Objects and Attitudes

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Sources and Acknowledgments

The chapters of this book are in part based on published papers, though often with significant changes in content. Here is a brief description of the publications that precede the overall project or specific parts of it.

The overall view of object-based truthmaker semantics of attitude reports and modal sentences was outlined in the *Theoretical Linguistics* target article 'Truthmaker Semantics for Natural Language: Attitude Verbs, Modals and Intensional Transitive Verbs' (Moltmann 2020a). The comments by Boban Arsenijeviç, Robert Matthews, Paul Portner and Aynat Rubinstein, Kristina Lieffke, Wayne Davies, Paul Elliot, Gillian Ramchand, and Magdalena Kaufmann had been highly stimulating, and responding to them led to various important revisions of the project (Moltmann 2020b). A precedent of the target article is 'Clauses as Semantic Predicates. Difficulties for Possible-Worlds Semantics' (Moltmann 2018b).

A much earlier general outline of the semantics of attitude reports and modal sentences developed in this book are the articles 'Propositions, Attitudinal Objects, and the Distinction between Actions and Products' (Moltmann 2014) and 'Cognitive Products and the Semantics of Attitude Reports and Deontic Modals' (Moltmann 2017a), which are heavily oriented at Twardowski's (1911) seminal article 'Actions and Products. Some Remarks on the Borderline of Psychology, Grammar, and Logic', a paper that had greatly stimulated the project in its earlier stages.

More topic-specific articles form points of departure of particular chapters of the book. The ontological theory of attitudinal and modal objects outlined in Chapter 2 is a development of part of the content of the papers 'Attitudinal Objects. Their Importance for Philosophy and Natural Language Semantics' (Moltmann 2019a) and, at the earlier stage, Moltmann (2014 and 2017a). Chapter 3 is in part based on my article 'Truth Predicates, Truth Bearers and their Variants' (Moltmann 2021c), as well as 'Truthmaking, Satisfaction and the Force-Content Distinction' (Moltmann 2021b), and to an extent 'Partial Content and Expressions of Part and Whole. Discussion of Stephen Yablo: *Aboutness*' (Moltmann 2017c). Chapter 4 is based on 'An Object-Based Truthmaker Theory for Modals' (Moltmann 2021c). Chapter 5 builds

on Moltmann (2020a, 2021a); however it deviates in significant ways from the earlier work regarding the syntax-semantics interface. Chapter 6 is a much further development of 'Levels of Linguistic Acts and the Semantics of Saying and Quoting' (Moltmann 2017b). Chapter 7 is entirely new in content.

The development of the views in this work has benefited greatly from the numerous workshops which I co-organized at New York University with Kit Fine and at Rutgers University with Jane Grimshaw from 2014 to 2019. It has also benefited from feedback at workshops at the IHPST in Paris (2013, 2014, 2015), at workshops on truthmaker semantics at the University of Hamburg (2019) and Geneva (2022), as well as at workshops, conferences, and invited talks in Amsterdam, Austin (Texas), Barcelona, Berkeley, Bochum, Bristol, Cambridge, Duesseldorf, Geneva, Konstanz, Leeds, Lille, Louvain-La-Neuve, Liège, Miami, Milan, Munich, London, Nice, the Ecole Normale Supérieure and the Collège de France in Paris, Noto (Sicily), Padua, Patras, Pavia, Stanford, Salzburg, Toronto, Tübingen, Turin, Vancouver, Venice, and Warsaw. In 2023, Chapters 5–7 were presented at the newly established hybrid workshop on complement clauses Côte d'Azur (CCCA) in Nice, where it had benefited particularly from comments by Keir Moulton, Kalle Müller, Chang Liu, Clementine Raffy, Katrin Axel-Tober, Ellen Brandner, Elena Guerzoni, and Vesela Simeonova. The project has also benefited greatly from discussions with various researchers, foremost Kit Fine, whose truthmaker semantics was used for the satisfaction conditions of attitudinal and modal objects ('object-based truthmaker semantics') and who had an immeasurable impact on many other aspects of this work as well. Conversations with Gary Ostertag, who had read carefully through a good part of the book, have been highly stimulating and beneficial. The overall view was also presented in a series of six lectures, *Acts, Objects, and Attitudes*, at New York University (Linguistics and Philosophy Departments) in the fall of 2015, organized by Vera Flocke, a greatly appreciated initiative at the time. Regular in-person meetings with Guglielmo Cinque in Venice that had started during the pandemic have been immensely helpful, as have been numerous meetings with Richard Kayne in New York as well as exchanges with Justin Bledin, Richard Faure, Jane Grimshaw, Peter Hanks, Johannes Brandl, Bob Matthews, Richard Kayne, Kristina Liefke, Jim Pryor, Chris Peacocke, Indrek Reiland, Gideon Rosen, David Rosenthal, Stephen Schiffer, Michael Schmitz, and Stephen Yablo.

September 2023

Preface

This book pursues a project that in a way had started twenty years ago, when I argued that the linguistic facts do not support propositions as the entities that propositional attitude reports are about, but rather what I call 'attitudinal objects', entities like claims, requests, thoughts, desires, hopes, decisions, and intentions (Moltmann 2003a, b, 2004). Thanks to my colleagues at the IHPST in Paris at the time, Jaques Dubucs and Wioletta Miskiewicz, I became aware that a closely related notion to that of an attitudinal object had already played a central role in the philosophy of the Polish early analytic philosopher Kazimierz Twardowski (Twardowski 1911, Dubucs and Miskiewicz 2012). Twardowski distinguished entities like claims, requests, and judgments as 'products' from 'actions' of claiming, requesting, and judging. Only products, for Twardowski, are bearers of truth or satisfaction conditions and play a role in logic and the humanities in general. Twardowski's work became a major inspiration and encouragement to further pursue the approach of an ontology of attitudinal objects. The interest in Twardowski's view as well as in related cognitive approaches to propositions in the history of philosophy and in contemporary philosophy of language subsequently led to the edited volume *Act-Based Conceptions of Propositional Content: Contemporary and Historical Perspectives* (Moltmann and Textor 2017).

The present project involves two major deviations from my earlier work on attitudinal objects. The first concerns the semantics of attitude reports. In Moltmann (2003a, b, 2004, 2013a), I had pursued a Russellian-style multiple-relations analysis of attitude reports, that is, an analysis on which *John believes that Mary is happy* is taken to describe a three-place belief-relation holding among John, the property of being happy, and Mary. Moreover, attitudinal objects such as 'John's belief that Mary is happy' were conceived as relational 'qua objects', entities of the sort 'the propositional constituents Mary and happiness qua being related in the (three-place) belief-way to John.' This particular view was subsequently given up, in part because it faces similar problems to a structured-propositions view of propositions, in part because some of the specific linguist support for it turned out to be in error. Instead, I then adopted the view that *that*-clauses act semantically as predicates of

attitudinal objects (Moltmann 2014, 2017a, b, 2018b, 2020a). This view plays a central role in this book as well; though another function of *that*-clauses will be distinguished on which they have nominal status and denote entities as internal arguments of the embedding predicate, for example facts or states of affairs.

The second deviation from the earlier work concerns an ontological category close to that of attitudinal objects, namely modal objects, entities like needs, obligations, permissions, offers, invitations, and laws. Modal objects were not recognized by Twardowski and in fact they do not fit Twardowski's understanding of a product as being temporally coincident with the act that produced it. Modal objects fit much better a view on which products are abstract artifacts generated by (or ontologically dependent on) acts.

The notion of a modal object, as I will argue in this book, also covers the notions of a fact and of a state of affairs. Facts, states of affairs, as well as 'thin' generic assertions, I will argue, can act as denotations of *that*-clauses when they have nominal status rather than the status of predicates of attitudinal objects.

In this project as in earlier work (Moltmann 2014, 2017a, b, 2020a), the ontology of attitudinal and modal objects is combined with truthmaker semantics as recently developed by Fine (2017a, b, c, 2018a, b). This is not an arbitrary choice; rather, the ontology of attitudinal and modal objects provides specific new motivations for truthmaker semantics.

1

Problems for Propositions and Issues for the Semantics of Modals

A New Approach to the Semantics of Attitude Reports and Modal Sentences

1.1. The ontology of attitudinal and modal objects in the context of descriptive metaphysics

This book develops a novel semantics of attitude reports and modal sentences based on an ontology of what I call 'attitudinal objects' and 'modal objects'. Attitudinal objects, intuitively, are the sorts of things we refer to as claims, judgments, beliefs, assumptions, hopes, requests, decisions, desires, intentions, ideas, and hypotheses. Modal objects are entities like obligations, permissions, laws, rules, offers, invitations, abilities, strategies, options, dispositions, and essences. Attitudinal and modal objects are sharply distinguished from the sorts of entities that play a central role in standard semantic analyses of attitude reports and modal sentences, namely propositions (or sets of worlds) on the one hand and events (including actions and states) on the other hand.

There is another type of object that belongs to the same category as attitudinal and modal objects, namely what I call 'intensional objects', entities like searches, debts, and purchases, entities that generally correspond to intensional transitive verbs. I will call the more general category that comprises the three types of entities, attitudinal, modal, and intensional objects—the category of 'satisfiable objects', or 'satisfiables' for short. That is because the main characteristic of those objects is that of having satisfaction conditions (such as conditions of truth, fulfillment, or realization).

The project of this book is undertaken within a particular methodology, namely that of descriptive metaphysics.[1] The point of departure is to make use of ontological categories that are reflected in our general intuitions and

[1] See Strawson (1959). Fine (2017d) uses the notion of 'naïve metaphysics' for what is generally understood as descriptive metaphysics, even if not exactly in the more Kantian sense of Strawson (1959).

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in natural language in particular, while setting aside philosophical or other preconceptions of what categories there are. Specifically, the ontology used in the semantic analysis of attitude reports and modal sentences will first of all match an ontology that is implicit in natural language itself, rather than being an ontology adopted primarily through philosophical consideration of what there is. The book pursues the view that ontological intuitions anchored in natural language help us to understand key notions in the metaphysics of the mind and philosophy of language.

The standard view of attitude reports takes the technical notion of a proposition to be the central notion, without concern as to whether there are referential terms that describe propositions in the core of natural language, that is, the non-technical part of natural language (which excludes the term *proposition* itself). The absence of a noun for propositions in the core of natural language (as opposed to terms for attitudinal objects) has been noted already by Bolzano (1837). Bolzano, when trying to find terms for propositions, says: 'No other words of German come to mind that are suited for this purpose than *sentence, judgment*, *statement*, and *assertion*. They all have the defect that they carry with them the secondary concept of something that became and that became in virtue of a thinking being. . . . When understanding the words *a judgment*, *a statement*, *an assertion* we think certainly of nothing else but something that has been produced by judging, stating, and asserting' (Bolzano 1837, I, 81–82, translation by Mark Textor).[2] By contrast, the present approach is based on an ontological category of attitudinal and modal objects, or more generally satisfiables, that is extremely well-reflected in the core of natural language.[3] But not only do we generally have good intuitions about satisfiable objects reflected in language. We also have strong intuitions about some of them that are fairly independent of language, for example hypotheses, ideas, abilities, and dispositions, as well as specific kinds of artifacts like laws (which are modal objects) and reports (which are attitudinal objects of a more complex sort).

Attitudinal objects play an important role in our mental life and in communication, as concrete bearers of content, that is, as bearers of satisfaction conditions. We communicate by making assertions as well as hearing

[2] See Moltmann (2020b, 2022a) for the core-periphery distinction in natural language ontology, the discipline whose subject matter is the ontology implicit in natural language.

[3] As the citation makes clear, Bolzano takes judgments, statements, and assertions to be products of acts making use of a distinction between actions and their non-enduring products later adopted by Twardowski (1911) (see below and Chapter 2, Section 2.4.4.).

and understanding claims, and our mental life consists, in part, in having thoughts, remembering ideas, adopting beliefs, forming intentions, making decisions, making plans, remembering decisions, revising decisions, etc. Attitudinal objects are mind-dependent particulars that come with a content. At the same time, they display features of concreteness: they generally have a limited lifespan; they enter causal relations; and they can act as objects of perception.

Modal objects also come with a content (that is, satisfaction conditions), and they may display some features of concreteness as well, such as having a limited lifespan and triggering memories and fears. Modal objects sometimes bear a close connection to particular attitudinal objects. Someone makes a promise and hence is under an obligation to fulfill it; someone makes an assertion and puts herself under a commitment to maintaining its content. Modal objects play obvious roles in our social life, as laws, obligations, commitments, permissions, and options. Modal objects also play a role in the natural world as abilities, dispositions, and essences.

Satisfiable objects do not just form a list of various sorts of entities; rather they share characteristic properties that jointly distinguish them from other, related types of entities, in particular propositions and events (including actions and states). Satisfiables come with characteristic content-related properties: having satisfaction conditions, having a part structure strictly based on partial content, and entering similarity relations based on shared content. Moreover, satisfiables (generally) come with properties of concreteness that still relate to their content. Thus, they enter not just relations of causation, but also relations of content-based causation, content-based perception, and content-based memory, and they are generally evaluated based on their content and not just their potential physical aspects.

Satisfiable objects have not generally been recognized as an ontological category in philosophy or linguistics. Instead, the categories of propositions and events (actions and states) are generally taken for granted in metaphysics, philosophy of mind, and the philosophy of language when theorizing about propositional attitudes. But satisfiables play an important role in our mental life and in social ontology. They are extremely well-reflected in natural language and thus our linguistically manifest intuitions. But, as already mentioned, we also have robust intuitions about at least some such objects that do not strictly depend on expressions in a particular language.

Attitudinal objects such as claims, judgments, and beliefs share with propositions their status of truth bearers. But unlike propositions, attitudinal

objects are mind-dependent concrete entities, rather than abstract entities in a 'third realm' (Frege 1922).[4] Satisfiable objects, at first sight, look like events (as a category that includes acts and states). However, satisfiables are in fact sharply distinguished from events ontologically, which is manifest in the sorts of properties they can bear. Most importantly, unlike events, satisfiables come with satisfaction conditions. There is no intuitive basis, linguistic or otherwise, for events (including acts and states) being bearers of such properties as truth, fulfillment, or realization, at least on the ordinary understanding of the notion. Having a content (or satisfaction conditions) is also the basis for other differences between satisfiables and events. For example, satisfiables have a part structure based on partial content only, whereas events have a temporal part structure. Moreover, satisfiables are evaluated and enter causal relations on the basis of their content, but not so events.

There is one philosopher in the history of philosophy that in a way recognized attitudinal objects and attributed great importance to them, namely Kazmierz Twardowski (1911). Twardowski noticed various differences in the types of properties that entities such as claims and requests and entities such as (acts of) claiming and requesting can bear, including that of bearing satisfaction conditions. For him the distinction was that between actions (such as acts of claiming or requesting) and products (such as claims or requests), understood in a particular way (to be discussed in Chapter 2, Section 2.4.4.). For Twardowski only products are bearers of content, and only products, not actions are relevant for philosophy of language and logic. The present project shares the recognition of the importance of what Twardowski took to be products, that is, attitudinal objects. But it does not follow Twardowski's particular way of drawing and of conceiving of the distinction between actions and what Twardowski called 'products', an issue that will be discussed in detail in Chapter 2 (Section 2.4.4.).

By entering relations of content-based causation, attitudinal objects play a central role in our mental life and in communication, as concrete bearers of satisfaction conditions. Being mind-dependent particulars, attitudinal objects avoid notorious conceptual problems for propositions: the Problem

[4] The view that the ability to be true or false is limited to mental objects can be found in Russell (1910): « Thus there will be in the world entities, not dependent upon the existence of judgments, which can be described as objective falsehoods. This is in itself almost incredible: we feel that there could be no falsehood if there were no minds to make mistakes » (« On the nature of truth and falsehood,» 1910).

of the Graspability, the Problem of Truth-directedness, the Problem of the Unity of the Proposition, and the Problem of Arbitrary Identification, problems that I will come to shortly. However, as we will see, attitudinal objects will not play the same semantic roles as propositions on the standard, Relational Analysis of attitude reports, that is, the analysis on which attitude verbs denote two-place relations between agents and propositions and propositions act as referents of *that*-clauses.

There is another major difference between attitudinal objects and propositions. Attitudinal objects, unlike propositions, bear an important connection to normativity, which underlies the application of the predicate *correct* as well as the choices of particular satisfaction predicates with different attitudinal objects. In particular, truth and correctness coincide for attitudinal objects of the sort of claims, beliefs, speculations, and guesses, but not so for propositions, which do not reflect a normative notion of truth.

Modal objects can be abstract artifacts of the sort of laws, commitments, offers, and invitations, entities that may endure past the act that has produced them. Being able to endure part the act of their creation may even hold for certain attitudinal objects, namely those that involve some form of commitment, for example claims and promises. Claims and promises may endure past the speech acts that produced them (even if their features of concreteness are limited to the period of the act). We will turn to the issue in Chapter 2 (Section 2.1.5.1.).

1.2. Concurrences with recent research in philosophy and linguistics

The overall view pursued in this book concurs with recent directions of research on the semantics of attitude reports and modal sentences.

First of all, it concurs with a recent approach in the philosophy of language that replaces the notion of an abstract proposition by a cognitive notion of a truth bearer, allowing truth bearers to be cognitively graspable and causally efficacious. Various philosophers, most notably Soames (2010) and Hanks (2015), have recently proposed cognitive notions of a proposition based on cognitive, truth-directed acts of predication. While the present project concurs with a view that truth bearers should be cognitively graspable particulars capable of playing causal roles, it does not take acts to be truth bearers. Rather it takes attitudinal and modal objects to be bearers of

truth or more generally of satisfaction. Moreover, the view developed in this book assigns attitudinal and modal objects very different semantic roles than propositions whether conceived as cognitive or as abstract. Propositions by definition are entities that are compositionally determined semantic values of sentences and arguments of attitudinal relations. Attitudinal and modal objects, by contrast, are the things that clauses embedded under attitude verbs or modal predicates are predicated of. This also holds for independent sentences; an independent sentence is taken to convey the satisfaction conditions of the illocutionary object (e.g., a claim) meant to be produced by uttering the sentence. Of course, sentences will still have a propositional content, but that content does not have the status of an object, but only serves the attribution of satisfaction conditions to attitudinal and modal objects.

This relates to another convergence with recent research. The project concurs with recent developments in syntax and the syntax-semantics interface, on which *that*-clauses do not act as referential terms, at least not generally, but rather have a function on which they can serve as predicates of content bearers (for example by being relative clauses) (Moltmann 1989, 2014, 2018b, 2017a, 2020a, Kayne 2005, Arsijenevic 2009, Harves and Kayne 2012, Elliott 2017, Moulton, 2009, 2015). The present view takes clauses to express properties of attitudinal and modal objects specifying their satisfaction conditions, rather than denoting abstract propositions that serve as arguments of the embedding predicate.

The present project also concurs with recent directions of research on the semantics of modality, which do not start out with sets of possible worlds, but take a localized approach to the semantics of modals, tracing the source of modality to particular objects or features of objects. One such approach is Fine's (1994) theory of essence, which makes use of a primitive notion of object-dependent essential truth to account for metaphysical necessity, rather than universal quantification over possible worlds. Another such approach is Vetter's (2015) semantics of circumstantial modality based on the notion of potentiality as a property of objects. In linguistics, an event-centered approach to epistemic and circumstantial modality has been proposed by Haquard (2010). On the present view, the semantics of modals (of any sort) is based on modal objects, which may be more or less independent of each other, may depend on particular individuals, and may have been produced by particular acts.

The present project also goes along with recent hyperintensional approaches to semantic content, that is, on which content is not identified

with a set of possible worlds (which fails to distinguish logically equivalent propositional contents), but with either a set of situations or else a structured complex (structured proposition). In particular, the present project adopts a version of truthmaker semantics as developed by Kit Fine (2017a, b, c, 2018a, b). Truthmaker semantics was originally developed for sentences, identifying the content of a sentence not with a set of worlds, but rather with a pair consisting of a set of situations that are the verifiers of the sentence and a set of situations that are its falsifiers. This semantics naturally extends to attitudinal and modal objects, yielding what I call object-based truthmaker semantics, which is developed in Chapters 3–4. On this semantics, an attitudinal or modal object is assigned as its content a pair consisting of a set of satisfiers and a set of violators (if it has violators). Not only does this provide a sufficiently fine-grained notion of content; there are also specific reasons to adopt truthmaker semantics for satisfiable objects, as we will see (Chapter 3).

1.3. Responses to recent challenges to the notion of a proposition

1.3.1. Propositions and their problems

The project of this book responds to a range of challenges that have been at the center of recent philosophical and linguistic debates about propositional attitudes and modality.

One range of such challenges concerns the standard view of propositional attitudes as two-place relations between agents and propositions, that is, the Relational Analysis of attitude reports. This includes the more recent variant that replaces abstract propositions by types of acts of predication.

