists e\ \text{claim}(e, \text{John}, C_1, \ldots, C_n))$

Free relative clauses like *what Mary claimed* involve the same nominalization function. Taking the denotation of (81a) to be a kind of attitudinal object, (81b) can be analyzed as in (81c):

(81) a. $[\textit{what Mary claimed } e] = \iota x[\exists n \exists C_1, \ldots, C_n (x = f_{\text{kind}}(\lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ R(\text{Mary}, x) \ \&\ \exists e\ \text{claim}(e, \text{John}, C_1, \ldots, C_n)))]$
b. John claimed what Mary claimed.
c. $\exists x \exists n \exists C_1, \ldots, C_n (x = f_{\text{kind}}(\lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ \exists e'\ \text{claim}(e', \text{John}, C_1, \ldots, C_n) \ \&\ R(\text{John}, f_{\text{kind}}\ (\lambda y[\exists e\ \text{claim}(e, y, C_1, \ldots, C_n)]) \ \&\ x = [\textit{what Mary claimed}])$

Finally, a special pronoun such as *that* can be treated as anaphoric to an attitudinal object e_i given by the context, again involving the same operation f:

(82) $[\textit{John believes that}_i] = \exists n \exists C_1, \ldots, C_n (e_i = f_{\text{kind}}(\lambda x'[\exists e\ \text{believe}(e, x', C_1, \ldots, C_n)]) \ \&\ \exists e\ \text{believe}(e, \text{John}, C_1, \ldots, C_n))$

The analysis so far has not yet done justice to the variability of attitudinal objects that show up in certain contexts. For this purpose, it must be permitted that not all of the content of an attitude verb makes up the attitudinal relation in question, but rather part of it may just play the role of characterizing such a relation.

The fact that only part of the contribution of the predicate is taken into account should be considered an instance of the more general way in which terms for dependent concrete entities such as tropes or events can be interpreted. Thus, Kim (1976) argued that event descriptions such as *John's slow walk* might either refer to an event constituted by John's walking only, an event that happens to be slow, or to an event that is constituted both by John's walking and slowness. Similarly, *John's stroll* may either refer to an event constituted by John's walking, which happens to be casual, or to an event constituted by John's walking as well as "casualness." Introducing events on the basis of a (possibly complex) predicate and its arguments will thus involve a division of the content of the predicate and possibly its arguments into parts that will play a constitutive role and parts that will play a characterizing role for the event. The same will hold for tropes in general and attitudinal objects in particular.

Various kinds of divisions of content into characterizing and constitutive parts may play a role for the introduction of attitudinal objects. One kind of division that is generally available concerns attitude verbs that differ in the degree of strength of the commitment to truth, but otherwise share a particular kind of attitudinal object (*believe, doubt, disbelieve,* and *assume*). In this case, the specification of the degree of commitment to truth will not be constitutive of the attitudinal object the nominalizing expression introduces. Emphasis on the predicate or its modifiers furthermore allows attitude verbs with quite different contents to share their attitudinal object. In that case, the attitudinal object is based on some very general attitudinal relation, such as "acceptance" or "entertaining" and the modifier will be rather rich in content. Formally, this means that before an attitudinal object is introduced, a function f_c determined by the context c will map the verb onto a pair consisting of a relation modifier and a relation, so that the application of the relation modifier to the relation is identical to the intension of the verb:

(83) For a context c, $f_c(V) = \langle m, R \rangle$, for some relation R and relation modifier m so that $[V] = mR$

(84a) can then be analyzed as in (84b) or equivalently as in (84c):

(84) a. John (finally) said what Mary has (always) believed.

b. $\exists nC_1, \ldots, C_n(\exists e\ pr_1(f_c(\textit{said}))(pr_2(f_c(\textit{believes}))(e, \text{John}, C_1, \ldots, C_n))] \ \&\ f_{kind}(\lambda y[\exists e\ pr_2(f_c(\textit{said}))(e, y, C_1, \ldots, C_n)]) = [\textit{what Mary believes}] \ \&\ R(\text{John}, f_{kind}(\lambda y[\exists e\ \text{say}(e, y, C_1, \ldots, C_n))]))$

c. $[\textit{what Mary believes}] = \iota x[\exists C_1, \ldots, C_n(x = f_{kind}(\lambda y[\exists e\ pr_1(f_c(\textit{believes}))(e, y, C_1, \ldots, C_n)]) \ \&\ pr_2(f_c(\textit{believes}))(pr_1(f_c(\textit{believes}))(x, C_1, \ldots, C_n))]$

Here $pr_1(f_c(V)$ is the first projection of $f_c(V)$, the modifier of the relation, and $pr_2(f_c(V))$ is the second projection, the relation itself.

10. Cognate objects and special quantifiers

Special quantifiers, on the analysis I have given, act like nominalizations in that they introduce a "new" domain of objects, even though they themselves do not act as referential terms like the familiar sorts of explicit nominalizations. With *that*-clause-taking attitude verbs, special quantifiers introduce attitudinal objects or kinds of attitudinal objects, the products of the act or state described by the verb. It appears that certain non-special NPs may play a very similar semantic role in one particular part of construction, namely as *cognate objects*. Cognate objects are NP-complements that generally occur with intransitive verbs, as below:

(85) a. John jumped a high jump.
b. John lives a good life.
c. John screamed a terrible scream.
d. Mary danced a nice dance.

Cognate objects are complements that seem to spell out the very same event that the verb describes. In fact, a common approach to cognate objects is that they play the role of making explicit the implicit Davidsonian event argument of the verb (cf. Moltmann 1989, Mittwoch 1998).

There are problems, however, with this view about the semantic role of cognate objects. First, a cognate object may describe a trope rather than an event, for example a smile, which would not be a Davidsonian event argument:

(86) John smiled a beautiful smile.

Moreover, cognate objects are restricted to product nominalizations and impossible with action nominalizations, as is illustrated below:[40]

(87) a. ??? John jumped intense jumping.
b. ??? John screamed terrible screaming.
c. ??? Mary danced nice dancing.

Finally, cognate objects are also possible with certain transitive verbs that may take *that*-clause complements, such as *think* in (88a) and *dream* (88b), and in such a case, the cognate object describes an attitudinal object, an object that has truth or satisfaction conditions:

(88) a. John thought an interesting thought.
b. John dreamt a nice dream.

The modifiers *interesting* and *nice* in (88) are predicates of the product, not the act: *interesting* in (88a) is predicated of the content of John's thought, not his act of thinking, and *nice* in (88b) is predicated of the content of John's dream, not his dreaming.

Cognate objects of this sort can be replaced by special quantifiers. Thus, the questions below can have (88a) and (88b) as answers:

(89) a. What did John think?
b. What did John dream?

By contrast, such questions are not possible with other cognate objects, which instead require *how*-questions. Thus, the question corresponding to (85a) is (90a), not (90b):

(90) a. ?? What did John jump?
b. How did John jump?

Unlike special quantifiers, which can replace *that*-clause complements of any attitude verb, the cognate-object construction is restricted to particular lexical verbs (and

[40] The claim that cognate objects are restricted to product nominalizations can be found already in Twardowski (1912).

languages differ in what verbs may take cognate objects). The nominalizations *belief, claim*, and *imagination*, for example cannot act as cognate objects. Verbs thus must be specified in the lexicon as to whether they take cognate objects or not. Setting this difference aside, the semantics of pro-sentential special quantifiers and of cognate objects is almost the same. Thus, cognate objects in the place of sentential complements take both a scope and a nominalization domain, as in (91a) (for (88a), and they introduce tropes on the basis of the nominalization domain as in (91b):

(91) a. An interesting thought$_i$ [$_{ik}$ John thinks t_k]
b. $\exists x\, \exists n\, \exists C_1, \ldots, C_n(\exists e(\text{think}(e, \text{John}, C_1, \ldots, C_n)\ \&\ x = f[\text{John}, \lambda y[\exists e(\text{think}(e, y, C_1, \ldots, C_n))]]\ \&\ \text{interesting}(x))]$

Other cognate objects will simply involve the function *prod* mapping an event onto a product, as in the analysis of (85a) in (92):

(92) $\exists e \exists x(\text{jump}(e, \text{John})\ \&\ x = \text{prod}(e)\ \&\ \text{jump}(x)\ \&\ \text{high}(x))$

The cognate-object construction thus serves to characterize the product–event relation, and in particular permits modifiers of cognate objects to act as predicates of products, rather than the Davidsonian event argument. Cognate objects thus introduce the very same sorts of entities as special quantifiers, though by means of an explicit nominalization.