1.3.1.1. The standard view of propositional attitude reports and its motivations

The view of propositional attitudes that this project develops differs fundamentally from the standard view in philosophy and formal semantics, which centers on the notion of a proposition. Propositions, since Frege (1922) (and Bolzano 1837), have been taken to be mind- and language-independent objects that are functionally defined by at least four roles they are to play: that of shareable contents of attitudes and illocutionary acts, of truth bearers, of the meanings of sentences (relative to a context), and of the

denotations of (apparent) propositional anaphora and (apparent) propositional quantifiers.[5] Propositions, as entities characterized in terms of those roles, are generally identified either with sets of circumstances (possible worlds) or structured propositions. The standard analysis of attitude reports is the Relational Analysis, on which (1a) has the logical form in (1b), where [*Mary is awake*] stands for the proposition denoted by *Mary is awake*:

(1) a. John claims that Mary is a genius.
b. claim(John, [*Mary is a genius*])

The availability of apparent propositional anaphora and quantifiers such as *that*, *something*, and *everything* as well as free relatives like *what Mary claims* in place of *that*-clauses seem to confirm the status of *that*-clauses as referential terms and thus the objectual status of propositions:

(2) a. John claimed *something*, that Mary is a genius.
b. John claims *what* Bill claims, that Mary is a genius.
c. John claims that Mary is awake. Bill claims *that* too.

Propositions are standardly taken to be separate from force: different illocutionary act types involving different forces can have the same propositional content, as can different propositional attitudes involving different attitudinal modes. The illocutionary verbs *assert* and *request* both take *that*-clauses in English and thus appear to be able to take the same propositional argument while conveying different forces. Likewise, the attitude verbs *believe* and *hope* both take *that*-clauses in English and thus appear to be able to take the same propositional argument while conveying different attitudinal modes.

There are serious problems, however, for propositions as entities fulfilling the various roles at once. Moreover, there are difficulties treating propositional attitude verbs as denoting two-place relations between agents and propositions. Finally, the view that quantifiers like *something*, pronouns like *that*, and free relatives like *what John claims* stand for propositions does not accord with their actual semantic behavior.

[5] For the standard view of propositions see also Stalnaker (1984), Schiffer (2003), Richard (1990), Bealer (1998), King (2007), Merricks (2015). Frege uses the noun *thought*, which is actually a noun for attitudinal objects (or kinds of them). Thoughts for Frege are abstract, sharable contents of sentences and propositional attitudes.

1.3.1.2. Conceptual for propositions

In the following, I will very briefly review the philosophical and linguistic problems for propositions as abstract objects, problems that for the most part have been discussed in the literature in greater detail.

The philosophical critique of propositions concerns the following issues:[6]

[1] The Problem of the Graspability of Propositions

How can propositions as abstract objects be grasped, and thus act as the contents of mental attitudes?

[2] The Problem of the Truth-Directedness of Propositions

How can propositions, as abstract objects of any sort, be true or false?

[3] The Problem of the Unity of the Proposition

How can propositions have the particular truth conditions they are meant to have, if they are identified with structured propositions (n-tuples consisting of a property and n-1 objects, say).

[4] The Problem of the Content-Object Distinction

Propositions make up the contents of attitudes, rather than the objects of attitudes. But how does this come out when propositional attitudes are taken to be relations between agents and propositions?

[5] The Problem of Arbitrary Identification

How can propositions be considered identical to one particular formal object rather than another, e.g., a set of worlds rather than a set of singleton sets of worlds, or a particular n-tuple rather than an n-tuple in reverse order?[7]

[6] The Problem of Content-Based Causation

Propositional content appears to be causally efficacious (*John's claim that he is poor may shock Bill*, *Mary's thought that she might become poor may*

[6] See Jubien (2001) for problems [1]–[3] and [5], as well as Soames (2010), Hanks (2015), and Moltmann (2003a, 2013a). See Devitt (1994, 2013) for problems [1]–[3] and [6]. Problem [4], the content-object distinction, goes back to Brentano, but was elaborated in particular in Twardowski (1977).

[7] Propositions as such need not be identified with particular abstract objects. An alternative that would avoid problem [5] is to take propositions to be primitives, in their roles as contents of attitudes and truth bearers, and to be just represented by the particular mathematical objects that are compositionally determined meanings of sentences. See Schiffer (2016) for such an approach.

frighten her). But how do mental and linguistic contents take part in causal relations when they are identified with propositions as abstract objects?

How do these problems arise? They arise because propositions are assumed to play at least three roles at once, and clausal complements are assumed to act as singular terms providing an argument of the relation expressed by the attitude verb. Being shareable contents of attitudes that are denoted by sentences (or *that*-clauses) requires propositions to be abstract, or so Frege thought. Being semantic values of clausal complements of attitude verbs requires propositions to be arguments of a relation expressed by the attitude verb.

1.3.1.3. Empirical problems for the Relational Analysis of attitude reports

There are also linguistic difficulties for the standard view, in particular the Problem of Substitution and the related issue of the Objectivization Effect as well as its failure to account for the actual semantic behavior of special quantifiers.

[1] The Substitution Problem and the Objectivization Effect

The Substitution Problem consists in the unacceptability of replacing a clausal complement of an attitude verb by an ordinary proposition-referring noun phrase (NP), as in (3b) or (3c) as an inference from (3a):[8]

(3) a. John claimed that Mary is a genius.
b. * John claimed the proposition that Mary is a genius.
c. * John claimed some entity / some content / some thing.

There are only few verbs that permit such an inference, *believe*, *reject*, *deny*, *accept*, and *prove* among them. On the Relational Analysis, however, the inference should go through with all attitude verbs.

The Objectivization Effect consists in the change in the reading of the complement with certain verbs like *fear*: whereas the *that*-clause complement provides the content of the attitude, as in (4a); an ordinary NP-complement denotes the object of the attitude or what the attitude is directed toward, as in (4b):

(4) a. John fears that Mary is awake.
b. John fears the proposition that Mary is awake / some proposition / some thing.

[8] For the Substitution Problem and Objectivization Effect see Moltmann (2003a, b, 2013a), as well as already Vendler (1967a), Prior (1971), Bach (1997), among others.

[2] The Semantics of Special Quantifier

Quantifiers like *something* and pronouns like *what* and *that* do not lead to the Substitution Problem or the Objectivization Effect:

(5) a. John claimed / feared something.
b. Mary claimed / feared that too.
c. What did John claim / fear?

Such quantifiers (and pronouns) can thus be called 'special quantifiers' (Moltmann 2013a). Philosophers generally assume that special quantifiers in place of *that*-clauses range over propositions and that pronouns like *that* and *what* in place of *that*-clauses stand for propositions.[9] However, this cannot be right.

One argument concerns the sorts of restrictions that special quantifiers can take, which are not generally predicates applicable to propositions (Moltmann 2003a, b, 2013a):

(6) a. John claimed something that caused consternation.
b. John thought something daring.

Claims and thoughts, that is, attitudinal objects, can cause consternation or be daring, but propositions cannot.

A second argument for special quantifiers not ranging over propositions is that special free relatives like *what John claimed* and *what Mary thinks* can be arguments of (first-order) predicates that are not applicable to propositions:

(7) a. Mary likes what John claimed / John's claim / ??? the proposition John asserted.
b. What Mary thinks / Mary's thought / ??? That proposition is disturbing.

The only reading of *Mary liked what John claimed* is one on which Mary likes John's claim, not a proposition, and *What Mary thinks is disturbing* only has a reading on which what is said to be disturbing is Mary's thought, not a proposition.

[9] See Horwich (1990), Schiffer (2003), Bealer (1998) and many others for that view. The critique holds both for the view on which special quantifiers are first-order quantifiers and on which they are higher-order quantifiers ranging over propositions. The view that special quantifiers are higher-order quantifiers goes back to Prior (1971).

A third argument is restrictions on reports of the sharing of contents of different attitudes (Moltmann 2003a, b, 2013a), illustrated below:

(8) a. ?? John claimed what Bill thought, that Mary is awake.
b. ?? John claimed everything Bill suggested.
c. ?? John believes what Bill suspects, that Joe is a thief.

Such restrictions are entirely unexpected if such reports were about the sharing of a proposition. They present a serious problem for the proposition-based Relational Analysis, which takes special quantifiers and free relative clauses to range over propositions.

The restrictions, however, are explained straightforwardly if reports about content-sharing are about the sharing of attitudinal objects or, better, kinds of them: (8a) is unacceptable because a claim is not a thought, (8b) because a claim is not a hope, and (8c) because a belief is not a suspicion.

There are exceptions to such restrictions on reports of content sharing. For example, (8c) becomes tolerable if *what Bill suggested* in (8b) is replaced by *what Bill merely suggested* (with focus on *suggested*); likewise (8c) becomes better when *what Bill suspects* is replaced by *what Bill only suspects* (with focus on *suspects*). Such exceptions are discussed and analyzed in detail in Moltmann (2003a, 2013a) on the basis of a lexical re-analysis of attitude verbs (in terms of a more general constative verb or verb of acceptance + modifier).

Special quantifiers thus do not provide arguments in favor of propositions at all. Rather, the predicates and restrictions that apply to them indicate that special quantifiers range over attitudinal objects or kinds of them.

1.3.1.4. Cognitive propositions and their problems

Problems [1]–[3] for propositions have been addressed by recent proposals on which abstract propositions are replaced by types of cognitive acts, more precisely types of acts of predication (Soames 2010, Hanks 2015). Acts of predicating a property of an individual are taken to be constitutive of the unity and truth-directedness of the proposition. Grasping a proposition, on that view, means performing a mental act of predication of the type of that proposition. One crucial premise of that view is that acts are truth bearers, with propositions as types of acts inheriting their truth conditions from the acts that are their instances.

The theory of attitudinal objects shares some similarities with Soames' and Hanks' views. First, it also makes use of types (or kinds) of cognitive particulars for the role of propositions as truth bearers and shareable content bearers. This accounts for one problem for the standard view of propositions as abstract objects, the Problem of the Graspability of Propositions. Second, it shares Hanks' view that truth bearers come with forces and thus with different kinds of satisfaction conditions (such as conditions of truth, of fulfillment, and of answerhood). However, the theory of attitudinal objects differs from Hanks' and Soames' views in two important respects.

First of all, attitudinal objects are not acts. Acts do not have truth or satisfaction conditions, but attitudinal objects do.[10] Moreover, attitudinal objects belong to a larger category of satisfiables that includes modal objects, but modal objects play no role in Hanks' or Soames' theories. In fact, it is very unclear how their view could extend to sentences embedded under modal predicates.

Second, attitudinal-objects theory does not share Soames' and Hanks' assumption that truth bearers are compositionally determined, meaning objects that sentences, in particular embedded clauses, stand for. The Problem of Truth-directedness and the Problem of the Unity of the Proposition arise only under that assumption. The problem of how propositions as abstract meaning objects can be truth bearers comes about only on the assumption that there are such things as propositions, objects that are both essential bearers of truth conditions and compositionally obtained meanings of sentences. On the approach developed in this book, sentences embedded under attitude verbs act as predicates of mind-dependent objects, attitudinal objects, which by nature are bearers of satisfaction conditions. The Unity of the Proposition Problem arises when propositions are taken to be structured propositions (say, sequences of an (n-1)-place property and individuals). Only then does the question come up how such a sequence can be true or false and have the particular truth conditions it is meant to have. On Soames' and Hank' theories, it is predicative acts that provide the unity of the propositions and its truth or

[10] See also Davis (2021) for a critique of propositions as types of acts and for an alternative cognitive conception of propositions. Ostertag (2014) gives a further argument against act-based conceptions, pointing out that predication acts cannot provide truth conditions, since they fail to coordinate objects with argument positions.

satisfaction conditions. However, acts, on any intuitive understanding, just do not come with truth conditions and are unsuited for providing the 'glue' that unifies a structured proposition.[11]

Finally, the act-based view still endorses the Relational Analysis of attitude reports, which means it still faces the Problem of the Object-Content Distinction and the Substitution Problem and Objectivization Effect, and it won't be able to account for the actual semantics of special quantifiers and pronouns, which does not involve propositions, as either abstract or cognitive entities.

1.3.2. Attitudinal-objects semantics

1.3.2.1. The semantics of attitude reports based on attitudinal objects

The semantics of attitude reports this book develops does away with propositions and makes use instead of attitudinal objects. It can thus be called 'attitudinal-objects semantics'. Attitudinal objects share with propositions the role of being truth bearers; but unlike propositions they are not also meanings of sentences. Rather they are entities that can just bear the satisfaction conditions given by sentences. While attitudinal objects unlike propositions are not shareable contents, they come in kinds whose instances are the same in content.

Given attitudinal-objects semantics, attitude reports are about attitudinal objects, but without attitudinal objects being the semantic values of *that*-clauses. Clausal complements of attitude verbs instead act semantically as predicates of the reported attitudinal object, specifying its satisfaction conditions.

Attitudinal-objects semantics does not take as its point of departure simple attitude reports like (9a, b), which seem to bear the Relational Analysis on their sleeve, as in (9b):

(9) a. John claimed that Mary is awake
b. claim(John, [*Mary is awake*])

[11] The structured-propositions view has also been motivated by the need to have a more fine-grained notion of content than a set of possible worlds. On a truthmaker-based view of content, content is fine-grained and a structured notion of content is not needed; see Chapters 3 and 4.

Rather it focuses on attitude reports with complex predicates, consisting of a light verb (such as *have* or *make*) and a noun taking a clausal modifier:

(10) a. John made the claim that Mary is a genius.
b. John has the belief that Mary is a genius.

Such complex attitude reports display attitudinal-objects semantics rather transparently. The noun in complex attitude reports generally describes an attitudinal object (or kind of attitudinal object) and the *that*-clause following it acts as a predicate modifier of the noun, giving the satisfaction conditions of the attitudinal object. In (10a, b), *make* and *have* express relations that hold between an agent and an attitudinal object (or kind of attitudinal object). The compositional semantics of complex attitude reports such as (10a) and (10b) is straightforward:

(11) a. ∃d(make(John, d) & claim(d) & prop([*that Mary is a genius*])(d))
b. ∃d(have(John, d) & belief(d) & prop([*that Mary is a genius*])(d))

Here the property denoted by the clausal modifier is predicated of an attitudinal object that the sentence existentially quantifies over. More precisely, prop([*that* S]) stands for the property (of attitudinal and modal objects) of having the particular satisfaction conditions conveyed by *that* S. This property (which will be spelled out in Chapter 3) consists in a truthmaker-based content, which, when predicated of an attitudinal or modal object, tells what the satisfaction conditions of that object are.

Complex attitude reports involve explicit reference to attitudinal objects and no reference to propositions. Complex attitude reports are rather common in natural language. Sometimes, complex attitude reports are variants of simple attitude reports, as is the case for (10a, b): sometimes, they are the only options (*have the impression that* S, *have the premonition that* S). A semantics of attitude reports should be able to also handle complex attitude reports such as (10a, b). Not only that. I will pursue the view that complex attitude reports display the semantics of simple attitude reports overtly and that simple attitude reports are in fact derived syntactically from complex attitude reports. This means that simple attitude reports can be interpreted on the basis of the complex version with its explicit reference to attitudinal objects.

Attitudinal-objects semantics also applies to independent sentences. An independent sentence such as *Mary is a genius* will act as a predicate of utterances by giving the satisfaction conditions of the assertion meant to be produced by a particular utterance of the sentence. Such a predicational view of the function of sentences also applies to a sentence's phonological and morpho-syntactic structures, which can likewise be conceived as properties of utterances. Thus, on an ordinary use of the sentence *Mary is a genius*, a speaker intends to produce an utterance *u* that realizes the phonological structure of *Mary is a genius*, and by producing *u* she intends to produce a realization of the morpho-syntactic structure of *Mary is a genius*. Furthermore, by producing that, she intends to produce an attitudinal object with the satisfaction condition given by *Mary is a genius* (and meeting further conditions such as direction of fit that matches the clause type of the sentence).

1.3.2.2. Attitudinal-objects semantics and the conceptual problems for propositions

Attitudinal-objects semantics avoids the various conceptual problems for propositions. To an extent that is due to the fact that attitudinal objects are not considered the meanings of sentences (and *that*-clauses in particular). Only if propositions are conceived as abstract objects that are both meanings of sentences and truth bearers does the Problem of the Truth-directedness of Propositions arise and, if propositions are conceived as structured, the Problem of the Unity of the Proposition. Only abstract-meaning objects give rise to those problems. Attitudinal objects are mind-dependent particulars. This means that their ability to represent (the fact that they come with truth- or satisfaction conditions) can be attributed to the intentionality of the mind itself. Attitudinal-objects semantics endorses the priority of the intentional (Chisholm 1984), the view that the ability to represent is due to the intentionality of the mind.[12] Specifically, it endorses the view that it is not abstract meaning objects that are truth bearers (propositions), but rather mind-dependent objects, attitudinal objects.[13]

[12] Chisholm took the ability of linguistic expressions to represent to be derived from the intentionality of the mental. This view also applies to the approach to sentence meaning pursued in this book, namely on which sentences have truthmaking conditions and derivatively express properties of mind-dependent truth bearers. Thus, both attitudinal objects and sentences are considered truth bearers (or bearers of truthmaking conditions).

[13] Such a view has also been endorsed explicitly by Russell (1910). See also, more recently, Boghossian (2010).

It is not the job of the semanticist or philosopher of language to account for the intentionality of mental objects. Rather it is the task for the philosopher of mind to account for the intentionality of the mental. The descriptive metaphysician and the semanticist only identify categories such as that of an attitudinal object on the basis of linguistically reflected and language-independent intuitions; the philosopher of mind can then take such categories as a point of departure and account for their properties within her discipline. If the content bearers involved in attitude reports are mind-dependent, it will be the task of the philosopher of mind to account for their ability to represent; it is not a task for a semanticist or philosopher of language to take on. The source of the Problem of the Truth-directedness and the Problem of the Unity of the Propositions resides in the view that propositions are entities that are both the meanings of sentences and truth bearers, a view that is problematic both philosophically and linguistically.

The view developed in this book does away with propositions as entities. Sentences still have a truth-conditional content, but that content does not have the status of an entity in the semantics of natural language (at least not in the 'core of language', which excludes philosophers' technical usage of *proposition*). The propositional content of a sentence does not serve the role of a referent of a *that*-clause, of an argument of an attitudinal relation, or of an entity in the domain that special quantifiers like *something* range over. There are no entities fulfilling the various roles of propositions at once, on that view.

Also the Problem of the Content-Object Distinction is avoided. Truth bearers are no longer treated as the objects of attitudes. Rather having a propositional attitude means engaging (as an agent or experiencer) with an attitudinal object. The clausal complement will just give the satisfaction conditions of the attitudinal object. Having a propositional attitude thus does not mean standing in an attitudinal relation to something that is both a meaning object and a bearer of truth conditions.

Finally, the Substitution Problem does not arise, since clauses embedded under attitudes are treated as semantic predicates rather than referential terms, an account that will be developed for simple attitude reports in Chapter 5.

1.3.3. Attitudinal objects and special quantifiers

The semantics of special quantifiers such as *something* and free relatives like *what John claims* give significant empirical support for attitudinal-objects semantics. The relevant examples are repeated below:

(12) a. John claimed something that caused consternation.
b. John thought something daring.

(13) a. I like what John claimed / John's claim / ??? the proposition John asserted.
b. What Mary thinks / Mary's thought / ??? That proposition is disturbing.

(14) a. ?? John claimed what Bill thought, that Mary is awake.
b. ?? John claimed everything Bill suggested.

Special quantifiers will be analyzed as 'nominalizing' quantifiers ranging over the same attitudinal objects (or kinds of them) that the noun corresponding to the attitude verb would stand for (Chapter 5, Section 5.2.2.). Thus, *something* in (12a) will range over claims and in (12b) over thoughts. (13a) is unproblematic if *what John claimed* stands for John's claim and (13b) if *what Mary thought* stands for Mary's thought. (14a) and (14b) are impossible because claims are not thoughts or suspicions; reports of content-sharing require a shared kind of attitudinal object. The semantic analysis of special quantifiers will make use of the fact that special quantifiers syntactically involve (pronounced or silent) light nouns such as *-thing* (Kayne 2005, Moltmann 2022b), a crucial feature distinguishing them from ordinary quantifiers syntactically and semantically.

1.3.4. Attitudinal-objects semantics for specificational sentences

Attitudinal-object nouns appear not only in complex attitude reports as in (10a, b), but also in specificational sentences as below:

(15) a. John's belief is that he will win.
b. John's claim is that he will win.

In specificational sentences such as (15a, b), the *that*-clause following *be* gives the content of the attitudinal object and *is* conveys the relation that holds between a content bearer and its content. Specificational sentences are a standard criterion for entities that are content bearers. The criterion distinguishes beliefs and claims from emotional states such as happiness and anger, which also go with clausal modifiers, but which do not permit specificational sentences:

(16) a. ??? John's happiness is that he won.
b. ??? John's anger is that he did not win.

The reason is that emotional states like happiness and anger are not themselves bearers of satisfaction conditions; rather, they are relations toward facts (or possibilities). This means that in (16a, b) the *that*-clause gives the object, not the content of the mental state being described, as will be discussed in Chapter 7.

1.3.5. The semantics of modals with modal objects

The semantics of attitude reports as in (11a, b) can be carried over to modals. However, modals less often come with a complex-predicate version, at least in English and related languages. One modal verb that does have a complex-predicate version is the verb *need*, as in (17a), which alternates with *have (a) need*, as in (17b) (and which Harves and Kayne (2012) argue underlies syntactically the simple verb *need*):

(17) a. John needs to sleep.
b. John has (a) need to sleep.

Based on (17b), the semantics of (17a) can be given as in (18), where the clausal modifier of *need* (*John to sleep*) serves as a predicate of the modal object the sentence existentially quantifies over, giving its satisfaction conditions:

(18). ∃d(have(John, d) & need(d) & prop([*John to sleep*])(d))

The main idea for the semantics of modals is that the prejacent, complement clause, or clausal subject of a modal-acts as a predicate of the modal object. Such

a clausal predicate applies with the same meaning to modal objects of the various flavors and forces. In particular, this means that sentences with modals of necessity and with modals of possibility will have the very same logical form. Thus, the logical form of (19a) will be the same as that of (17b), namely as in (19b):

(19) a. Mary has permission to work.
b. ∃d(have(Mary, d) & permission(d) & prop([*Mary to walk*])(d))

The difference in modal force will then be entirely a matter of the nature of the modal object. More precisely the difference resides in whether the modal object has not only satisfiers but also violators.

While specificational sentences and complex predicates involve explicit reference to attitudinal and modal objects and thus make their semantic involvement indispensable, there are also good reasons to posit them for the semantics of simple attitude reports and modal sentences; as will be discussed in further detail in Chapters 4 and 5.

1.3.6. The semantics of attitudinal nouns

On the present view, attitudinal nouns like *belief* and *claim* denote attitudinal objects, entities distinct from both acts and propositions. This view differs from the standard view on which such nouns are polysemous, denoting either events or propositions. The standard view about attitudinal nouns is related to a standard assumption in both philosophy and natural language semantics that there are two sorts of objects associated with propositional attitudes and illocutionary acts: [1] acts or states, including speech acts and [2] propositions as the objects or contents of propositional attitudes or illocutionary acts.

Standardly, beliefs, desires, hopes, and intentions are considered mental states, belonging to the same ontological category as mental acts or events. Actions, events, and states are generally taken for granted ontologically or at least not in further need of explanation. They are equally well-accepted in linguistic semantics, where they are generally posited as implicit arguments of verbs, following the influential Davidsonian analysis of action sentences (Davidson 1967).

The standard, proposition-based view takes nouns like *judgment* and *claim* to stand for either mental events or speech acts or for propositions.[14]

[14] See, for example, Pustejovsky (1985) and Thomson (2008) for the standard view on such nouns.

That is to account for the observation that such predicates allow on the one hand for content-related predicates such as *true* (which could apply to propositions) and on the other hand for predicates of concreteness, specifying, for example, a temporal duration or causal relations. However, there are good reasons to consider such nouns univocal, standing for entities of a third kind, namely attitudinal objects. One reason is that they permit at once predicates of concrete objects and truth predicates:[15]

(20) a. John remembered his false judgment.
b. Mary overheard John's true claim.
c. John's obviously false claim yesterday caused astonishment.

Another, more important reason is the applicability of various predicates that could not apply in the same way to either propositions or events. In fact, beliefs, judgments, and claims belong to a category of objects—the category of attitudinal objects—which has a range of linguistically well-reflected characteristics that together distinguish them both from propositions and from actions. In particular, predicates of satisfaction can apply to a request, a piece of advice, or a promise, but neither to an action nor a proposition (Ulrich 1976, Moltmann 2014, 2017a, 2019):

(21) a. John fulfilled the request.
b. ??? John fulfilled the act of requesting / a proposition.

(22) a. Joe followed the advice.
b. ??? Joe followed the act of advising / a proposition.

(23) a. John broke the promise.
b. ??? John broke the act of promising / a proposition.

The applicability of predicates of satisfaction makes particularly clear that nouns like *request*, *advice*, or *promise* can stand neither for acts nor propositions: neither acts nor propositions can be 'fulfilled', 'followed', or 'broken', a point emphasized by Ulrich (1976).

[15] These are not the ordinary cases of co-predication dealt with in the pertinent literature (Pustejovsky 1985, Asher 1993). This literature focuses on conjunction of predicates of different sorts, allowing conjuncts to apply to different developments of an underspecified entity referred to by the subject term. Compositionally such an account would not be available in (20a, b), which requires a modifier to apply to the semantic value of the noun and then the predicate to apply to that.

1.4. A Davidsonian event-based alternative semantics of attitude reports?

On Davidson's (1967) semantics of adverbials, events are implicit arguments of verbs so that adverbials can be considered predicates of events, as in (24b) for (24a):

(24) a. John walked slowly.
b. ∃e(walk(e, John) & slowly(e))

Events should also be implicit arguments of attitude verbs, which allow, for example, for temporal adverbials and manner adverbials:[16]

(25) a. John finally realized that Mary was not interested in the project.
b. John with little effort concluded that the problem was unsolvable.

Davidsonian event semantics was originally motivated by its ability to explain the possibility of adverb drop, the validity of the inference from (24a) to *John walked*. Davidson's semantics of events has been immensely influential in linguistic semantics, with a great range of applications being pursued beyond the semantics of adverbials. This makes it tempting to use it also for a semantics of attitude reports when clausal complements are not considered referential terms standing for propositions, but rather predicates of concrete content bearers. Clausal complements would then be predicates of the Davidsonian event argument of the attitude verb, a view that has been pursued by a number of researchers (Moltmann 1989, Elliott 2017, Bondarenko 2022). On such an event-based analysis of attitude reports, the logical form of (26a) would be as in (26b), where for a sentence S, cont([S]) = λe[content(e, [S]), that is the property of events of having the content of S as their content (however sentential content is to be construed):

[16] The same adverbials apply to complex attitude predicates, which means that the same event occupies an implicit argument position of the light verb:

(i) a. John finally made the assumption that the problem is solvable.
b. John with little effort reached the conclusion that the problem is unsolvable.

By contrast, nominal attitudinal constructions do not generally permit the same predicates as noun modifiers, at least on the same event-related reading:

(ii) a. ?? John's final assumption that the problem is solvable.
b. ?? John's conclusion with effort that the problem is unsolvable.

(26) a. John thinks that Mary is happy.
b. ∃e(think(e, John) & cont([*that Mary is happy*])(e))

However, taking clausal complement to be predicates of Davidsonian event arguments is in error. First of all, events are not content bearers, as was already discussed.[17] Events fail to have truth or satisfaction conditions and other content-related properties. In addition, a Davidsonian semantics of attitude reports would wrongly predict that clausal complements can modify nouns that describe speech acts or mental acts:

(27) a. * John's speech act that he will come to the party
b. * John's belief state that the problem is solvable-
c. * The event / act / state that the problem is unsolvable-

Davidsonian events do not come with satisfaction conditions and thus cannot bear the content that a clausal modifier would attribute to them. Only nouns for attitudinal objects permit clausal modifiers that attribute content:

(28) John's hypothesis / idea / thesis that the problem is unsolvable

While there are the same motivations from adverbials for using Davidsonian semantics for attitude verbs as for verbs in general, it is a mistake to consider Davidsonian events themselves to be bearers of content and targets of predication for clausal modifiers. Since the semantics of adverbials is not of interest in the present context, I will largely disregard Davidsonian event arguments for attitude verbs in this work.

1.5. The question of the priority of attitudinal objects and the corresponding act

There is one important question, though, that arises with respect to the category of events for the present project. This is how act-related attitudinal objects relate to the corresponding acts, e.g., how claims relate to acts of claiming and judgments to acts of judging. The question in particular

[17] Another researcher pursuing an account of clausal complements based on Davidsonian event semantics is Pietroski (2005). Pietroski, however, makes use of a more general relation than that of content between an event and the content of the clause, namely what he calls 'import'.

arises, should attitudinal objects that are related to acts, such as claims and judgements, be taken to be dependent on the corresponding acts (of claiming and judging), as products of those acts? This is in fact suggested by Twardowski (2011), who distinguished acts of claiming and judging from claims and judgments as their products. As products of those acts, they may be conceived as abstract artifacts produced by them (see Chapter 2, Section 2.4.4.). However, it appears that attitudinal objects actually take priority over the acts described by the corresponding attitude verbs, rather than the other way around.[18] A claim is not produced by an act of claiming; it is produced rather by acts below the act of claiming, such as acts of uttering a sentence with a particular meaning. A particular act of claiming that the world is round rather is individuated in terms of the claim that the world is round, the attitudinal object. An act of claiming that the world is round is in fact just the making of the claim that the world is round, which means the complex predicate *make the claim that* S reflects the nature of act more transparently. Likewise, an act of judging does not produce a judgment; rather an act of judging is the making of a judgment. The decompositional analysis of attitude verbs, on which simple attitude reports are interpreted on the basis of complex attitude reports, is thus well-motivated also conceptually.

1.6. Summary

To sum up, the starting point of this project is a novel ontology, pursued within a version of metaphysics that attributes particular importance to linguistically reflected intuitions. Together with a semantic analysis of attitude reports based on complex attitudinal predicates rather than simple attitude verbs, the ontology of attitudinal objects avoids serious problems facing the Relational Analysis, whether based on the traditional notion of an abstract proposition or the more recent one of a cognitive proposition. The ontology of modal objects together with a new analysis of modal sentences moreover will open up new, 'localized' perspectives on the semantics of modals that are not based on quantification over worlds.

[18] See also Davis (2020) on this point, a justified critique of my earlier work on attitudinal objects as products of the corresponding acts (Moltmann 2014, 2017a).

2

The Ontology of Attitudinal and Modal Objects

Attitudinal and modal objects play a central role in the view developed in this book, that is, objects we refer to as claims, judgments, assumptions, ideas, hypotheses, needs, obligations, and permissions, or more generally satisfiable objects (satisfiables). The project of this book is to show that starting out with an ontology of attitudinal and modal objects can shed new light on a great range of linguistic and philosophical issues regarding propositional attitudes and modals, as well as, with a further extension, verbs of saying and quotation. The approach of pursuing this ontology is that of descriptive metaphysics, metaphysics whose subject matter is the ontology that is reflected in our ordinary judgments or intuitions, linguistic or otherwise.

This chapter will argue in detail that satisfiables form an ontological category of their own, distinct from that of events, states, or propositions. It will elaborate the ontology of satisfiables in two respects.

First, it will clarify what sorts of properties characterize satisfiables, in particular their possession of satisfaction conditions. The satisfaction conditions of satisfiables will be conceived of in terms of truthmaker semantics in the sense of Fine (2017a, b, c). In fact, attitudinal and modal objects give specific novel motivations for truthmaker semantics, as we will see in this and the next chapter.

Second, this chapter will discuss the relation of attitudinal and modal objects to acts from which they may result and argue that at least certain attitudinal and modal objects are to be viewed as artifacts resulting from such acts. This view differs from the notion of a product of Twardowski (1911), which, however, can be viewed as a historical predecessor of the notion of an attitudinal object. This chapter will argue specifically against one way of understanding Twardowski (1911), on which an act-related attitudinal object constitutes just an aspect of the act, rather than an entity distinct from it.

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2.1. The ontology of satisfiable objects

With these preliminaries we can turn to the ontology of satisfiables. The nature of satisfiables is reflected in linguistic data, but also in general intuitions not strictly driven by linguistic data. Satisfiables do not just form a list of things that are denotations of certain sorts of nouns; rather, they form an ontological category of their own, jointly characterized by a range of characteristic types of properties, which I will discuss in detail in the following sections, starting with attitudinal objects.

2.1.1. Types of attitudinal objects

Attitudinal objects divide into *illocutionary objects*, such as claims, requests, promises, and suggestions, and *mental objects*, such as beliefs, thoughts, intentions, decisions, hopes, and doubts.[1] In addition, attitudinal objects include locutionary objects, entities that correspond to Austinian locutionary acts. Locutionary acts are, roughly, acts of merely presenting or entertaining a content. The corresponding speech-act-related locutionary objects are utterances, or what one may call 'sayings'. There are also locutionary acts in the realm of the mental acts of thinking or merely entertaining a content. The corresponding mental locutionary objects are what one may call 'thoughts'. Locutionary objects play an important role in the semantics of verbs of saying (and thinking) as well as in the semantics of quotation (which will be elaborated in Chapter 6).

Another distinction among attitudinal objects, which is orthogonal to that among illocutionary, locutionary, and mental objects, is that between *act-related* and *state-related attitudinal objects.* Attitudinal objects such as thoughts, claims, and judgments correlate with acts of thinking, claiming, and judging, and thus are act-related attitudinal objects. State-related attitudinal objects include beliefs and intentions. They are distinct from the corresponding states, at least in the sense of the things we refer to *as* 'states'. What we refer to as states does not share the characteristic properties of attitudinal objects (such as bearing satisfaction conditions and having a part structure based on partial content, cf. Section 2.2.3.).

[1] In previous work I called such mental objects "cognitive products," making use of the notion of a product as discussed in Section 2.5.1.). The term "mental object" is better suited for a category that also includes, for example, volitional and certain emotive states.

Likewise act-related attitudinal objects are distinct from the corresponding acts, since the latter do not share the characteristic properties of attitudinal objects, as we will see. The question of course arises of how the relation between the attitudinal objects and the corresponding states or acts is to be understood. This will be addressed in detail in Sections 2.5 and 2.6. For the time being, the focus will be on the types of properties that characterize attitudinal and modal objects.

Non-gerundive nominalizations of attitude verbs generally describe attitudinal objects. But attitudinal objects are not tied to nominalizations, rather there are also lots of underived nouns in English that describe attitudinal objects, such as *idea*, *hypothesis*, *impression*, and *thesis*. Moreover, in the case of at least some attitude verbs, the verb is clearly derived from the attitudinal object noun, rather than vice versa (*fear*, *question*, *answer*, *guess*).

2.1.2. The role of attitudinal objects in thought and communication

Attitudinal objects play an important role in our mental life: we remember ideas, thoughts, hypotheses, not pure contents, that is, propositions.[2] We make plans, proposals, offers as things that guide our future actions, and those things can be the objects of memory, communication, modification, and merger. Attitudinal objects may cause other attitudinal objects or mental events: the imagination of an attack may make John afraid, the thought that he may be killed may make him shudder, the fear that the situation is hopeless may make him not take action. In fact, attitudinal objects appear to be just the right entities to enter the relation of content-based causation, more so than acts or events. A claim causing surprise generally means content-based causation, but not so a speech act causing surprise. If Mary's claim caused a commotion, this implies that the content (as conveyed by Mary) was causally responsible; by contrast, if Mary's speech act caused a commotion, this implication does not hold. If an answer caused surprise, this implies that the content was the subject of surprise; but not so if an act of answering caused surprise. A decision may cause an action on the part of the agent, and that can only be in virtue of its content. This is not so for a mental act of deciding (whose exhausting nature may be the trigger of an act of taking a break from

[2] We also remember facts. These will later be construed as modal objects (Chapter 7).

further decision-making). Propositions as abstract objects cannot play causal roles and thus leave content-based causation a puzzling phenomenon.

Mental attitudinal objects also act as the targets of content-related memory. We remember thoughts, beliefs, decisions, and intentions, rather than propositions. We may remember acts of thinking or acts of deliberating without recalling their content, and thus this would not be content-related remembering.

Unlike propositions, attitudinal objects are *agent-dependent* entities. Thus John's thought is John's, not Bill's. The agent-dependency is reflected in the necessary falsehood of statements of identity as in (18a), in contrast to those conveying similarity, with *is the same as*, in (18b), data that are exactly parallel to those with terms for kinds of material objects, such as (18c), which requires identity of John's and Mary's car for it to be true, and (18d), which requires sameness of type:

(18) a. ?? John's claim is Mary's claim.
b. John's claim is the same as Mary's claim.
c. ?? John's car is Mary's car.
d. John's car is the same as Mary's car.

Agent-dependence looks somewhat different for entities such as ideas and dogmas, which may involve a generic dependency (as in *the idea has been around for a while*).[3] Unlike particular attitudinal objects, ideas and dogmas have the status of enduring and shared content bearers, because of the range of causal chains and physical realizations they involve.

2.1.3. Kinds of attitudinal objects

Reference to attitudinal objects is possible also without an apparent agent:

(19) a. The belief that god exists is widespread.
b. John often encounters the expectation that he should become famous.

The belief that S and *the expectation that* S do not stand for particular attitudinal objects, but for kinds of attitudinal objects.[4] That is because they

[3] See Thomasson (1999) for the notion of an artifact-involving generic agency.
[4] Note that (19a, b) could not involve reference to propositions: propositions cannot be 'widespread' or 'be encountered by John'.

accept typical kind predicates like *be widespread* and trigger existential readings ranging over instances with episodic predicates like encounter. They are in that respect like kind terms in Carlson's (1977) sense. Carlson argued that bare (determinerless) plural and mass nouns like *giraffes* and *gold* stand for kinds both with typical kind predicates such as *be widespread* and with episodic predicates like *encounter*. With such kind terms, episodic predicates display a reading existentially quantifying over instances (*John never encountered giraffes*). Whereas Carlsonian kind terms take the form of bare plurals and mass nouns, terms for kinds of attitudinal objects take most naturally the form of definite noun phrases or NPs.[5]

What are kinds of attitudinal objects? Kinds may be conceived in various ways, and a particular choice as to how kinds are to be conceived is not needed in the present context.[6] What is most important is that kinds of attitudinal objects have satisfaction conditions, which they inherit from the particular attitudinal objects that are their instances:

(20) a. The belief that John won the race is true.
b. The expectation that John would become famous was not fulfilled.

Reference to kinds of attitudinal objects is important in that it permits reporting the sharing of a propositional content (see Section 2.5.3):

(21) a. John and Bill share the belief that Mary is guilty.
b. John and Bill both made the claim that Mary is guilty.

Here *the belief that Mary is guilty* stands for a kind of attitudinal object: John and Bill both 'have' the belief by way of having instances of it. The fact that attitudinal objects come in kinds that are based on the sharing of content distinguishes them from events. *John and Mary both engaged in thinking*

[5] There are also bare plurals and mass nouns for kinds of attitudinal objects:

(i) a. Claims that mathematics is easy are rare.
b. John never encountered claims that mathematics is easy.

However definite kind NPs like *the claim that mathematics is easy* are clearly more commonly used. While the difference between the two sorts of terms for kinds of attitudinal objects is certainly interesting, I will focus on definite kind terms in the context of this book.

[6] Kinds need not be conceived as single abstract objects, but may rather be viewed as pluralities of (possible and actual) instances, as I argued in Moltmann (2013a) for kind terms of the sort of bare plurals (*giraffes*) and bare mass nouns (*wood*) as well as terms for kinds of attitudinal objects such as *the belief that* S.

does not imply that John and Mary were thinking the same thing, but only that they engaged in the same kind of activity.

2.1.4. Modal objects

Modal objects are entities like obligations, needs, permissions, offers, invitations, options, strategies, dispositions, laws, and essences. Modal objects share the characteristics of attitudinal objects, which distinguish them from entities such as states, actions, and propositions. That is, modal objects enter similarity relations based on sameness of content (John's obligation being the same as Mary's obligation means they are similar in content); they have a part structure strictly based on partial content ('part of John's obligation' can only be a partial content, not a temporal part of a state or event or a structural part of a proposition), and, most importantly, modal objects have satisfaction conditions. Thus, an obligation or commitment may be satisfied, fulfilled, or complied with, and an offer or invitation taken up or accepted. Modal objects may be produced by the very same acts that produce illocutionary objects, such as acts of requesting, promising, and permitting. A modal object produced by an illocutionary act shares its satisfaction conditions with the illocutionary product that the same act has produced. However, it generally has a different lifespan, being able to last beyond the act that may have produced it.[7] Being able to endure past the act that created them is a characteristic feature distinguishing modal objects from attitudinal objects such as thoughts and remarks (though not attitudinal objects such claims and demands, which may themselves have a modal component).

Modal objects clearly play a role in our ordinary ontology. Obligations, permissions, laws, rules, abilities, and dispositions obviously play a role in our social ontology, and we have very clear intuitions about them, not strictly tied to language. Modal objects are not always overtly reflected in English. In particular, modal auxiliaries such as *can*, *must*, *may*, and *should* are associated with modal objects of deontic and circumstantial sorts, but they do not come with nominalizations. Yet English has the noun *need* that can stand for both deontic and circumstantial modal objects. Moreover,

[7] Some nouns are polysemous, standing for an illocutionary or modal object, for example *permission*, *offer*, and *invitation*.

besides nouns for deontic modal objects (*obligation*, *permission*), there are various nouns for circumstantial modals, such as *ability*, *option*, *strategy*, and *possibility* (as in *there is an option / strategy / possibility to avoid a collapse of the building*). There are hardly any nouns for epistemic modal objects in English (and perhaps natural language in general). The only exception is *possibility*, which can stand for epistemic possibilities (*the possibility that John might be late*) as well as circumstantial possibilities (as in *there is a possibility of opening the bottle*).

I will take modal objects to play a role in modal sentences even if there is no explicit noun making reference to them. Thus, for any modal predicate on any reading, there will be a corresponding modal object even if there are no corresponding nouns describing it explicitly.