To summarize, cognate objects do not have the semantic role of adjuncts, acting as predicates of the event argument of the verb, and they do not have the semantic role of ordinary complements either, providing an argument of the relation expressed by the verb. Rather they are "nominalizing complements": they have the function of introducing a new entity on the basis of their nominalization domain, namely the product of the event or state described by the verb.

11. *That*-clauses and measure phrases

That-clauses share a range of similarities with measure phrases, as do nominalizations of attitude verbs such as *thought* with nominalizations of measure verbs such as *weight*. In fact, some philosophers, for purely philosophical reasons, have proposed that propositional attitudes should be understood in measure-theoretic terms, a view that goes along with a functional account of attitudinal states. This is the Measurement Theory of propositional attitudes (cf. Matthews 1985, 2007). The Measurement Theory need not make use of propositions and amounts to a non-relational account of propositional attitudes. Given the present context, this raises the question whether the Measurement Theory might not provide a semantic alternative to the neo-Russellian analysis of attitude reports, to account for the linguistic problems for the Relational Analysis.

On the Measurement Theory of propositional attitudes, attitude reports describe relations between an attitudinal state or act and a proposition or sentence. Within this theory, crucially, the proposition or sentence only serves to represent certain properties of the attitudinal state or act, such as its entailment relations with respect to other states, its truth conditions as well as any aboutness relations it may stand in to external objects. Technically, this means that attitude verbs express a measure function mapping attitudinal states or acts to sentences or propositions, while preserving the relevant semantic properties and relations. That is, they specify homomorphisms between an empirical system (attitudinal states and certain of their properties and relations) and a representation system (propositions or sentences and their semantic properties and relations). On this view, propositional attitudes are not genuine relations (which could be established on the basis of empirical properties of objects), but relations based on a stipulation as to the choice of the "representation system," a system which only serves to represent certain empirical properties of the measured entity.

While the Measurement Theory as such is a theory about the nature of propositional attitudes and not the semantics of attitude reports, it does raise the question of its potential linguistic adequacy and of the linguistic parallels between attitude reports and measure constructions. Let us first take a closer look at the semantics of measure constructions. Measure phrases occur as complements of measure verbs, as in (93a), and measure verbs allow for nominalizations, with a degree phrase as complement, as in (93b):

(93) a. John weighs 100 pounds.
b. John's weight (of 100 pounds)

Several linguistic criteria show that measure phrases such as *100 pounds* in (93a) do not act as referential arguments, but more like (obligatory) adjuncts (Rizzi 1990). They do not allow for passivization and, like adjuncts, cannot be extracted from "weak islands," for example *that*-clauses in the scope of negation. Thus, the contrast between the ambiguous (94a) and the unambiguous (94b), with an adjunct, corresponds to the contrast between (95a) and (95b) (which can be understood only as a question about an object, not a measurement) (cf. Rizzi 1990):

(94) a. It is for this reason that I believe that he was fired t.
b. It is for this reason that I do not believe that he was fired t.

(95) a. What do you believe he weighed t? (possible answer: 100 kilos)
b. What do you not believe he weighed t? (impossible answer: 100 kilos)

Measure phrases also exhibit the Substitution Problem, though they are of course replaceable by special quantifiers and pronouns:

(96) a. ??? John weighed the same number/entity /degree as Mary.
b. John weighed what Mary weighs.

c. Bill weighs that too.
d. John weighs the same as Mary.[41]

This is evidence that the measure phrase does not provide an argument of a relation expressed by the measure verb (a number, say). A measure verb in fact could not really express a relation. A measure verb on its own cannot denote a function from individuals (or rather tropes such as weights) to numbers, but rather such a function must be partly specified by part of the content of the measure phrase as well ("pound," as opposed to "kilo"). Moreover, the contribution of the measure phrase cannot just be an entity as an argument of a relation expressed by the verb: it specifies both a function and a value of the function. This indicates that both the measure verb and the measure phrase are syncategorematic expressions, forming a complex predicate expressing a measure property.