Quite independent of natural language, there also purely philosophical motivations that philosophers have put forward in favor of modal objects or closely related notions. Thus, based on a range of philosophical motivations, Vetter (2015) has developed a theory of circumstantial modality based on the notion of a potentiality (roughly, a disposition). Vetter conceives of potentialities as particularized properties (properties of particular objects), which is close to the notion of an object-dependent modal object. Given the ontology of satisfiable objects, dispositions and abilities are modal objects that come with satisfaction conditions. More precisely, they come with conditions of realization or manifestation, which means a disposition or ability is satisfied by particular actions or events that realize or manifest it.

Also the notion of essence, as defended by Fine (1994, 1995), may be viewed as a notion related to that of a modal object. Fine represents essence by an essentiality operator O_F for individuals that are F: $O_F\, S$ is understood as 'S is true in virtue of the nature of thing that are F' (see also Chapter 4, Section 4.5). While Fine does not take essence to be an object, this is at least one way of understanding Aristotle's notion of an essence.[8] In fact, there is a promising connection to be made between the notion of an essence and truthmaking as applied to attitudinal objects: the constraints on (fully specific) truths essential to an entity appear to be the very same as those on the truthmakers of the corresponding attitudinal objects.

[8] See, however, Lowe (2018) for a critique of an objectual conception of the notion of an essence. If essence itself is an object, it should also have an essence. However, it will depend on how an entity like an essence itself is conceived whether that is problematic. An essence may be conceived as a trope of objects, their 'substantive form', to use an Aristotelian term and then it depends on how tropes are conceived, what sort of essence essences themselves will have.

Modal objects may be agent-dependent, for example deontic modal objects such as particular permissions and obligations; others, such as essences, dispositions, and capabilities, depend on a particular individual in a non-agentive role: Socrates' essence depends on Socrates, the disposition of the glass to break depends on the glass, Joe's capability of sleeping depends on Joe.

Modal objects may also display a generic dependence on types of entities, just as ontological dependence in general permits generic dependence (Correia 2006). Thus, the obligation to pray may involve a generic dependence on the members of a particular religious order.[9] However, unlike attitudinal objects, modal objects need not depend on an agent. For example, circumstantial modal objects such as the possibility that it will rain or the need for a new hospital do not depend on a particular agent.

2.1.5. Characteristic properties of attitudinal and modal objects

2.1.5.1. Properties of concreteness and endurance

Unlike propositions, attitudinal objects are concrete content bearers. This means they display features of concreteness but also display content-related properties. Here are some of their properties of concreteness.

As was already mentioned, attitudinal objects are causally efficacious, unlike propositions. They are just the kinds of entities that enter relations of content-based causation, unlike propositions.[10] Only entities like beliefs, intentions, and claims can cause behavior and other mental events, not propositions (*John's belief that he was fatally ill made him anxious*, *Joe's intention made him get his coat*, *John's claim shocked Bill*). Moreover, some attitudinal objects are perceivable (*John overheard Joe's remark*, *John's belief that he was fatally ill made him decide to choose Mary as his heir*).

Even modal objects of certain types may enter causal relations. John's need may have pushed him to act in certain ways, and his medical condition may have been the cause of his need for a certain medicine.

Attitudinal objects of course are not concrete in that they may fail to have a material realization (unless, of course, they are written down). In that respect, and only in that respect, would attitudinal objects be abstract.

[9] Moreover, epistemic modal objects such as 'the possibility that John might be sick' may involve a generic dependence of the interlocutors.

[10] For a critique of propositions as being unable to be causally efficacious, see also Devitt (2013), who defends the view that thoughts act as content bearers instead, where by thoughts are considered mental entities on a naturalized understanding.

Attitudinal objects are concrete also in that they generally have a limited lifespan. A claim is made at a particular time and goes out of existence, at least when it is no longer valid. A thought occurs to someone at a particular time, but arguably does not endure beyond the time it so occurs. State-related attitudinal objects such as beliefs come into being when constitutive conditions for the state obtain. Act-related attitudinal objects come into being as a result of the act, however the result relation is conceived (an issue I will turn to in detail in Section 2.6). While it is clear that attitudinal objects are not eternal objects, the length of their temporal duration is not obvious. Twardowski (1911) took act-related attitudinal objects to be temporally coincident with the act that set them up. However, this is not plausible for attitudinal objects that are culminations, such as assertions, conclusions, and decisions. Such attitudinal objects rather come into being at the end of the relevant act. Twardowski (1911) took the apparent continuity of an attitudinal object such as a thought to be due to it causing the production of exactly similar thoughts, by an agent remembering the thought, by a speaker conveying that thought and making the addressee understanding it.

Twardowski was even more in error about the lifespan of attitudinal objects. At least certain act-related attitudinal objects may very well endure past the act. Claims, requests, offers, and promises may have an intended validity, which allows them to endure beyond the act that may have set them up. This is reflected in the choice of tense in specificational and predicational sentences. With attitudinal objects that do not endure past the act that produced them (such as remarks, guesses, and utterances), tense in specificational sentences must match the time of the act, whereas that is not so for attitudinal objects like assertions and requests, which may endure past the act that produced them. This is illustrated below, in a context in which John's utterance was in the past:

(22) a. John utterance was / ?? is 'I won the race!'
b. John's assertion was / is that he won the race.

The choice of tense in ordinary predicational sentences shows the same thing:

(23) a. John's remark (which he made yesterday) was / ??? is astonishing.
b. John's claim (which he made yesterday) was / is astonishing.

The choice of tense also distinguishes attitudinal objects (of the enduring sort) from acts:

(24) a. John's claim (which he made yesterday) was / is disturbing.
b. John's demanding (yesterday) of extra coffee was / ??? is disturbing.

Existence predicates also show the difference between enduring and non-enduring attitudinal objects. Natural language does not just contain a single existence predict *exist*, but a range of existence predicates, including *happen*, *occur*, *hold*, *obtain*, and *be valid*.[11] *Obtain*, *hold*, and *be valid* are predicates that convey both validity and existence, notions that coincide for entities like rules and laws.[12]

The applicability of particular existence predicates is generally indicative of the ontological category of entities and the way they relate to time and space. Attitudinal objects do not generally share the existence predicates of events. Events can 'happen', 'occur', or 'take place'. Claims, remarks, assumptions, and judgments hardly can be said to 'happen', 'occur', or 'take place'.[13] In fact, there do not seem to be suitable existence predicates for attitudinal objects in English. Only attitudinal objects that come with an intended validity (claims, offers, invitations, promises) allow for an existence predicate, namely, *obtain*, *hold*, and *be valid*:

(25) John's claim / offer / promise still obtains / still holds / is still valid.

By contrast, attitudinal objects such as thoughts, 'sayings' (utterances), and guesses do not come with an intended validity, which would allow them to endure past the act that produced them.

Validity beyond the act of creation is common among deontic modal objects. Permissions and obligations that result from particular illocutionary acts may easily be valid past the act that created them. Thus, an obligation or law produced by an illocutionary act may obtain as long as it is meant to obtain. An offer established by an illocutionary act will last as long as it is intended to be valid. An act of commanding may produce a

[11] See Cresswell (1986) for the difference between *exist* and *occur* and Moltmann (2020c) for a detailed discussion of existence predicates in natural language.
[12] See again Moltmann (2020c) on the equivalence between existence and validity for laws.
[13] Note, though, that *occur* with an additional experiencer is applicable to thought: a thought can occur to someone.

command, and, under the right circumstances, an obligation on the part of the addressee, and the latter may last longer than the command. An act of promising produces both an illocutionary product that is a promise and a commitment on the part of the speaker (Searle 1969). Also an act of permitting may set up an enduring modal product, namely the permission that the addressee may have for a longer period of time. Similarly, an act of offering creates an enduring product, the offer that may obtain for a period of time beyond the duration of the act.[14] The endurance of products thus depends on the intention of the agents producing them. There is no general condition on the endurance of products or abstract artifacts as such.[15] This also holds for artifacts that have a material manifestation. The endurance of a chair may be strictly tied to its material composition. But a chair as a designed artifact may also endure past the lifetime of a particular chair, as long as the design keeps being used. Deontic modal objects need not have been created, as is the case for deontic modal objects that, arguably, represent universal ethical laws.

If attitudinal and modal objects can be enduring, this raises the question whether they require ongoing manifestations in order to remain valid, such as mental acts of understanding and remembering. The same issue arises for abstract artifacts such as literary creations. Even if literary creations are meant to be forever, they arguably need to be sustained through memory in order to persist (Thomasson 1999).

Enduring deontic modal objects may take various sorts of existence predicates. Besides *exist*, these are *obtain*, *hold*, *prevail*, and *be valid* in English. An obligation that results from an act of demanding may 'hold' or 'obtain', that is, 'exist', for a period of time after the act. Similarly, an offer may 'hold' or 'be valid' for a time past the act of making it, and a permission may 'hold' for a time past the act of giving it. All those existence predicates convey validity as the way of existence or mode of being of deontic modal objects,

[14] Note that nominalizations such as *permission* and *offer* are polysemous, permitting reference to both an illocutionary product and a modal product.

[15] Bronzo (2020) criticizes my view of illocutionary and mental products as artifacts based on the claim that endurance is a characteristic feature of abstract artifacts, in (incorrect) reference to Thomasson (1999). Endurance is not essential for abstract artifacts. Thomasson herself takes literary works that are no longer remembered to have gone out of existence, and laws obviously need not endure beyond their intended validity. This is also an option for works of art, such as improvisations. Bronzo claims that non-enduring abstract artifacts are 'unintelligible', but that is quite mistaken. When it comes to an important notion of descriptive metaphysics such as that of an artifact, the procedure should be to first clarify how that notion is in fact understood given our ordinary judgments, before declaring it unintelligible. This requires careful considerations regarding our intuitions about various instances of the notion.

i.e., the validity of a modal object (at a time) amounts to the existence of the modal object (at the time).

Validity is also linked to truth. The validity of a modal object at a time amounts to the time-relative truth of the corresponding modal sentence (or, equivalently, the truth of the corresponding tensed modal sentence). Thus (26a) is, roughly, equivalent to (26a), and (27b) to (27b):

(26) a. The obligation for Mary to work still obtains.
b. That Mary has to work is still true.

(27) a. The permission for Mary to use the house still obtains.
b. That Mary may use the house is still true.

For modal objects that are laws, rules, and conditions, the same holds for the existence predicate *obtain*:[16]

(28) a. The law that one must have a passport still obtains.
b. That one must have a passport is still true.

To summarize, among existence predicates, only predicates of validity appear to be applicable to attitudinal objects, and only to those attitudinal objects that can endure past the act that produced them, a fact that again distinguishes attitudinal objects rather sharply from acts and events. Modal objects, by contrast, accept *exist* and a range of predicates of validity.

2.1.5.2. Content-related properties

Satisfiable objects have three characteristic content-related sorts of properties, none of which pertains to states and actions.

[1] Having satisfaction conditions
[2] Entering similarity relations based on sameness of content only, rather than shared features of a performance

[16] Validity may also apply to declarations, the products of declarative illocutionary acts, and the abstract state that goes along with the declaration may be said to 'obtain' at a particular time and space:

(i) a. The declaration of war is still valid.
b. The state of war still obtains.

See Moltmann (2013b) for more on the notion of an abstract state.

[3] Having a part structure strictly based on partial content rather than temporal parts.

These features together distinguish attitudinal and modal objects as an ontological category from acts and propositions. They also distinguish them from states when those are referred to as 'states' (*a state of believing / intending / desiring*). States in that sense generally do not come with satisfaction conditions. The three types of properties not only show that attitudinal and modal objects have a content; they also indicate that they come with a particular sort of content, based on the notion of a truthmaker, rather than a possible world.

2.1.5.2.1. Satisfaction predicates of attitudinal and modal objects

Satisfiable objects come with satisfaction conditions. This is reflected in the great range of predicates of satisfaction that can apply to attitudinal and modal objects, predicates such as *was satisfied*, *was fulfilled*, *was executed*, *was followed*, *was broken*, *was complied with*. The applicability of such predicates sharply distinguishes attitudinal and modal objects from sentences, propositions, and 'mental representations' as well as from actions.

Four types of satisfaction predicates can be distinguished:[17]

[1] Truth predicates: *true*, *correct*, *false*
[2] Predicates of fulfillment and violation: *fulfill*, *satisfy*, *follow*, *violate*, and *ignore*
[3] Predicates of acceptance: *accept*, *take up*
[4] Predicates of realization: *realize*, *execute*, *implement*, *carry out.*

The four classes of satisfaction predicates go with different types of attitudinal objects, as we will see in the next sections.

2.1.5.2.1.1. Truth predicates Truth predicates apply to attitudinal objects with a word-to-world/mind direction of fit, to use Searle's (1969, 1983) term, such as beliefs, claims, and judgments, but hardly to events and states. John's claim or judgment may be true or false, as may be John's belief. But a speech act of claiming cannot intuitively be true or false, and neither can an act of

[17] See Moltmann (2017a).

judging. Acts and events cannot be true or false, and neither can mental states described as such (*John's state of believing / intending / desiring*).

Attitudinal and modal objects that take truth predicates generally also accept the predicate *correct* on a reading on which it just conveys truth (see Chapter 3). A claim is correct only in the sense that the claim is true, whereas if an action is correct, it means that it fulfilled the relevant norm or standard.

Philosophers sometimes try to discard intuitions about the applicability of truth predicates. For example, Soames (2010) and Hanks (2018) declare acts to be truth bearers. Not only is discarding intuitions unsuited for an approach of descriptive metaphysics, declaring truth to be applicable to actions would also leave unexplained why *correct* conveys the fulfillment of an action-guiding norm when we refer to speech acts or other act, and not truth.[18]

Related to truth conditions are logical relations, such as implication and contradiction, which are again applicable to truth-directed attitudinal objects, but hardly to acts and states (*John's belief that life is short implies that life is short, John's claim that life is a gift contradicts Mary's claim that life is a burden*).

2.1.5.2.1.2. Predicates of fulfillment and acceptance

Predicates of fulfillment include *satisfy*, *fulfill*, *comply with*, *keep.* They apply to attitudinal objects such as requests, demands, promises, as well as to modal

[18] Hanks (2015) points at the availability of *truly* as an adverbial event predicate apparently conveying truth in English:

(i) a. John truly believes that he won the election.
b. John truly said that he won the election.

However, there appears to be a peculiarity about English adverbials that they can be predicated on an action or state and thereby attribute a property of the corresponding attitudinal object. Other languages, for example German, French, and Italian, do not allow the adverbial version of 'true' to convey truth when applied to an action or state (*wahrlich*; *vraient*, *veramente*), as the French translation of (ia) illustrates:

(ii) Jean crois vraiment qu'il a gagné l'élection

By contrast, no language-particular variation is attested regarding the inapplicability of *true* to actions or states, or *correct* on a reading on which it just conveys truth.

Interestingly, predicates of falsity seem to be better as adverbials, illustrated for German below:

(iv) Hans glaubte/behauptete, fälschlicherweise, dass es regnet.
'John believes falsely that it is raining.'

Clearly, this is a linguistic topic requiring much further investigation. What is important in the present context, however, is the fact that *true* in standard predicate position acts as a predicate of attitudinal objects and not of acts:

(v) a. John's claim is true.
b. ??? John's speech act is true.

objects of the sort of obligations and needs. Predicates of fulfillment also include predicates of violation, such as *contravene*, *violate*, *ignore* (in the sense of 'violate'), and *break*. Predicates of fulfillment apply to attitudinal objects with a world-to-word/mind direction of fit in Searle's (1969, 1983) sense. They do not apply to actions. An act of requesting or promising cannot be fulfilled, as opposed to the request or promise, the attitudinal object. Also when we refer to mental states as 'states', satisfaction predicates are hardly applicable: a state of desiring can hardly be 'satisfied' and a state of hoping can hardly be 'fulfilled'.[19] They also fail to apply to propositions. Propositions can hardly be 'satisfied', 'fulfilled', or 'violated'. Most strikingly, promises can be kept or broken, but not so propositions, contents, or acts. *Ignore* when applied to requests implies violation, but when applied to propositions or actions, it means 'not pay attention,' rather than 'violate'.

Predicates of satisfaction also include agent-related predicates (*satisfy*, *carry out*, *follow*, *accept*) besides impersonal ones (*is satisfied*, *is fulfilled*). An agent may fulfill a request, carry out an intention, and accept an offer by doing something. Such predicates also show something about the nature of the content of attitudinal objects, namely that it may be satisfied by actions. Actions may serve the fulfillment of attitudinal objects and of course they may also violate them. The fact that attitudinal and modal objects come with agent-related predicates of satisfaction constitutes one motivation for conceiving of satisfaction conditions not in terms of possible worlds, but rather in terms of truthmakers. Truthmakers include actions that can be described by agent-related satisfaction predicates (*fulfill*, *take up*, *obey*, . . .).

Satisfiable objects such as offers, suggestions, permissions, pieces of advice, and invitations do not take predicates of fulfillment, but rather go with predicates of acceptance, such as *take up*, *follow*, and *accept* (*Joe accepted the invitation / took up the permission to leave the room / followed the advice*). Those satisfiables also come with a world-to-word/mind direction of fit, but they differ from attitudinal and modal objects that take predicates of fulfillment and violation by being associated with the modal force of possibility rather than necessity (a difference that will be construed in truthmaker semantic terms in Chapter 3). Unlike obligations, modal objects of the sort of permissions, invitations, and offers do not come with violation conditions: there is nothing incorrect about failing to take up a permission or accepting an invitation or offer.

[19] The failure of events and states having satisfaction conditions was noted by Twardowski (1911), who distinguished them from what he called 'products' (see Section 2.5).

Also modal objects such as strategies and options lack violation conditions. Strategies and options can be 'taken' or 'pursued', but there is nothing wrong with 'ignoring' them.

2.1.5.2.1.3. Predicates of realization Attitudinal objects of the sort of intentions and decisions do not take predicates of fulfillment, violation, or acceptance, but rather predicates of realization such as *carry out*, *realize*, *implement*, and *execute*. Again, those predicates do not apply to the corresponding states or acts: states of intending or acts of deciding can hardly be carried out, realized, implemented, or executed.

Different types of satisfaction predicates thus select different types of satisfiables. Of course, the question is why satisfiables go with different predicates of satisfaction. This issue will be addressed in Chapter 3, which will give an account of that selection based on truthmaker theory and a normative construal of the notion of direction of fit.

2.1.5.2.2. Similarity relations based on sameness of content

The second content-related type of property of satisfiables consists in that satisfiables of the same types enter similarity relations strictly on the basis of being the same in content. Thus, attitudinal objects that are of the same sort (involving the same kind of physical realization and force) enter similarity relations just on the basis of a shared content. This is reflected in the way *is the same as* is understood:[20]

(29) a. John's claim was the same as Mary's.
b. John's act of claiming / John's speech act was the same as Mary's.

(29a) can only state the sharing of (a partial) content, not the sharing of a way of performing a speech act. By contrast, for actions as in (29b) to be the same, they need to share features of their performance; sharing of content is neither sufficient nor in fact strictly necessary. The same holds for state-related attitudinal objects:

(31) a. John's belief is the same as Mary's.
b. John's belief state is the same as Mary's.

[20] See Moltmann (2014, 2017a, 2019).

(31a) is true just in case John's belief shares its content (satisfaction conditions) with Mary's, other features of their belief states won't matter, unlike for (31b).

Modal objects likewise enter similarity relations just on the basis of shared satisfaction conditions or perhaps types of satisfaction conditions. John's obligation 'is the same as' Mary's obligation just in case the two obligations are satisfied and violated by the same types of actions (i.e., John's actions satisfying his obligation being of the same type as Mary's actions satisfying hers).[21]

2.1.5.2.3. Part structure based on partial content only

Satisfiables have a part structure based on partial content only.[22] This is reflected in the fact that part-structure related expressions exhibit a single reading when applied to satisfiables, relating to partial content. Again, this is a feature distinguishing satisfiables from propositions and from events and states (on the standard conception on which states have temporal parts). A part of a belief, judgment, or assertion is a partial content, not a temporal part of a state or act. 'Part of John's decision' cannot be a part of the action of deciding, the temporal part of a mental action. 'Part of John's claim' cannot be a (temporal) part of a speech act. Similarly, 'part of an obligation', 'part of a need', and 'part of an offer' are partial contents, not the temporal parts of states. The partial-content reading is the only way in which *part of* can be understood when applied to satisfiables. In fact, all part-related expressions, not just *part of*, display such a reading, including the partitive construction in general:

(32) All of / Most of / None of Joe's hope / need was fulfilled.

This also holds for the modifier *double*. When applied to attitudinal objects, *double* specifies two content-related parts (or in fact two attitudinal objects generated by the same act), as in (33). By contrast, when applied to events it specifies two eventive parts, as in (34):[23]

(33) a. a double threat
b. a double insult

[21] Types of action may also mean actions that may be realized in different ways. John's obligation as a soldier and Mary's obligation as a defense minister may be the same in the sense that they are fulfilled by both serving their country. But serving one's country can be done in different sorts of ways. Thanks to Hans-Martin Gaertner for pointing this out to me.

[22] See Moltmann (2013a, chap. 4, 2014, 2017a).

[23] See Wiegal (2022) for a semantic analysis of *double* when applied to events.

(34) a. a double pirouette
b. a double murder

Part-related expressions do not really apply to propositions, with a clear intuitive understanding.[24] When *part of* is applied to a proposition, it very much depends on the theoretical conception of a proposition how *part of* is understood. If propositions are conceived as structured propositions, then objects and properties will be constituents of propositions, and hence parts of them. But this is not so if propositions are conceived as sets of possible worlds.[25]

How is the notion of partial content to be understood? It is a notion that cannot be accounted for on a standard possible-worlds conception of content (Yablo 2015). Truthmaker semantics, by contrast, has been developed specifically to account for that notion, and the fact that satisfiable objects display the notion of partial content is one motivation for conceiving of their content in terms of truthmaker semantics (see Chapter 3).[26]

Even physically realized attitudinal objects (e.g., claims) fail to have a physical part structure, given linguistically reflected intuitions. They differ in that respect from materially realized artifacts like books and letters, which have content-based and material part structures. Why is there such a difference? An explanation is that attitudinal and modal objects are non-material endurants. As endurants, they fail to have temporal parts; as non-material objects, they fail to have material parts. Let's adopt the traditional (if controversial) notion of endurance of an entity as complete presence throughout time the entity exists (Lewis 1986, p. 202).[27] Then attitudinal objects endure

[24] However, *part of* can apply to what is described as a 'content', picking out a partial content:

(i) Part of the content of the sentence *John came and Mary left* is that John came.

[25] Of course, if propositions are construed in truthmaker-semantic terms, the notion of part in the sense of partial content does apply to them (Yablo 2015, Fine 2017b, Moltmann 2017c).

[26] The adverbial *partly* seems to be able to apply to propositions clearly relating to a partial content in (i):

(i) The proposition that John is incompetent is partly true.

However, *partly* does not directly relate to the part structure of the subject referent, but may relate to an entity closely related to it, such as the content of a sentence, as in (iia), which is not equivalent to (iib):

(ii) a. The sentence 'John is incompetent' is partly true.
b. Part of the sentence 'John is incompetent' is true.

See Yablo (2015) for the observation and Moltmann (2017c) for an analysis.

[27] See Hawley (2001) for further discussion of the notions of endurance and of temporal part.

throughout a time because with their content-related parts they are capable to be completely present throughout the time.

2.1.5.5. The source and scope of satisfaction conditions for attitudinal and modal objects

The property of having satisfaction conditions is characteristic also of attitudinal and modal objects that do not result from acts, such as state-like attitudinal objects of the sort of intentions, beliefs, desires, and fears, and light permissions and light obligations. This means that the representational ability of modal and attitudinal objects cannot be traced to the intentional act that may have created them. Rather it should be regarded as a primitive feature of certain mental or mind-dependent entities. In that respect, the theory of attitudinal objects differs from the act-based conceptions of propositions of Soames (2010) and Hanks (2015), which try to account for the ability of propositions to represent and be true or false in terms of the predicational acts that, on their view, are constitutive of them.

It may not be obvious that all attitudinal and modal objects have satisfaction conditions. Here are two cases that may seem problematic.

First, imaginations look like attitudinal objects, but there are no satisfaction predicates applicable to imaginations (?? *Bill's imagination that he was living in a castle was correct / satisfied.*). This at least holds for imaginations that are not directed at reality (imaginations as described by *John imagined his father* may have representational adequacy conditions). However, the verb *imagine* takes clausal complements that should serve to give the satisfaction conditions of the imagination. This means that imaginations have satisfaction conditions even if English lacks suitable satisfaction predicates applicable to them.

Second, one may consider sighs, exclamations, screams, and other products of expressive speech acts attitudinal objects, and again they seem to lack satisfaction conditions. Yet the verbs *sigh*, *scream*, and *exclaim* take clausal complements and thus should have satisfaction conditions. The reason may be the nominalization of verbs describing locutionary acts that are accompanied by an emotion pick out only that emotion, not the locutionary content bearer that the emotion accompanies.[28] Pure emotions in general do not come with satisfaction conditions, that is, emotive states such as anger and happiness. They

[28] See Chapter 6 for more on the notion of a locutionary content bearer, that is, a 'saying' or locutionary object.

do not tolerate predicates of satisfaction, and the clausal complement of the corresponding predicates (*angry*, *happy*) generally serves to describe a fact as an object of the emotion, rather than giving the satisfaction conditions of an emotive state.[29] Such purely emotive states need to be distinguished from cognitive emotive states, such as fear and hope, which do come with satisfaction conditions: a fear can become true and a hope fulfilled.

2.2. Attitudinal and modal objects and the sharing of content

Attitudinal objects depend on a particular agent. John's claim depends on John and cannot be the claim of Mary. This raises the question how attitudinal objects as carriers of content could allow for the sharing of content among different agents. There are two ways in which content can be shared with attitudinal objects, both of which are well-reflected in natural language.

The first way consists in two agents engaging in similar attitudinal objects, as in the reports of (exact) similarity or 'sameness' among attitudinal objects below:

(35) a. John's claim is the same as Bill's.
b. John and Bill made the same claim.

The second way consists in two agents engaging in a kind of attitudinal object (Section 2.2.2.):[30]

(36) John and Bill made the same claim.

Whereas *John's claim that Mary is a genius* in (37a) usually stands for a particular attitudinal object, *the claim that Mary is a genius* in (37b) stands for a kind of attitudinal object:

(37) a. John's claim that Mary is a genius is true.
b. The claim that Mary is a genius is true / is widely believed / has never been made.

[29] It has been argued that emotions are subject to conditions of correctness (Deonna and Teroni 2022). Roughly, on that view, John's fear of a storm is correct if John judges a storm as dangerous. Conditions of correctness are of a different sort, though, from conditions of satisfaction and are not on a par with content.

[30] See Moltmann (2003a, 2013a).

As (37b) illustrates, kinds of attitudinal objects exhibit representational properties just like particular attitudinal objects; moreover they need not be instantiated.

However kinds of attitudinal objects are to be conceived, what is important only is that they, rather than propositions, are used in reports about the sharing of content.

2.3. Intensional objects

Attitudinal and modal objects belong to the category of satisfiable objects, entities which are characterized by particular content-related properties and properties of concreteness. There is another semantically relevant type of entity that displays the same sorts of properties, though it may involve different kinds of satisfiers. These are 'intensional objects' (to use a somewhat misleading term), which include what we may refer to as 'searches', 'needs', 'purchases', 'debts', 'offers', and 'acceptances'. Intensional objects are entities that correspond to intensional transitive verbs, that is, verbs that display an intensional reading with NP-complements, such as *look for*, *need*, *owe*, *own*, *buy*, *sell*, *offer*, *accept*. Satisfiables thus comprise attitudinal, modal, and intensional objects.

Intensional objects exhibit properties of concreteness, and they come with satisfaction conditions. For example, a search and a debt generally have limited lifespans and can stand in causal relations, and they have satisfaction conditions. But here the satisfiers are entities that are part of situations in which the search is completed or the debt is resolved. The satisfiers of John's search for a house are particular, suitable houses in situations in which they are 'had' by John as a result of the search (e.g., bought or rented). John's purchase of a bottle of wine on the internet, likewise, is a concrete entity with satisfaction conditions, bottles of wine in situations in which they are 'had' by John as a result of the purchase. What distinguishes most intensional objects from attitudinal and modal objects is the nature of the satisfiers. In general, the satisfiers of intensional objects are entities standing in a relevant relation to the agent, that is, entities-in-situations. Intensional objects may impose further conditions on satisfaction situations. An object-in-a-situation satisfies a purchase only if the situation was caused by the purchase. This does not hold for all intensional objects, though. Debts and ownerships are not subject to a causal condition.

Even perceptions as the intensional objects corresponding to the intensional transitive verb *see* take objects-in-situations as satisfiers, and they impose additional conditions on satisfaction. An object-in-a-situation satisfies John's perception of a tree (when John is looking at an object which he identifies or misidentifies as a tree) only if the object is specified as a tree in that situation.

2.4. The relation of attitudinal and modal objects to acts

Certain attitudinal objects correlate with acts: a claim correlates with an act of claiming, a decision with an act of deciding, a request with an act of requesting, a thought with an act of thinking. Even though, as we have seen, attitudinal objects differ sharply from acts in the kinds of properties they may have, the relation between the attitudinal object and the act is an important one: without the act, an act-related attitudinal object could not exist.

But how should the relation between an attitudinal object and the corresponding act be understood? This question is particularly important since, as an ontological category, acts are generally taken to be unproblematic, but not so attitudinal objects. There are three types of roles that attitudinal objects can play with respect to the corresponding acts or states:

[1] as products
[2] as results
[3] as states that do not result from acts.

2.4.1. Attitudinal objects as products or artifacts produced by acts

There is first of all an intuitive sense in which an assertion and a request are products of speech acts and a decision a product of a mental act. The products may lack a physical realization (judgment, decision) and may or may not endure past the act that set them up. This product relation appears, to an extent at least, to be reflected in the choice of the light verb *make* in the complex attitude predicate (*make an assertion*, *make a request*, *make a decision*).

The distinction between actions and products as a distinction that includes the one between acts and non-enduring, non-physical products plays a prominent role in Twardowksi's work (which I will discuss shortly). However, it is not a distinction that is exclusive to Twardowski, and in fact Twardowski (at least on one interpretation) conceived of the distinction in a way that I will not adopt myself (Section 2.4.4.). The notion of a product in the intuitive sense in which it applies to entities like judgments, assertions, requests, and decisions can be found in the work of philosophers prior to Twardowski. In fact, Twardwoski (p. 84*f.*, Fn 25) himself mentions Bolzano, Bergman, Stumpf, Meinong, and Witasek as philosophers who were aware of the distinction between actions and products.[31] The notion of a product, in particular that of a work of art, also plays an important role in the work of Roman Ingarden (1931), a student of Twardowski's. It also plays an important role in the work of Gilbert Ryle (1949, chap. 9), according to whom terms for acts are to be part of the 'language of biography' and terms for products like *judgment*, *discussion*, and *abstraction* to be part of the 'language of reviews of books, lectures, reports'.[32]

An important issue regarding the relation between an act and its (possibly non-physical) product is the lifespan of the product in relation to the act. Twardowski (1911) held the view that a (non-material) product is temporally coincident with the act that produced it. However, that cannot be right. First of all, a claim, request, or a thought should certainly exist only at the end of the act of claiming, requesting, or thinking. More importantly, illocutionary and mental products may have a modal component, which allows them to endure past the act that created them and which is reflected in intuitions about validity and thus the applicability of predicates like *is still valid* or *still holds*. A claim may still be valid long after the act of claiming, depending on its intended validity, a promise or decision may still hold after the making of the promise. Even products that do not come with a status of

[31] Thus, Twardowski cites Bolzano: 'Bei den Worten: ein Urteil . . . eine Behauptung stellen wir uns sicher nichts anderes vor, als etwas, das durch Urteilen . . . und Behaupten hervogebracht ist.' ('With the words 'a judgment . . . a claim . . . we certainly imagine nothing else than what has been produced by judging . . . and claiming'—my translation) (Wissenschaftslehre, v. I, p. 82). Twardowski also cites Bergman (*Reine Logik*, E.S. Mittler und Sohn 1879, pp. 1–3, 10–12, 38–39), saying, 'Bergman, who follows Bolzano in his very resolute differentiation of product from action, ultimately refers to a thought, concept, or judgment as simply products that correspond to actions.'

[32] Thus Ryle (1949, chap. 9) says, 'I hope to show that the words 'judgment', 'deduction', 'abstraction' and the rest belong properly to the classification of the products of pondering and are mis-rendered when taken as denoting acts of which pondering consists. They belong not to the vocabulary of biography but to the vocabulary of reviews of books, lectures, discussions, and reports. They are referees' nouns, not biographers' nouns' (Ryle 1949, chap. 9, p. 285*f.*).

validity may endure past the act, for example plans (which 'exist', rather than being 'valid') and predictions.

The notion of a product should also apply to modal objects. Laws obviously are products of acts of passing or declaring them, as are other deontic modal objects, such as (explicit) obligations, permissions, and offers. Deontic modal products clearly may endure, or be valid, past the act that may have set them up.

I take illocutionary, mental, and modal products to be artifacts produced by acts. Mental and modal products will be abstract artifacts, though, in that they lack a physical realization.[33] Abstract artifacts are familiar from musical works, literary works such as poems (which may have not been written down), fictional characters, and laws (Thomasson 1999).[34]

I will adopt the view that abstract artifacts are created (Thomasson 1999), rather than discovered (Dodd 2000).

There is an important critique of abstract artifacts as entities created by acts that has been discussed in the literature on literary and musical works of art. That is that abstract artifacts cannot be caused by the actions that have created them, since causation is a relation between concrete entities (Irmak 2020). The same critique has been applied to the notion of an attitudinal object as an abstract artifact by Bronzo (2020) and Davis (2021). However, the relationship between an action and its product need not be viewed as a causal relation. Rather it is more plausibly a relation of ontological dependence; more specifically, a generating relation of ontological dependence, on which the dependence relation defines a new entity (Irmak 2021). Thus, a musical work ontologically depends on the various mental acts composing it as well as the overall intention of producing such a work of art thereby.

Ontological dependence does not mean inheriting the temporal duration of the object that is the base. Rather, the duration of the lifespan of the artifact depends on the intention that goes along with its production. A work of art may be intended to last forever; a law may be intended to last for a limited period of time; a claim or hypothesis may be intended to be valid until it is withdrawn in view of contrary evidence. Thus illocutionary, mental, and

[33] Thomasson (1999) takes abstract artifacts to be entities that lack a specific spatio-temporal location. That notion is suited for works of art such as musical compositions or plays, which may have physical manifestations but are not tied to their spatio-temporal location.

[34] Further support for the classification of attitudinal objects as artifacts comes from their teleological status, reflected in the applicability of *correct*. Just as attitudinal objects with a word/mind-to-world direction of fit are correct in case they are true, certain artifacts can be correct in that same sense. Thus, a thermometer can be correct, though not true.

modal products are dependent on mental acts as well as an overall intention in order to last for a particular time or under particular conditions.

We can now turn to the important question mentioned earlier, namely, on what sorts of acts attitudinal objects as products depend. The act on which an attitudinal product depends is not really the act described by the verb from which the attitudinal product noun may have been derived. A claim does not depend on the claiming act itself, but rather on the acts that together make up an act resulting in a claim. That is, attitude verbs generally describe acts in terms of the products they produce, rather than just describing the acts on which the product ontologically depends. The same holds for complex predicates describing the production of musical works, on the creationist view I have adopted. A symphony does not ontologically depend on an act of composing a symphony, but rather it depends on the various acts of composition that lead to the product of the symphony. A letter does not ontologically depend on an act of writing the letter, but on the various acts that lead to the letter. This is so not only for mental acts. There are also predicates for physical actions that make reference to the intended product, such as *to circle*, *to underline*, and *to surround*. Here again the act described is individuated in terms of the physical product. In many cases, thus, the attitudinal object is ontologically prior to the act described by the attitude verb. This means that the act is more transparently described in terms of a complex predicate such as *reach a conclusion* or *make an assumption*, rather than the simple verbs *conclude* or *assume*. This gives further motivation for the derivation of attitude verbs from complex predicates (light verb–attitudinal-object noun) that this book pursues (see in particular Chapter 5).

Artifacts in general and illocutionary, mental, and modal products in particular, on the present view, inherit their ability to represent from the intentions involved in their creation, rather than that being the result of the acts themselves that lead to their creation. The view thus differs from various recent and historic attempts of act-based conceptions of propositions, on which the truth aptness of propositions is explained in terms of acts that are taken to make up propositions (Hanks 2015, Soames 2010).

2.4.2. Attitudinal objects as results of acts

The distinction between an action and a corresponding act-related attitudinal object cannot always be taken to be the distinction between an action

and its product. Some attitudinal objects have the status of entities resulting from an act rather than being produced by it. For example, a particular conclusion is reached by an act, rather than being its product. What we describe as an act of concluding is an activity whose aim is some conclusion or other and that results in a particular conclusion; it is not an intentional act that produces a particular intended conclusion. This arguably also holds for judgments: an act of judging is not an intentional act aiming to produce a particular judgment, but rather an act that aims at some judgment or other, and that results in one particular judgment. While an act of thinking may have as its aim a certain type of thought, a particular thought is not an intended product, but rather a result of the thinking (and it 'occurs' or 'is had' rather than being 'made'). By contrast, a particular claim can naturally be viewed as the intentional product of an act, and so for a particular assumption or speculation (but of course it is not the gerundive nominalizations *claiming*, *assuming*, and *speculating* that describe the acts that produce those attitudinal objects; the gerundive nominalizations rather describe a more complex act individuated in terms of the product).

The difference between attitudinal objects that are results and attitudinal objects that are products tends to be reflected in the choice of light verbs: a conclusion is 'reached' rather than 'made', a thought 'occurs' (or else is 'had') rather than is 'made'. By contrast, a claim, an assumption, or a decision is 'made'. In some cases, two different verbs are available (a decision or judgment is 'made' or 'reached').

2.4.3. Attitudinal objects and states

State-related attitudinal objects likewise can hardly be viewed as products, at least not products produced by the corresponding state, since states do not lead to new objects. Thus, a belief may have been produced by a state of believing. A belief, though, may have been produced by a thought. Yet not all beliefs come about that way; in particular, implicit beliefs may fail to do so. Even more strikingly, intentions cannot be viewed as produced by acts aiming to produce those intentions, on pain of circularity, as the acts themselves would have to start out with an intention to perform them (Searle 1983).

There is a further question to address, namely what to make of the difference between attitudinal objects likes beliefs and hopes and attitudinal

states, such as states of belief or hope. More linguistically put, this would be the difference between the denotations of nouns like *belief* and *hope* and denotations of gerunds such as *believing* or *hoping*, or explicit state-referring terms like *belief state* and *state of hope*, which are more or less co-extensional.[35] Unlike beliefs and hopes, belief states and states of hope do not exhibit variable intensity (*John's deep belief that god exists*, * *John's deep believing that god exists*, **John's deep belief state that god exists*; *John's great hope that the war will end*, **John's great hoping / state of hope that the war will end*). Moreover, belief states and states of hope do not possess satisfaction conditions (*John's belief is true*, ??? *John's believing that the war has ended is true*, ??? *John's belief state is true*; *John's hope that he would win was fulfilled*, ??? *John's hoping that that he would win was fulfilled*, ??? *John's state of hope was fulfilled*).

A plausible conception of states of believing or hoping is in terms of Kim's (1976) theory of events. Kim (1976) proposed an implicit definition of events based on properties, individuals, and times, stating that an event $F(P, a, t)$ dependent on a property P, and agent a, and a time exists just in case a has P at t, and two events are identical just in case they depend on the same properties, individuals, and times. It is generally agreed that Kim's account is better suited as an account of facts rather than events, since the account does not permit events to have properties not fixed by the implicit definition itself, such as properties of concreteness, like being perceivable, entering causal relations, having a particular manifestation.[36] But the account is also suited for a notion of an abstract state, that is, a kind of state that fails to come with a location, with a particular manifestation, and with causal relations (Maienborn 2007, 2020), What we refer to as a 'state of belief' and a 'state of hope' side with abstract states in that they do not come with variable intensity (and thus lack a particular manifestation) and do not come with satisfaction conditions (since the implicit definition fails to fix those). Unlike facts, states, intuitively, can obtain at different times, which means that abstract states should depend just on a property (or relation) and an individual

[35] Unlike gerunds, *belief state* and *state of hope* sound like technical philosophical terms. Yet they seem to be co-extensional with gerunds, setting aside an apparent difference in mass-count status (gerunds are mass nouns, *state* is a count noun).

[36] The distinction between events and facts based on different types of acceptable predicates is originally due to Vendler (1967a, chap. 5). Vendler (1967a, p. 132) points out that what he called 'narrow containers', predicates that describe temporal, spatial, and certain manner-related properties, can apply only to events (as denoted by nominal gerunds and deverbal nominals), but not to the things denoted by verbal gerunds or *that*-clauses, facts or proposition-like entities.

(or several individuals). We can then say that 'John's believing that the war will end' is 'John's having the belief that the war will end'. This means it is a state that depends on a two-place property of 'having', John, and the attitudinal object that is John's belief. Likewise 'John's hoping that the war will end' will be 'John's having the hope that the war will end'. This gives the following Kimean account of attitudinal states:

(38) A Kimean Account of Attitudinal States
   a. For an attitudinal object *d*, the having relation *H*, and an agent *a*, the state *F(H, a, d)* exists at a time *t* if *H* holds between *a* and *d* at *t*.
   b. For attitudinal objects *d* and *d'*, the having relation *H*, and agents *a* and *a'*, *F*(*H*, *a*, *d*) = *F*(*H*, *a'*, *d'*) iff *d* = *d'* and *a* = *a'*.

'Having' is to be understood as the ontological dependence relation between an agent and an attitudinal object. Given that (38) is an implicit definition, attitudinal states won't have any inherent properties not fixed by (38), such as possessing variable intensity or satisfaction conditions. On this proposal, attitudinal states are derivative with respect to attitudinal objects: they ontologically depend on the latter.