NPs such as *John's weight* were discussed already in Chapter 2 as NPs referring to quantitative tropes. A measure phrase such as *a hundred pounds* in *John's weight of 100 pounds* then serves to measure the trope, rather than specifying a degree to which the entire NP would refer to.

Measure verbs display an action–product distinction, parallel to the distinction between mental states or events and their products, that is, attitudinal objects (tropes of a complex sort). "John's weighing 100 pounds" is a state, whereas "John's weight," the product, is a trope. Only the trope has a measurement, the event does not. While *John's weight of 100 pounds* is fine, *John's weighing of 100 pounds* is not.[42] Furthermore, only the tropes enter similarity relations that go along with a shared measurement, events and states do not. Thus, (97a) is fine and possibly true, but not (97b), which could only be false:

(97) a. John's weight last year is the same as John's weight this year.
b. John's weighing 100 kilos this year is the same as John's weighing 100 kilos last year.

Attitude verbs and measure verbs thus share two properties: that of taking a non-referential complement and that of having a nominalization that is trope-referring, rather than event-referring. Given these parallels between measure constructions and attitude reports, it appears that the Measurement Theory might provide an interesting alternative way of explaining some of the relevant data, while being based on entirely different philosophical assumptions about propositional attitudes and mental states than the neo-Russellian account. However, there are two problems for the Measurement Theory when applied to the semantics of attitude reports.

[41] Note that measure verbs do not allow the full form *the same thing* as complement:

(i) ??? John weighs the same thing as Mary.

Measure verbs thus are not entirely parallel to attitude verbs in their ability to accept special quantifiers. Why that is so remains to be explained.

[42] A measurement theorist of propositional attitudes will relate this to the fact that only the attitudinal object has truth conditions, a corresponding event or act does not.

First, *that*-clauses do not exhibit the linguistic properties of measure phrases. Measure phrases generally resist passivization and extraction from weak islands (Rizzi 1990). However, both are fine with *that*-clauses:

(98) a. * Three hundred pounds has never been weighed by anyone.
b. That John is incompetent has never been claimed.

(99) a. * How much didn't you think that John weighed t?
b. What didn't you think that he said t?

Thus, even though both measure phrases and *that*-clauses are non-referential, they are not sufficiently similar linguistically to make a role of *that*-clauses as measure phrases plausible.

Furthermore, the Measurement Theory has difficulties accounting for the intuitive distinction between attitudinal objects and mental states or acts. On the Measurement Theory, what is mapped onto propositions is mental states and events. Mental states and events will thus be assigned truth conditions and inferential relations. This, however, is not right, as we have seen.

Thus, while there is a close similarity between "measurements" and attitudinal objects (both are monadic tropes of some sort), the Measurement Theory of propositional attitudes does not seem to do justice to the linguistic structure of attitude reports and the ontology of attitude-related objects that natural language displays, namely attitudinal objects. Thus, while there are interesting parallels between attitude reports and measure constructions, there are reasons to prefer the neo-Russellian analysis of attitude reports together with the particular role of attitudinal objects in the semantics of special quantifiers.

12. Conclusion

In this chapter, I have argued that the semantics of attitude reports does not require propositions as objects of reference. However, attitude reports do involve proposition-like objects in the presence of nominalizing expressions, such as special quantifiers. However, these are concrete objects that depend both on a particular mental or illocutionary event and an agent. That is, they are attitudinal objects. Attitudinal objects are involved, though, in simple attitude reports without nominalizing expressions. For those I have proposed a neo-Russellian analysis, though for entirely different reasons from those which had motivated Russell originally.

Given the best option of how to understand attitudinal objects, namely as quasi-relational tropes, the semantic importance of attitudinal objects also gives further support for tropes as a central category of objects in the ontology of natural language. The difference between attitudinal objects and mental or illocutionary events is part of a more general distinction between what Twardowski called "actions" and "products," a distinction I will make use of in the next chapter as well.