2.4.4. Twardowski's action-product distinction and the Aspectual Theory of products

The action-product distinction, as was mentioned, can be found in the work of various philosophers in phenomenology and early analytic philosophy, but it was elaborated the most by Twardowski (1911). However, it is important to distinguish the linguistic motivations for the distinction that Twardowski presents and the philosophical importance Twardowski attributes to products from the particular way in which Twardowski conceived of the distinction, in particular an interpretation of Twardowski's view on which it is a distinction between two aspects of an act. I consider that way of drawing the distinction problematic, and so for the somewhat similar suggestion recently made by Bronzo (2020).

Twardowski connects the distinction between actions and products to two sorts of deverbal nominalizations in Polish, German, and French (in three versions of the same article in those languages). The distinction appears in the very same way in English: gerunds such as *claiming*, *judging*, *deciding*, and

requesting are terms for actions; nominalizations such as *claim*, *judgment*, *decision*, and *request* are terms for products. Twardowksi made a range of linguistic observations about the differences between actions and products. These include the observation that products, but not actions, permit predicates of truth or satisfaction; that products, but not actions, are evaluated on the basis of content (*John's speaking was surprising–John's speech was surprising*), and that products, but not actions, enter similarity relations on the basis of content. Products, not actions, for Twardowski are truth bearers (or bearers of satisfaction conditions). For that reason, for Twardowski, products, not actions, are the things that play a role in logic and form the subject matter of the human sciences in general. By introducing the notion of a product, Twardowski aimed to overcome the problems of psychologism prevalent at the time while maintaining a close connection between logic and cognition, with products being mind-dependent truth bearers.

Twardowski was very well aware that the notion of a product raises the issue of how agents can share a content and of how the content of an assertion can be understood by the addressee. For him, for two people to share a content means that they produce similar products. In particular, understanding an assertion means that the assertion causes the production of a product similar to the assertion. The stabilization of a content over time for Twardowski consists in a causal chain of such productions of similar products.

For Twardowski, products like claims and thoughts are distinguished from the more familiar products, i. e., material products like books and letters, by being non-enduring. Twardowski in fact took products such as claims and thoughts to be temporally coincident with the action that produced them. Twardowski's view of actions and products being temporally coincident is linked to the fact that he included in the action-product distinction what he took to be a distinction between a physical action and its non-enduring, non-material product. This is the apparent distinction between a walking and the walk, and a shouting and a shout, a distinction that appears reflected in the same linguistic contrast between two sorts of nominalizations as the distinction between mental and illocutionary acts and their products. When discussing the distinction between a physical action and its apparent non-enduring products, Twardowski (1911, p. 80) appears to take the distinction to be one between two different aspects of the same entity: product nouns such as *jump* and *race* 'do not bring into relief the aspect of action', instead 'they bring to the force a different aspect, one that might be termed the 'phenomenal' or 'static' aspect.' He also says, 'When we speak of the shout, we

abstract from [the activity of shouting] treating the shout as an acoustical phenomenon on a par with a roar, a rustle etc.' (Twardowski 1911). He admits that 'in the case of fighting and fight, terms for actions and for products may even pose as merely two ways of grasping the same thing. In the case of to err and error and bending and bend, the distinction in meaning between verb and noun is quite pronounced, these nouns being entirely free of the functional aspect' (Twardowski (1911, p. 81). He emphasizes later again, 'there is a continuum from those cases in which the product virtually coalesces with the action that produces it, through instances in which the distinctness of action and product becomes increasingly sharp' (Twardowski 1911, p. 83). At the same time, Twardowski takes non-enduring products to be on a par with material, enduring products, and he points out sharp differences in the attribution of properties: concepts can be defined, but not the activity of conceiving; saying that a question is unintelligible is not saying that the act of posing questions is unintelligible; overlooking an error is not overlooking the action of committing the error; expectations can be fulfilled and resolutions implemented, but not 'actions' of expecting or resolving. Thoughts being inspiring is not the same as acts of thinking being inspiring (Twardowski 2011, p. 91).

Given this, it is not at all obvious that Twardowski takes the action-product distinction to consist just in different aspects of one and the same thing, an action. Yet, his view has been interpreted as such (van der Schaar 2006, Bronzo 2020). Let me call this interpretation the 'Aspectual Theory' of the action-product distinction.[37]

The view that actions and products are just two aspects of the same thing in fact does not capture the intuitive distinction adequately. First, it would leave it a mystery why material products are in many ways like non-enduring mental or psychophysical products. Material products like street signs share with non-enduring products the ability of having satisfaction conditions and

[37] Bronzo (2020) points out an unwanted consequence of the action-product distinction, if the distinction is guided by the presence of verb-nominalization pairs in the language. It would then apply not only to standard action-product pairs like 'the constructing of the bridge' and 'the bridge', but overgenerate in such a way that the action of constructing of the bridge would come with its own product 'the construction of the bridge', and the action of 'engaging in constructing the bridge' would come with its product, the 'engagement' in the constructing of the bridge. The existence of such additional apparent terms for actions and for products, Bronzo argues, leads to an absurd multiplicity of products, which (apart from the physical product) would be spatio-temporally coincident with the corresponding actions. It is not clear to me that Twardowski would subscribe to such a strictly language-driven action-product distinction. I myself consider *engage* a stative verb that would not come with a product in the first place.

other content-based properties. If non-enduring products are just aspects of an action, the parallel remains entirely mysterious (and Twardowski clearly recognizes the parallel between non-enduring and material products).

Second, if a judgment is a different aspect of something that would also be an act of judging, and an assertion a different aspect of an act of asserting, this requires that the product coincide temporally with the act, which, we have seen, cannot be right. One reason is that there are products that could exist only at the end of the act. A second reason is that there are illocutionary and mental products that come with a validity and thus endurance beyond the act that produced them. The Aspectual Theory makes the action-product distinction inapplicable to modal objects and the actions that may have produced them. Deontic modal products, we have seen, display the very same characteristic properties as attitudinal objects, but they may easily last beyond the act that produced them.

The Aspectual Theory in general also has difficulties explaining why actions and products take different existence predicates (*take place* for actions, *be valid* for (certain) products).

Another concern about the Aspectual Theory of the action-product distinction is that there seem to be no expressions that allow reference to an act in a way that is neutral between the two aspects. This is quite different from well-discussed cases of an entity having two different facets, such as a book, with its information-based and material-object facet: the noun *book* is neutral as to the two facets that one may be referring to on a particular use.[38]

These points of critique also apply to a version of the Aspectual Theory that was suggested by Bronzo (2020) and that does away with the notion of a product. For Bronzo, nouns for actions and nouns apparently denoting products stand for different aspects of the same act, in virtue of their descriptive content. A non-gerundive nominalization such as *assertion* refers to the content-related, truth-evaluable aspect of an act of assertion, the assertion viewed as being truth-evaluable, as having a content-based part structure, as coming with the norm of truth. By contrast, the gerund *asserting* refers to the action as such. The problems for any version of the Aspectual Theory are that it fails to capture the similarity between material products and non-enduring 'products' (or aspects of acts) and that it is inapplicable to mental

[38] Twardowski in the first part of his article takes product nouns to be ambiguous between standing for actions or products. However, his observations about the applicability of predicates to actions and products make clear that that view cannot be correct.

and illocutionary products that endure past the act that produced them, as well as to modal products.[39]

Bronzo's view moreover rests on the problematic assumption that acts are primary truth bearers and explain the truth aptness of content bearers (see Section 2.1.5.5.). Just like other act-based approaches to propositions, no account is given how an action could possibly be the bearer of content, when content-related properties go against our intuitive notion of an action when referred to as such. More specifically, Bronzo's view faces the challenge to explain why the content-related aspect not only goes together with satisfaction conditions, but also, for example, involves a part structure based on partial content rather than a temporal part structure, when the act as such seems to just have a temporal part structure.

It is in fact better not to apply the action-product distinction to the distinction between merely physical entities, such as a walk and a walking. Given that *walk* is a count noun and *walking* a mass noun, the semantic distinction between the nouns *walk* and *walking* may better be accounted for in terms of the content of the mass-count distinction applied to events, which means as an aspectual distinction.[40] *Walk* describes an event as completed, as having a boundary; *walking* describes the event as an unbounded activity.

By setting apart the distinction between a walk and a walking, the alternation between the two sorts of nominalizations will display the action-product distinction only to the extent that the nominalizations are based on attitude verbs. A walking will not have a product and a jump only if the jump is intended to exemplify particular relevant features such as a height at a competition. Whether an action has a non-material (possibly non-enduring) product depends on the agent's intentions, which the product ontologically depends on. The distinction between an action and a product thus holds only between an act and its intended product, which comprises the relation between actions and the intended material product and the relation between an action and the intended non-material product, such as an assertion or a thought.

In addition to material, physical, and non-physical products, there are things such as artistic performances that need to be recognized as products. These are spatio-temporally coincident with the actions of performing.

[39] Bronzo (2020) appears to take enduring modal products to be artifacts and as such to be distinct from truth-evaluable aspects of acts. But this would leave it a mystery why modal products share the same characteristic properties as (non-enduring) attitudinal objects.

[40] See Moltmann (2017) and also Bronzo (2020).

Thus, a dance is the aesthetic product of a dancing event and an opera performance is the artistic product of an event of performing. What matters for the product are the aesthetic features, but not irrelevant features of the act of performing. Likewise for certain linguistic acts: phatic acts of making sounds with the intention of realizing a particular phonological or morpho-syntactic structure should count as products. Products of this sort will be spatio-temporally coincident with the corresponding act and have a temporal part structure that is at least aligned with that of the act. They are thus not enduring products, unlike enduring illocutionary, mental, and modal products and unlike material products. This will be relevant in Chapter 6 when the ontology of satisfiables is extended to phatic objects (for the semantics of quotation).

2.5. Conclusions

While attitudinal and modal objects are hardly recognized in contemporary metaphysics, they are clearly part of our ordinary ontology that pertains to the mind, to communication, as well as to the social world. Attitudinal objects are particularly well-reflected in natural language, most obviously in nominalizations of attitude verbs such as *claim*, *thought*, *judgment*, *decision*, *promise*, *offer*, *invitation*, *request*, *demand*, *suggestion*, *desire*, *intention*, *belief*, and *hope*, which all exhibit stable semantic behavior displaying the characteristic properties of attitudinal objects. Attitudinal objects, even though they are well-reflected in natural language, are not in any way language-dependent. They exist whether or not a language has terms standing for them. Attitudinal objects may correlate with acts or states, but they are sharply distinct from them in the properties they may have. Some attitudinal objects have the status of products of acts, in the sense of abstract (non-material) artifacts generated by acts (or being ontologically dependent on them). As in the case of material artifacts, it is the product not the act that is the carrier of representational and relevant normative properties. This holds in particular for truth and correctness (in the sense of truth).

Attitudinal objects and Davidsonian events (that is, events in their roles as implicit arguments of verbs) have very different motivations. Davidsonian events are meant to be the objects to which adverbials apply, whereas attitudinal objects are mind-dependent entities that are bearers of truth or satisfaction conditions and are the entities which *that*-clauses are predicated

of. Events are not bearers of truth or satisfaction or other content-related properties. The attempt to derive the representational ability of content bearers from the acts that may have created them is just as misguided as would be an attempt of trying to derive the ability of artifacts to represent from the act of creating them. A thermometer does not represent temperature because the act of making the thermometer does so. Likewise, a claim does not represent truth because of a truth-directed speech act.

Modal objects share the characteristic properties of attitudinal objects. Modal objects are less well-reflected in natural language, but they play an equally important role in our ordinary ontology. Finally, there are intensional objects, which come with satisfaction conditions and generally some properties of concreteness. Intensional objects, attitudinal objects, and modal objects together form the category of satisfiables, entities whose main characteristic is to be bearers of satisfaction conditions.

3

Object-based Truthmaker Semantics, Norms of Truth, and Direction of Fit

Attitudinal and modal objects, or more generally the category of satisfiable objects, come with satisfaction conditions. This is reflected linguistically in the applicability of various predicates of satisfaction as well as in particular constructions whose semantics consists in the attribution of content, such as clausal complementation or modification and specificational sentences.

How should the satisfaction conditions of satisfiables be conceived formally? Given standard possible-worlds semantics, one might take the content of attitudinal and modal objects to consist in a set of worlds: the content of John's obligation to work would be the set of worlds compatible with John working and the content of John's belief that it is raining the set of worlds compatible with there being rain.[1] There are a range of reasons, however, not to construe the satisfaction conditions of satisfiables in terms of possible-worlds semantics. Instead, truthmaker semantics, the situation-based semantics developed recently by Fine (2017a, b, c, 2018a, b), appears much better suited for that purpose. In truthmaker semantics, situations, actions, and perhaps other types of entities act as truthmakers or satisfiers of content bearers, rather than entire worlds. Truthmaker semantics has been developed in order to obtain a more fine-grained notion of content than that of possible-world semantics, thereby permitting the definition of such notions as aboutness or subject matter and partial content. Fine had developed truthmaker semantics strictly for the content of sentences only. His semantic theory can thus be distinguished as '*sentence-based truthmaker semantics*' from the present version of '*object-based truthmaker semantics*', truthmaker semantics when applied to satisfiable objects.

Besides the general advantages of truthmaker semantics for the notion of content as such, there are the following specific motivations for applying

[1] See, for example, Moulton (2009, 2015) for such a view of the content of concrete content bearers.

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truthmaker semantics to attitudinal and modal objects, which this chapter will elaborate:

[1] Attitudinal and modal objects come with a part structure based on the notion of partial content, which truthmaker semantics specifically aims to capture.
[2] Some attitudinal and modal objects involve actions as satisfiers and come with agent-related satisfaction predicates.
[3] Truthmaker semantics can at least in part explain the selection of different predicates of satisfaction selected by different types of attitudinal and modal objects.
[4] Unlike possible-worlds semantics, truthmaker semantics permits formulating a single derived meaning of sentences as a property applicable to attitudinal and modal objects of possibility and of necessity.
[5] Truthmaker semantics can be applied to intensional objects like searches, debts, and purchases, which share characteristic properties with attitudinal and modal objects, but involve entities-in-situations as satisfiers.
[6] Truthmaker semantics may be further extended to questions, which themselves are attitudinal objects. Questions take as satisfiers answers, which are themselves attitudinal objects. The mental correlate of questions, states of inquiry, are attitudinal objects as well, taking states of knowledge as satisfiers.

Truthmaker semantics by itself will not be able to cover all there is to the satisfaction conditions of attitudinal and modal objects. In particular, it does not account for the direction of fit, which is a normative notion and underlies the distinction between truth conditions and fulfillment conditions. The notion can be illuminated by paying attention to the applicability and understanding of the predicate *correct*, which applies to both attitudinal objects and to satisfiers of attitudinal objects. When applied to attitudinal objects such as beliefs and claims, *correct* conveys truth, which will be considered as a non-action-guiding norm; when applied to actions, *correct* can mean that those actions satisfy the relevant attitudinal object, which thus imposes an action-guiding norm.

In what follows, I will first give an outline of Fine's sentence-based truthmaker semantics and then show how it can be extended to attitudinal

and modal objects. Then I will discuss the normativity displayed by attitudinal and modal objects and their satisfiers, the notion of direction of fit. An appendix discusses deflationist or minimalist accounts of truth and shows that they are inapplicable to the notion of truth displayed by attitudinal objects.

3.1. Outline of sentence-based truthmaker semantics

Possible-worlds semantics certainly is the most common approach to the semantics of modals, and it is also a dominant approach to the semantics of attitude reports, at least in formal semantics in the tradition of Montague (Thomason 1974). While philosophers have discussed problems with possible-worlds semantics for quite some time, the approach continues to have a range of attractive features that have made it persevere as a central tool of analysis in formal semantics. First of all, possible-worlds semantics appears to have the very general advantage of allowing for a unified compositional semantics of intensional and extensional expressions of various sorts. In addition, possible-worlds semantics promises more specific advantages, such as being a suitable basis for explaining various sorts of connections between modals and attitude reports, and providing a notion of discourse context or common ground, which is standardly construed as a set of worlds, a context set (Stalnaker 1984).

The main shortcomings of possible-worlds semantics are well-known, having to do with the fact that propositions construed as sets of possible worlds give too coarse-grained a notion of content. Standard possible-worlds semantics does not distinguish the meanings of logically equivalent sentences and fails to account for the intuitive notions of subject matter and of partial content. The need for a more fine-grained notion of content, especially for attitude reports, was the motivation for an alternative, structured conception of content, which replaces sets of worlds by structured propositions, commonly construed as n-tuples of objects or concepts (Cresswell 1986 Soames 1987, King 2019). The structured-propositions view comes with its own problems, however (Jubien 2001, Soames 2010, Hanks 2015, Moltmann 2003a, 2013a, 2014, Ostertag 2019). For one thing, it raises serious conceptual problems discussed in Chapter 1 (the Problem of the Unity of the Proposition). Moreover, it is tailored for attitude reports of a

certain sort, but not modals, and it is harder to make use of it for general semantic purposes, such as the semantic composition of complex expressions of different sorts.

The approach of this work falls within a third approach to semantic content, which makes use of situations rather than entire worlds, an approach that gives a more fine-grained notion of content, though of a different sort than a structured proposition. The version of the situation-based approach that I will adopt is truthmaker semantics, as recently developed by Fine (2017a, b, c, 2018a, b). Truthmaker semantics is based on the relation of exact truthmaking or satisfaction between a situation or action and a sentence (as well as a corresponding relation of exact falsification or violation). Exact truthmaking holds between a situation *s* and a sentence *S* just in case *s* makes *S* true and *s* is wholly relevant for the truth of *S*. Truthmaker semantics is able to distinguish contents of logically equivalent sentences and gives an immediate account of the notions of subject matter and of partial content. Still the notion of content given by truthmaker semantics is not as fine-grained as that of a structured proposition. In particular, the content of a sentence is not taken to reflect syntactic structure in the way a structured proposition does. The following is a brief outline of Fine's sentence-based truthmaker semantics, with just the necessary elements needed for the present aims.

Truthmaker semantics is based on situations rather than entire worlds, as well as on the relation $\Vdash$ of exact truthmaking (or satisfaction) holding between a situation and a sentence.[2]

Truthmaker semantics involves a domain *D* of situations containing actual, possible, as well as impossible situations.[3] Actual situations are part of the actual world; impossible situations are part of impossible worlds and would be truthmakers of contradictory sentences. The domain of situations is ordered by a part-whole relation $<$ (a partial order) and is closed under fusion $\oplus$. *D* includes a null situation (the fusion of the empty set) and the complete situation (an impossible situation that is the fusion of the set of all situations).

[2] Fine actually uses the term 'state', rather than 'situation', while being agnostic about how to understand the notion of a state ontologically. Truthmaker semantics is meant to be ontologically neutral in the sense that any entity can in principle play the truthmaker role as long as it serves the overall purposes imposed by the semantics. I will use the term 'situation' as a blanket term for entities able to act as truthmakers or satisfiers, including actions and attitudinal objects (which act as truthmakers of questions and states of inquiry).

[3] It should be emphasized that truthmaker semantics, unlike what the name may suggest, does not pursue the philosophical project of grounding the truth of a sentence in actual objects. The interest of truthmaker semantics is semantic only, involving descriptive metaphysics or 'naïve metaphysics', rather than 'foundational metaphysics', to use Fine's (2017d) terms.

Actions are a specific kind of situation. Actions may satisfy (comply with) or violate imperative sentences (rather than verify or falsify them).

A situation s stands in the relation ⊩ of exact truthmaking or verification (satisfaction) to a sentence *S* just in case *s* verifies (satisfies) *S* and is wholly relevant for the truth (or satisfaction) of *S*. This means that *s* should not include anything that fails to bear on the truth (or satisfaction) of *S*. A situation *s* is an exact falsifier (or violator) of a sentence *S* just in case *s* falsifies (violates) *S* and *s* is wholly relevant for the falsity (or violation) of *S*. For Fine, situations are parts of worlds; but no further assumptions are made regarding their ontology beyond the roles they play within truthmaker semantics.

The use of the notion of exact truthmaking distinguishes truthmaker semantics from older situation-based semantic theories such as that of Barwise and Perry (1983) and Kratzer (2002, 2014), which are based on the relation of inexact truthmaking between situations and sentences. The notion of an exact truthmaker of a sentence is distinct from that of a minimal situation supporting a sentence, a notion defined in terms of inexact truthmaking in Kratzer (2002, 2014). There are two important reasons for using the notion of an exact truthmaker rather than that of a minimal truthmaker (Fine 2017a). First, there are sentences that have exact verifiers, but lack minimal verifiers, for example *there are infinitely many natural numbers*. Second, a sentence such as *it is windy or it is rainy and windy* has two exact verifiers, a situation in which it is (just) windy and a situation in which it is (just) windy and rainy, but it would have only one minimal verifier (a situation in which it is windy).

The truthmaking / satisfaction relation ⊩ applies to both declarative and imperative sentences: declarative sentences are made true by situations that are their exact truthmakers or verifiers, imperatives are complied with by actions that are their exact satisfiers. The following standard conditions on the truthmaking of sentences with conjunctions, disjunctions, and existential and universal quantification then hold. Here '⊕' stands for the operation of fusion, applying to two entities or a set of entities:[4]

(1) a. *s* ⊩ *S* & *S'* iff for some *s'* and *s''*, *s* = *s'* ⊕ s'' and *s'* ⊩ S and *s''* ⊩ *S'*.
b. *s* ⊩ *S* ∨ *S'* iff *s* ⊩ *S* or *s* ⊩ *S'*.

[4] Fine would ultimately not subscribe to the truthmaking conditions for existentially and universally quantified sentences given in (1c, d). But his views of the truthmaking conditions for existentially and universally quantified sentences are not yet published. I will also set aside the truthmaking conditions of conditionals, as they involve issues not relevant for present purposes.

c. $s \Vdash \exists x\, S$ iff $s \Vdash S[x/d]$ for some individual d.
d. $s \Vdash \forall x\, S$ iff for a minimal set X of situations such that for each individual d, there is a situation s', $s' \in X$, and $s' \Vdash S[x/d]$, $s = \oplus(X)$.

Truthmaker semantics assigns to a sentence S not only truthmakers (or verifiers), but also falsifiers (or violators), situations in virtue of which S is false and which are wholly relevant for the falsity of S. This allows a straightforward formulation of the truthmaking conditions of negated sentences: a truthmaker of $\neg S$ is a falsifier of S. With $\dashv\!\Vdash$ as the relation of (exact) falsification, the condition on the truthmaking of a negated sentence is given below:[5]

(2) $s \Vdash \oplus S$ iff $s \dashv\!\Vdash S$.

Also complex sentences are assigned both verification and falsification conditions. For conjunctions and disjunctions the falsification conditions are those below:

(3) a. $s \dashv\!\Vdash S \,\&\, S'$ iff $s \dashv\!\Vdash S$ or $s \dashv\!\Vdash S'$.
b. $s \dashv\!\Vdash S \vee S'$ iff for some s' and s'', $s = s' \oplus s''$ and $s' \dashv\!\Vdash S$ and $s'' \dashv\!\Vdash S'$.

Given sentence-based truthmaker semantics, a sentence S will have as its meaning a bilateral content, a pair <pos(S), neg(S)> consisting of the set pos(S) of exact verifiers of S and the set neg(S) of exact falsifiers of S. I will adopt this meaning as the basic meaning [S] of a sentence S:

(4) Truhmaker-based basic meaning (bilateral content) of sentences
For a sentence S, $[S]$ = <pos(S), neg(S)>

Based on (4), a truthmaker-based derived meaning of a sentence as a property of attitudinal and modal objects will be defined in Section 3.2.3.

In truthmaker semantics, the contents of sentences are considerably more fine-grained than in possible-worlds semantics. In particular, logically equivalent sentences will have different truthmaker-based meanings whenever they are about different things. Possible-worlds semantics fails to give a

[5] (2) also applies to imperatives that are prohibitions: *Do not smoke!* is satisfied by actions that violate the imperative *Smoke!*, thus actions incompatible with the addressee smoking.

notion of aboutness or subject matter (Yablo 2015). By contrast, truthmaker semantics provides a straightforward account of that notion:

(5) The *subject matter* of a sentence S is the fusion of the verifiers of S and the falsifiers of S ($\oplus$ (pos(S) $\cup$ neg(S))).

Possible-worlds semantics furthermore is unable to provide a notion of partial content. By contrast, truthmaker semantics is able to define the notion as follows (Yablo 2015, Fine 2017a):

(6) Partial content for sets of situations
For sets A and B of situations, B is a *partial content* of A iff every element of A contains an element of B and every element of B is contained in an element of A.

Here containment is to be understood as a reflexive part-of relation. Given the notion of partial content, the content of the sentence *it is cold* is part of the content of the sentence *it is raining and it is cold* (since every situation in which it is cold (and nothing else is the case) is part of a (possible or actual) situation in which it is raining and it is cold, and every situation in which it is cold and it is raining has a situation as part in which it is just cold). However, the content of the sentence *Paris is Paris* is not a part of the content of *it is raining and it is cold*, though it is a logical consequence of it. Moreover, the content of *it is snowing or it is raining* won't be part of the content of *it is raining*, though again it is a valid inference from *it is raining*. Partial content provides the basis for a relation of analytic entailment, as an inference relation distinct from classical entailment. A sentence S_1 classically entails S_2 iff S_2 is true in any model in which S_1 is true. A sentence S_1 analytically entails a sentence S_2 iff the content of S_2 is a partial content of the content of S_1.[6]

Imperatives for Fine have the same kind of semantic value as declaratives, a pair consisting of a set of satisfiers (verifiers) and a set of violators (falsifiers), the only difference being that the satisfiers and violators of imperatives are actions, whereas the satisfiers and violators of declaratives are situations (in the narrow sense). Imperatives provide an important application of the notion of partial

[6] Strictly speaking, this is in fact analytic containment, see Fine (2015) for discussion.

content, namely to Ross' (1941) paradox, the intuitive invalidity of the inference below, which is valid given standard deontic logic:[7]

(7) Post the letter!
Post the letter or burn the house!

Fine explains the invalidity of (7) by taking inferences among imperatives to be based on analytic entailment rather than classical entailment. That is, an imperative S_2 follows from an imperative S_1 just in case the content of S_2 is a partial content of the content of S_1. (7) then is not valid because there are satisfiers of the conclusion, actions of burning the house, that are not contained in a satisfier of the premise, an action of posting the letter. In contrast to imperatives, entailments among declaratives, for Fine, are not based on analytic entailment, but on classical entailment.

Imperatives can be used not only for commands, but also for permissions (*Take an apple!*).[8] No distinction is made on Fine's account between imperatives used to convey permissions and imperatives used to convey orders.[9]

3.2. Truthmaker-based content of satisfiable objects

3.2.1. Partial content and partial satisfaction for satisfiables

In Fine's truthmaker semantics, the notions of exact verification or satisfaction and of exact falsification or violation apply to declarative and imperative sentences. Given that truthmaker semantics is meant to be a general theory of content, the very same notion should also apply to attitudinal and modal

[7] Fine (2018a, b) explains the invalidity of the corresponding inference with deontic *may* in a somewhat similar way:

(i) You may take the apple.
You may take the apple or the gold.

That is because the set of truthmakers of 'the addressee taking the apple or the gold' does not have the set of truthmakers of 'the addressee taking the apple' as a partial content. But see Chapter 4.

[8] There are particular contexts required for an imperative to be used in the weaker sense (Iatridou and von Fintel 2017).

[9] More precisely, Fine (2018a) suggests a different logical form for imperatives of permission, namely T v P rather than $P!$, where T is the formula made true by all situations or actions.

objects and more generally satisfiables. A rudimentary truthmaker view of the content of mental and illocutionary acts has in fact been suggested already by Searle (1983), who takes intentions, decisions, and requests to be satisfied by actions and assertions and beliefs by states of affairs.

If a satisfiable is assigned as its content a pair consisting of a set of verifiers and a set of falsifiers, the notion of subject matter given in the last section applies to it in the same way as to sentences. Moreover, the relation of partial content applies to the set of verifiers of satisfiables and derivatively to satisfiables themselves, as below (focusing, simplifying, just on the set of verifiers of satisfiables):

(8) Partial content of satisfiables
A set A of situations is a *partial content* of a satisfiable d iff A is a partial content of pos(d).

Truth, satisfaction, and validity permit partial application, resulting in notions of partial truth or satisfaction as well as partial validity. The obligation for Mary to work on weekends may be satisfied only partially, and it may obtain only in part. An offer may hold only partially, and it may be taken up only in part. Given the notion of partial content, the two notions of partial satisfaction (truth) and partial validity can be defined as follows:

(9) a. An (attitudinal or modal) object d is *partially satisfied (true)* iff there is a partial content A of d and an actual situation s such that $s \in A$.
b. A (potential) modal object d is *partially valid* if there is a partial content A of d such that for some (potential) modal object d' of the same type as d, d' is valid (exists) and $A = pos(d')$.

(9b) says that a potential modal object is partially valid just in case it has a partial content that is the content of an existing modal object of the same type. (9b) is a condition on potential modal objects, modal objects that may or may not obtain or be valid, yet are well-defined in terms of their content (sets of satisfiers and violators) and type. (9b) presupposes that for every partial content B of a potential modal object, there is a potential modal object with B as its (complete) content. This is ensured by an operation of Content Separation, which I will turn to later (Section 3.2.6.).

Partial truth or satisfaction and partial validity are well-reflected linguistically, namely in the use of adverbials like *partly* modifying predicates of truth, satisfaction, and validity, as in the examples below:

(10) a. John's belief is partly true.
b. Mary's desire was partly satisfied.
c. The offer was partly taken up.
d. The offer is now only partly valid.

Partly as a predicate modifier in (10a–d) relates to the content-based part structure of a satisfiable object. Thus, (10a, b, c, d) are equivalent to (11a, b, c, d), respectively:[10]

(11) a. Part of John's belief is true.
b. Part of Mary's desire was satisfied.
c. Part of the offer was taken up.
d. Only part of the offer is now valid.

Partial satisfaction is also available for agent-related predicates of satisfaction:

(12) a. John partly satisfied the demand.
b. John partly followed Mary's advice.

Note that partial (but not complete) fulfillment of an order goes along with partial ignorance or violation of the order, whereas partial (but not complete) taking up of an offer does not go along with any sort of violation. Failure of fulfilling part of an order is partly violating it, whereas failure of taking up part of an offer is no violation of any sort. This has to do with the fact that illocutionary products of the sort of orders have violators, whereas those of the sort of offers do not, an issue that will be discussed in the next section.

Modal objects likewise allow for partial satisfaction:

(13) a. John partly fulfilled his obligation.
b. John partly followed the law / the rule.

[10] Note that *partly true* carries the implicature 'partly false', but that of course is a matter of pragmatics rather than semantics.

Partial satisfaction of a modal object, one might think, can be reduced to the partial truth of the proposition that the modal object is satisfied. But this is not the case. The non-equivalence of (14a) and (14b) and of (15a) and (15b) illustrates that:

(14) a. The students fulfilled part of the requirement.
b. That the students fulfilled the requirement is partly true.

(15) a. The police force ignored part of the order.
b. That the police force ignored the order is partly true.

(14a) is a statement of the partial satisfaction of a requirement; (14b) is a statement of the partial truth of the satisfaction of the requirement. The partial truth of (14b) can consist in that only part of the students fulfilled the requirement. But this may not be a way in which part of the requirement could have been fulfilled, and thus (14b) does not entail (14a). Similarly, (15b) can have a reading on which part of the police force ignored the order, but this may not be a way in which part of the order could have been ignored, and thus (15b) does not entail (15a).

3.2.2. Satisfiables and their satisfiers and possible violators

Truthmaker semantics applied to satisfiables differs in one important respect from truthmaker semantics applied to sentences. Whereas sentences come with a set of verifiers and a set of falsifiers, not all satisfiables can have falsifiers or violators. The ability to have falsifiers or violators distinguishes attitudinal and modal objects of different modal forces. Claims do have falsifiers, namely situations in virtue of which they are false (situations completely relevant for the falsity of the claim). Requests and obligations have violators, actions that violate or ignore the request or obligation. However, attitudinal and modal objects with the modal force of possibility do not have falsifiers or violators. What distinguishes proposals, permissions, offers, and invitations from requests and obligations is that they cannot be violated. Not taking up an offer or accepting an invitation is not a violation, but not satisfying a demand or fulfilling a promise is, and whatever action is performed in virtue of which a request fails to be satisfied, that action is a violator of the request.

The difference is reflected in the absence of any predicates of violation applicable to permissions, offers, and requests. Obligations can be 'violated' or 'contravened', and rules or laws can be 'broken'. Offers and invitations can be 'declined' or 'refused', but that does not amount to a violation. The predicate *ignore* conveys violation with attitudinal and modal objects of necessity (request, obligation), but with those of possibility (invitation, offer, permission) it conveys simply lack of acceptance. Ignoring an invitation, offer, or permission does not mean violating it, but ignoring a request or obligation does. What we refer to as 'options', 'strategies', and 'possibilities' are teleological modal objects of possibility. They can be 'taken' or 'pursued', but not 'violated'. A strategy may fail, of course, but here failure is a property of the attitudinal object of not providing a way of reaching an aim, not a property of a satisfier violating it. An option may be rejected, but that means 'not taking it up', rather than 'violating' it.

The difference in modal force is also reflected in the way satisfiers are evaluated. An action of fulfilling a request is 'correct', but an action of taking up a permission is not 'correct', but would rather qualify as 'legitimate'.

The difference between modal forces thus resides in a difference in the truthmaker-based content of attitudinal and modal objects, which permits a new, non-quantificational approach to the semantics of modals.

3.2.3. Possible-worlds-based and truthmaker-based contents for sentences as predicates of content bearers

The present view is that sentences act as predicates of content bearers. Given the truthmaker-based meaning of sentences as a bilateral content, this requires positing a derived meaning of sentences as a property of content bearers.

The task of formulating the meaning of sentences as a property is of course shared by semanticists who take clauses to be semantic predicates, but adopt possible-worlds semantics. There is a serious problem that arises for possible-worlds semantics when combined with a predicativist view of clauses, a problem that gives a significant advantage to truthmaker semantics. Given possible-worlds semantics, the property below would be the most obvious candidate for the meaning of sentences as predicates of content bearers. Here f(d) is the set of worlds

compatible with the content of *d* (or in which the conditions represented by *d* are fulfilled):[11]

(16) Possible-worlds-based meanings of sentences as predicates of content bearers
$[S] = \lambda d[\forall w(w \in f(d) \rightarrow S \text{ is true in } w)]$

Such a possible-worlds-based content, however, would not allow distinguishing between attitudinal and modal objects with different forces, such as permissions and obligations. In application to modal objects of possibility, sentences as semantic predicates would have to stand for the property below (given the standard view of modals of possibility):

(17) $[S] = \lambda d[\exists w(w \in f(d) \,\&\, S \text{ is true in } w)]$

But then sentences would not have a single meaning, but would be ambiguous, depending on the lexical meaning of the embedding modal, which, of course, violates compositionality. The very same compositionality problem, of course, arises for complements of illocutionary verbs associated with necessity and with possibility (*demand*, *request* vs. *give permission*, *invite*, *offer*).

By contrast, truthmaker semantics is able to assign a sentence *S* a single meaning as a predicate of content bearers. This is the property *prop(S)* that holds of an object *d* just in case *d* has the same satisfiers as *S* and, if *d* has violators, *d* has the same violators as *S*:[12]

(18) Truthmaker-based derived meaning of sentences
For an (imperative or declarative) sentence *S*,
$\text{prop}(S) = \lambda d[\text{pos}(d) = \text{pos}(S) \,\&\, (\text{neg}(d) \neq \emptyset \rightarrow \text{neg}(d) = \text{neg}(S))]$.

The very same sentence meaning in (18) is applicable to modal and attitudinal objects of different flavors and forces as well as to the illocutionary objects described by imperatives on the request and the permission reading. Modal and attitudinal objects of necessity (of any flavor or type) have both satisfiers and violators; modal and attitudinal objects of possibility (of any

[11] (16) has been endorsed, for example, by Kratzer (2006, 2016) and Moulton (2009, 2015).
[12] See also Moltmann (2018b, 2021a).

flavor or type) have only satisfiers. The derived meaning of sentences given in (18) applies to both of them.

To sum up, the view of clauses as semantic predicates goes along well with truthmaker semantics. But it faces a serious difficulty with possible-worlds semantics, which adds to the familiar problem for possible-worlds semantics (that of giving an insufficiently fine-grained notion of content and of the failure to provide notions of aboutness and of partial content).

3.2.4. Modal products and modal states for strong and weak permissions

There is a further well-known problem for possible-worlds semantics to which object-based truthmaker semantics offers a novel solution. That is the inability for possible-worlds semantics to distinguish between strong (explicit) permissions and weak (implicit) permissions.[13]

The distinction has generally been taken to consist of two distinct readings of deontic modals. It is also reflected linguistically in the contrast between simple predicates (*be* + impersonal adjectival passive) as in (19a), which display the weak reading (as well as a strong one), and complex predicates (light verb + modal-object noun), as in (19b), which display the strong reading only:

(19) a. The patient is permitted to take a walk in the hospital garden.
b. The patient has (the) permission to take a walk in the hospital garden.

Possible-worlds-based semantics would attribute the same meaning to the two permission sentences: for permission sentences such as (19a) and (19b) to be true, the clausal complement would have to be true in some world compatible with the agent's obligations. But having a permission means more than that: it means that there was an act of giving a permission that provided new options to act and were then at the agent's disposal.

The linguistic difference between (19a) and (19b) is revealing as to the source of weak and strong permission readings. (19b) involves explicit reference to a permission, whereas (19a) contains a stative predicate

[13] The notions of weak and strong permission are due to Wright (1963).

is permitted to describing a deontic state. As expected, (20) only has the strong reading, as does any simple verb describing permission-giving, such as *offer* and *invite*:

(20) John gave Mary permission to take a walk.

The semantics of weak and strong permissions will be elaborated more formally in Chapter 4.

3.2.5. Truthmaker-related ontological operations for satisfiables

Satisfiables enter various ontological relations and operations. What is special about ontological operations applying to satisfiables is that they are content-related. This holds in particular for the operation of sum formation or fusion.

It is standard to assume that the domain of any type of object is closed under sum formation or fusion and that that would be needed for the semantics of definite plurals (*the students*) and conjunctions (*John and Mary*) (Link 1983 and subsequent research). But there is a particular difficulty that arises for that view when applied to satisfiables. Pluralities of satisfiables are certainly needed for the semantics of conjunctions of NPs standing for attitudinal or modal objects:

(21) a. John's belief that Mary is at home and his belief that Mary is working are mutually compatible.
b. The obligation to leave and the obligation to stay cannot both be fulfilled.

Predicates such as *are mutually compatible* and *cannot both be fulfilled* are plural predicates, requiring a plurality as the subject denotation, which is a plurality of satifiables in (21a, b).

Pluralities of satisfiables are also needed for the semantics of conjunctions of *that*-clauses:

(22) a. the claims that it is raining and that it is cold
b. the obligations to participate in the conference and to write a report

Given the view of *that*-clauses as predicates of satisfiables, conjunctions of *that*-clauses will denote properties of pluralities of satisfiables. There is a problem, however, if pluralities of satisfiables are taken to be fusions. Fusions should themselves be satisfiables again, but the fusion of two satisfiables would itself not have a content. 'The claim that it is raining and the claim that it is cold' (or 'the claims that it is raining and that it is cold') is not identical to 'the claim that it is raining and it is cold'. In fact, the operation of fusion applied to satisfiables could not yield pluralities of satisfiables. Fusions are defined in terms of the part relation applying to the relevant domain, but the part relation applying to satisfiables is that of partial content. This means that fusion of satisfiables could only amount to content merger ('the claim that it is raining and it is cold'), not the formation of a plurality ('the claims that it is raining and that it is cold'). Instead of taking pluralities of satisfiables to be fusions, a plural such as *the belief that* S *and the belief that* S or *the claim that* S *and that* S' are better treated in terms of plural reference, as terms that stand for two satsfiables at once (Oliver and Smiley 2016).

Plural reference to satisfiables thus needs to be distinguished from an operation of content merger applying to satisfiables. Content merger corresponds to a conjunctive *that*-clause such as *that it is raining and it is cold*. Thus, the attitudinal object that is 'John's belief that it is raining and it is cold' is the result of a content merger of 'John's belief that it is raining' and 'John's belief that it is cold'. 'The obligation to participate in the conference and write a report' is the content merger of 'the obligation participate in the conference' and 'the obligation to write a report'. Content merger *cont-merg* applied to two satisfiables consists in the introduction of a satisfiable of the same type whose content amounts to the conjunction of the contents of the two satisfiables:

(23) Content merger for satisfiables

For satisfiables d' and d'' of type T, cont-merg(d', d'') = the satisfiable d of type T such that $pos(d) = \{s \mid \exists s' \exists s''(s' \in pos(d') \,\&\, s'' \in pos(d'') \,\&\, s = s' \oplus s''\}$ and $neg(d) = \{s \mid s \in neg(d') \vee s \in neg(d''))\}$

Content merger applies only to satisfiables of the same type, for obvious reasons. But even then it is not freely applicable. It does not apply to act-related attitudinal and modal objects, such as claims and strong permissions.

It should apply only to state-related attitudinal and modal objects in a given context (beliefs, weak permissions).

The opposite of content merger is content separation *cont-sep*, which introduces a new satisfiable on the basis of a partial content of a given satisfiable:[14]

(24) Content separation for satisfiables
For a satisfiable *d* and a partial content *C* of *d*, cont-sep(*d, C*) = the satisfiable *d'* that is part of *d* and has *C'* as its content.

There are also conditions and operations on modal objects only, which will be introduced in Chapter 4.

3.3. Types of satisfaction predicates and the notion of direction of fit

3.3.1. Predicates of truth and predicates of fulfillment

Different types of satisfiables select different types of predicates of satisfaction. Deontic attitudinal and modal objects select predicates of fulfillment if they have the force of necessity (*fulfill*, *comply with*), and they select predicates of acceptance (*accept*, *take up*) if they are of the modal force of possibility. Object-based truthmaker semantics accounts for that difference in terms of the presence and absence of violators. But there is another distinction, that between truth predicates and predicates of fulfillment. Truthmaker semantics alone cannot account for that distinction, which involves a normative dimension. What exactly the normative aspect consists in can be illuminated by paying attention to the applicability and understanding of predicates of correctness, which display a close connection between truth and correctness understood as a non-action-guiding norm.

[14] The application of content separation is subject to restrictions as well. The existence of 'John's fear that the concert will take place and he will miss it' should not entail the existence of 'John's fear that the concert will take place'. In this construction, the first conjunct provides the background for the second conjunct, which is the actual focus of the fear.

3.3.2. Correctness of attitudinal objects and the normativity of truth

The predicate *correct* applies to attitudinal objects of the sort of beliefs and assertions by conveying truth and just truth:

(25) a. Mary's claim is correct.
b. John's belief is correct.

Propositions, by contrast, hardly allow for the application of *correct* on which *correct* conveys truth (or on which *correct* has a clear intuitive understanding at all):

(26) ??? The proposition that Mary is guilty is correct.

For the semantics of the predicate *correct* sharply distinguishes between actions and the corresponding attitudinal objects or products. When (27a) is true, (27b) need not be, and vice versa, and similarly for (28a) and (28b):

(27) a. John's claim that Mary won the award is correct.
b. John's making a claim / John's claiming that that Mary won the award was correct.

(28) a. The soldier's belief that the war can't be won is correct.
b. The soldier's adopting / maintaining the belief that the war can't be won is correct.

(27a) may be true without (27b) being true, for example if Mary's winning the award was supposed to be kept confidential at the time of making the claim. Similarly (28a) may be true without (28b) being true (soldiers ought to believe the way can be won, even if that's not true, in order to stay motivated). Acts of making an assertion or adopting or maintaining a belief may be correct because they follow a rule, instruction, order, or other action-guiding norm, not because they convey, adopt, or maintain a truth. Assertions and beliefs, by contrast, are evaluated as correct only according to the norm they are intrinsically associated with, the norm of truth.[15]

[15] Thomson (2008) argues against truth being normative and *correct* conveying normativity. For her, *correct* applies relative to a kind that fixes the standard that an object of that kind has to meet in

Correct is sensitive to the contrast between actions and products also when it does not convey truth, but the fulfillment of some other standard associated with a type of object:

(29) a. The proof that S was correct.[16]
b. The conclusion that S is correct.
c. The signature was correct
d. The punishment was correct.

When a proof or a conclusion is correct, it means that it followed the rules of logic; and that is compatible with the act of proving or concluding itself not being correct (such an act may go against a contextually given demand). When a signature is correct (which means it is authentic and of the right shape), the act of signing need not be (it may have been forbidden in the context in question). When a punishment is correct, it needs to be of the appropriate sort given the crime in question, but the act of punishing itself may have been discouraged and thus not be correct.

Correct simply cannot convey more than truth when applied to attitudinal objects such as beliefs and assertions. This is an important fact, which seems to go against the philosophical tradition of identifying conditions on the correctness of assertion as knowledge, justification, or belief (Williamson 1996, 2000).[17] In fact, what is discussed as the 'correctness of assertions' in that tradition is actually the correctness of acts of asserting, not the correctness of assertions, attitudinal objects.[18] Correctness is taken to consist in the fulfillment of an action-guiding norm, guiding the action of making an assertion,

order to count as correct. This is entirely in the spirit of the present account on which truth is the standard associated with a certain kind of attitudinal object. Unlike on the present view, Thomason does not take contextually given standards into consideration. Rather she takes the norms or standards associated with acts (of asserting) to be standards of 'internal correctness'.

[16] One may argue that proofs are correct by nature. Assertions and questions about the existence of a proof of a hypothesis seem to presuppose that. However, *proof* is in fact also used as a noun for something that may or may not be correct (*The proof he wrote down turned out to be incorrect, it contained a mistake*). Of course, the verb *prove* is factive: *John proved that* S implies the truth of S. But the verb is not the noun and the noun appears to be able to also stand for 'real' as well as 'potential' or attempted proofs. See also Loef (1987).

[17] Thomson (2008) argues that *correct* applies to assertions in two different ways depending on the meaning of *assertion*. When *assertion* stands for a proposition, *correct* conveys external correctness, such as truth; when *assertion* stands for an act of asserting, it conveys internal correctness, correct pronounciation or the use of a grammatical sentence, for example. I do not think this is reflected in linguistic intuitions concerning the noun *assertion*. Thomson relies on the standard view according to which *assertion* is polysemous. But that view, as we have seen in Chapters 1 and 2, is untenable.

[18] See Pagin and Marsili (2021) for an overview of that discussion.

not assertions themselves. The 'correctness of assertions' as the term is actually used is just the truth of assertions and has nothing to do with the correctness of asserting or making assertions.

The fact that *correct* when applied to beliefs conveys just truth has been acknowledged in philosophy. In fact, a number of philosophers have argued that the prescriptive use of *correct* when it applies to actions or states should be dissociated from a representation-relate use on which *correct* conveys just truth. Those philosophers include already Hegel (Kuenne 2003: 104–105) and more recently Hacker (2002), Hattiangadi (2006), and Thomson (2008). Hacker's argument focuses on language, when he writes, 'while to have a true or correct belief is to believe truly or correctly, it is not the believing that is true or correct. A's believing may be wise, foolish or thoughtless, if it is wise, foolish or thoughtless of A to believe that p, in which case A believes wisely, foolishly or thoughtlessly that p. But it is not wise, foolish or thoughtless that p. If A believes truly that p, it is not true of A to believe that p. `Truly' does not characterize the believing as do `wisely', `foolishly' and `thoughtlessly', nor does it characterize the manner in which the belief is held, as do `passionately' or `tentatively'. Rather, it is what is believed, namely that p, which is true or correct Ð if it is true or correct (to say) that p.' (Hacker 2002, 122f.). *Correct*, on that view, has a non-prescriptive use with beliefs conveying just truth, but a normative, action-guiding meaning when applied to actions and states.

Other philosophers have taken the close connection of correctness and truth in the case of belief to mean that belief is governed by a truth-directed norm. Thus it has been proposed that what is constitutive of belief is the norm that one ought to believe only what is true (Boghossian 2003, Gibbard 2005, Wedgewood 2002). On such a view, the correctness of a belief consists in the fulfillment of the norm governing the adoption or entertaining of belief, the norm that if one ought to believe p, then p is true. If such a norm is constitutive of the notion or the nature of belief itself, this means that belief itself and perhaps mental content more generally is normative (Boghossian 2003). The view, though, has been subject of serious critique (Hacker 2002, Glüer and Wikforss 2009). Norms for actions of adopting or maintaining a belief, for example, may easily be contextually given norms of some sort or another and not compatible with a norm that one should believe only what is true.

Still truth does seem to play a particular role for the notion of belief, as opposed to other attitudes such as assumptions. A belief that is not true is defective, but not so an assumption. Moreover, one can arbitrarily adopt or revise

an assumption, whether or not one takes it to be true, but not a belief. Thus there is a significant discussion about truth being the aim of belief, which concerns questions such as whether it is possible to believe something at will without aiming at truth and how truth as the aim of belief can be constitutive of the nature or the notion of belief (Williams 1973, Vellemann 2000). The issue of truth as the aim of belief is not relevant for the present issue, though, namely how to understand the correctness of attitudinal objects in the sense of truth. That is because the coincidence of correctness with truth pertains to other attitudes than belief as well, attitudes like assumptions that need not aim at truth.

Thus, an important observation is that *correct* applies to a much broader range of objects when conveying just truth. These objects include guesses, speculations, hypotheses, and assumptions, attitudinal objects that do not involve any effort at justification or for which aiming at truth is hardly constitutive:

(29) John's guess / speculation / hypothesis / assumption is correct.

Correct conveys truth with all and only those attitudinal objects that are 'acceptances' (Stalnaker 1984). This holds whether or not those objects are based on the fulfillment of any epistemic conditions and whether or not the agent fulfilled any prescriptive norms whatsoever. There are no particular normative conditions that acts of putting forward a guess or speculation or of making a hypothesis or assumption could be subject to and would be in any way constitutive of those attitudinal objects themselves.[19]

How can the coincidence of correctness and truth with acceptances be understood if it cannot be attributed to an action-guiding norm? In fact, the

[19] *True* actually does not apply to all attitudinal objects with which *correct* conveys just truth. *True* hardly applies to guesses, hypotheses, assumptions, answers, and impressions. It is not even good with thoughts:

(i) a. ??? Joe's guess/impression is true.
b. ??? Mary's thought was true.

This suggests that it is in fact *true*, rather than *correct* that requires warrant in addition to truth.
There are also cases in which *true* is appropriate, but not *correct*:

(ii) a. The story the children were told is true.
b. ?? The story the children were told is correct.

A plausible reason is that the aim of the story is not truth, but, say, entertainment. This would also hold for things like propaganda and publicity, attitudinal objects, in a sense, whose aim is not truth, but influencing the mental states of the audience.

notion of a norm itself need not be understood prescriptively, as applying to actions. Rather than being action-guiding, truth is better understood as a teleological norm, which is strictly associated with a type of representational object as its purpose or 'telos' (Jarvis 2012). As a teleological norm, truth is associated with mental states like beliefs as well as products of acts such as judgments, assumptions, and assertions.

Truth as a non-action-guiding norm goes along well with the notion of a direction of fit. The notion of direction of fit, like correctness when conveying truth, applies to representational objects, that is, attitudinal objects. Even though standardly applied to speech acts (Searle 1969, 1983), it is in fact not a notion suited for actions.[20] The notion of direction of fit presupposes that the object it applies to constitutes a linguistic or mental representation: an object has word/mind-to-world direction of fit just in case the representation is to fit the world, and it has a world-to-word/mind direction of fit just in case the world is to fit the representation.[21]

The notion of direction of fit also applies to non-propositional representations such as thermometers and other forms of measurements. A measurement comes with a world-to-word/mind direction of fit, and a measurement is correct if it matches what is being measured.

The attitudinal objects to which *correct* when conveying just truth applies, acceptances, are just the attitudinal objects that come with a word/mind-to-world direction of fit, that is, attitudinal objects whose content ought to fit the world, rather than the other way around. Truth as a norm is then associated with all attitudinal objects with a word/mind-to-world direction of fit.

Particular attitudinal objects may be subject to other norms in the context, but *correct* cannot evaluate the fulfillment of those norms: *correct* gives strict priority to the norm intrinsic to the type of object. Assumptions and hypotheses might be well-chosen for the purpose at hand, but that is not what *correct* would evaluate. Instead, this is a matter for evaluation by the predicate *good* (*a good assumption*, *a good hypothesis*). The difference between *correct* and *good* is particularly striking for answers. A 'correct answer' is something quite different from a 'good answer'. *Correct* with answers

[20] Searle, like the majority of analytic philosophers, of course failed to make the distinction between illocutionary acts and illocutionary objects (roughly, the action-product distinction).

[21] The notion of direction of fit was applied to mental states by Searle (1983) and also by Velleman (2000), who draws the distinction between cognitive states (mind-to-world direction of fit) and conative states (world-to-mind direction of fit).

conveys truth, whereas *good* conveys fulfillment of a relevant standard or interest.[22]

Correct does not apply to attitudinal objects that come with a world-to-word/mind direction of fit such as requests, desires, fears, and hopes by conveying fulfillment. With such objects *correct* can at best convey the fulfillment of some contextually given norm (*the request was correct*) and, in the case of desires, fears, and hopes, perhaps conditions on the appropriateness of emotions (Deonna and Teroni 2022).[23]

Correct can also be predicated of sentences, but it then does not convey truth:

(30) a. This sentence is true.
b. This sentence is correct.

When predicated of sentences, *correct* evaluates grammaticality rather than truth. This is because the norm associated with a syntactic object is grammaticality rather than truth.

To summarize, *correct* applies to an object with a single reading just in case the type of object is associated with a particular norm. *Correct* applies to beliefs, judgments, claims, as well as guesses and speculations with a single reading conveying truth because those attitudinal objects come with a word/mind-to-world direction of fit and are associated with the norm of truth. This association is quite different from the norms that actions of judging or claiming or actions of adopting or maintaining a belief may be subject to.

Conveying truth (and only truth) with beliefs and assertions is not a lexical peculiarity of English *correct*. Other predicates of correctness in English display the very same reading with beliefs and assertions, for example *right* and, for falsehood, *wrong*, as do corresponding predicates in other European

[22] This holds even for stories and propaganda. See note 19.

[23] Deonna and Teroni (2022) argue that emotions are subject to correctness conditions. On their view, for example, Joe's fear of bears is correct in case bears are dangerous. Note, however, that predicates like *correct* or *right* do not apply very well to emotions, conveying the fulfillment of such conditions:

(i) ?? Joe's fear/desire is correct/right.

Note, though, that fears may be 'warranted' or 'justified'.

Predicates of correctness may apply to the state of the agent having the emotions, which is something different from the predicates applying to the emotions themselves:

(ii) a. Joe is right in fearing bears.
b. Joe's fearing bears is right.

languages.[24] This is of course expected if a predicate conveys the fulfillment of a norm and it is in the nature of entities like beliefs, judgments, assertions, and guesses to come with a norm that is truth.

3.3.3. The notion of direction of fit

Truth as a property of satisfiables is part of another more general notion, namely satisfaction. Various types of satisfiables do not have truth conditions but rather satisfaction conditions, and some have both satisfaction and violation conditions.[25] Satisfaction (and violation) conditions in turn divide into different sorts, expressed by different natural language predicates. Illocutionary products that are requests, demands, promises, pieces of advice, or permissions cannot be 'true', but they can be 'satisfied', 'fulfilled', 'complied with', 'kept', 'followed', or 'taken up'.[26] A demand or a promise cannot be 'false', but instead a demand can be 'ignored' or 'contravened' and a promise 'broken'. Mental objects such as desires and hopes could not be 'true', but they can be 'fulfilled'. Finally, decisions and intentions cannot be true, but would be carried out or implemented.

What characterizes attitudinal objects of this kind is that they come with a world-to-word/mind direction of fit, rather than a 'word/mind-to-world direction of fit. They require the world to fit the representation, rather than the representation to fit the world. Thus, illocutionary objects like demands and promises are fulfilled if an action of a particular type is performed, as specified by the complement clause.

[24] Sometimes a language displays only the normative predicate and no specific truth predicate. Thus, German has only *falsch*, the antonym of *richtig* 'correct', conveying mere falsehood with claims and beliefs, as well, for example, failure to follow the choreography with dance movements (Moltmann 2015a). German *stimmen* is a predicate that expresses a more restricted notion of correctness, relating to norms of the sort of prescriptions and rules, but not moral values, as seen in (ia); yet it conveys truth (and only truth) with assertions and suppositions, as in (ib) (Moltmann 2015a):

(i) a. Der Tanzschritt/??? Die Bestrafung stimmt.
'The dance step / The punishment is correct.'
b. Die Aussage / Die Annahme stimmt.
'The claim / The supposition is correct.'

[25] In intuitionism, truth is in fact replaced by (or explained in terms of) satisfaction. Thus, rather than taking propositions to consist in truth conditions, propositions are taken to consist in an expectation or intention that is to be fulfilled by a proof (or evidence) (Heyting) or else in a problem or task to be resolved by a proof (or evidence) (Kolmogorov) (Löf 1987, p. 410).

[26] A promise, of course, can be said to be a true promise or a false promise, but only in the sense of being made sincerely, not in the sense of being fulfilled.

In its application to attitudinal and illocutionary objects, the direction of fit is a normative notion that is reflected in attributions of correctness to either the object or its satisfiers in the following way.[27] An attitudinal object with a word/mind-to-world direction of fit (assertion, belief, assumption) is correct just in case it is true, or, in truthmaker-semantic terms, there is a part of the world that makes it true. An action performed in recognition of an illocutionary object with a world-to-word/mind direction is correct in case it satisfies the attitudinal object.[28] An attitudinal or illocutionary object that comes with a word/mind-to-world direction of fit is itself subject to a norm (truth); an illocutionary object that comes with a world-to-word/mind direction of fit, by contrast, imposes an action-guiding norm or purpose:

(31) Characterization of direction of fit
   i. An attitudinal object *d* has a *word/mind-to-world direction of fit* just in case *d* satisfies its intrinsic norm ('is correct') in a world *w* iff *w* makes *d* true.
   ii. An illocutionary object *d* has a *world-to-word/mind direction of fit* just in case any action *a* performed in recognition of *d* satisfies the norm imposed by *d* ('is correct') in a world *w* iff *a* is part of *w* and satisfies *d*.

(31ii) only mentions illocutionary objects; mental objects such as desires and hopes present a challenge to (31ii), which I will address in the next section.

Correct fails to convey satisfaction when applied to attitudinal objects that come with a world-to-word/mind direction of fit. A request cannot be 'correct' in the sense of being satisfied, though of course it can be 'correctly satisfied'.[29] This can be attributed to the particular normative nature of a world-to-word/mind direction of fit, which imposes a norm on actions performed in recognition of the representational object, but not on the representational object itself, unlike a word/mind-to-world direction of fit.

[27] What follows holds for predicates of correctness in general, including *right* and *wrong*.

[28] 'In recognition of' is meant to capture Searle's (1983) point that only actions by way of recognizing a request or intention can satisfy the request or intention. Thus, if my intention to kill my neighbor makes me so distracted that I cause a car accident by which my neighbor is killed, my intention won't have been carried out and the action of killing my neighbor won't count as a satisfier of the intention.

[29] Jarvis (2012) mistakenly takes correctness to also apply to conative mental states such as intentions, pointing to the possibility of an intention being 'correctly realized'. But in *correctly realized*, *correctly* applies to the action that aims to realize the intention, not the intention, the mental state, itself.

The account of the notion of direction of fit in (31)-made essential use of truthmaker semantics. That is because truthmaker semantics allows actions to be exact satisfiers of requests, demands, and promises and thus count as 'correct'. The satisfaction of illocutionary objects like demands and requests may also be conveyed by agentive verbs, with the *by*-locution describing a particular action as the satisfier:

(32) a. John fulfilled the demand by handing in the paper in time.
b. John followed the request by staying home.

The notion of a direction of fit as construed in (31) provides an additional motivation for truthmaker semantics applied to attitudinal objects, given that correctness applies to satisfiers in (31ii).

3.3.4. The direction of fit of hopes and desires

There are cases in which appeal to the direction of fit is not straightforward and does not so obviously account for the choice of the satisfaction predicate. In particular, non-factive attitudinal objects associated with a positive emotion or preference such as hopes, desires have fulfillment conditions, rather than truth conditions:[30]

(33) John's hope / desire that he would win yesterday was fulfilled / ??? true.

But it is not obvious how a world-to-word/mind direction of fit should be understood with hopes and desires, since hopes and desires do not always require actions to satisfy them, unlike requests and commands.

[30] Note, though, that hope can also be directed toward the past:

(i) ??? John's hope that his wife was not his cousin has fulfilled itself.

Note also that future-oriented hope can 'become true', though a present-oriented hope can neither 'be true' nor 'become true':

(ii) a. John's hope that he would win became true.
b. John's hope that the key had remained in the lock was fulfilled / ??? was true / ??? became true.

By contrast, predictions, which can only be future-oriented, can always be 'fulfilled' or 'become true' (though, again, they could not 'be true'). This indicates that *become true* does not relate to epistemic uncertainty regarding the present or past, but metaphysical indeterminacy of the future.

One might think that instead of the direction of fit, it is the future-orientedness of hopes and desires that is responsible for them having fulfillment conditions rather than truth conditions. However, fears, which tend to be equally future-oriented, do not accept *be fulfilled* as a satisfaction predicate, and neither does future-oriented *believe*:

(34) a. ??? John's fear that he would lose was fulfilled.
b. ??? John's belief that he would win was fulfilled.

A better explanation why positive emotive attitudes go with *be fulfilled* rather than *be true* may be based on what actually sets up a direction of fit. Positive emotive attitudinal objects like hopes and desires imply a positive emotive response to their satisfaction (under normal circumstances), and reaching that positive response requires for a part of the world to make such an attitudinal object true, rather than the attitudinal object aiming to represent the world. The positive emotive response that a hope is directed toward constitutes a kind of norm or purpose and as such imposes a requirement on the world, rather than being subject to a requirement itself. Negative emotive responses that go along with a fear becoming true do not seem to be able to set up such a norm or purpose. A merely doxastic attitudinal object such as a belief has as its norm or purpose the accuracy of the representation only, and that imposes a requirement on the belief rather than on the world. In that sense, then, hopes and desires, even though they do not require actions to be their satisfiers, involve a world-to-word/mind direction of fit, rather than the word/mind-to-world direction of fit of merely doxastic attitudinal objects.

3.3.5. Satisfaction conditions of intentions and decisions

Attitudinal objects such as intentions and decisions are generally taken to involve a world-to-word/mind direction of fit. But the satisfaction of intentions and decisions is not conveyed by predicates of fulfillment. Rather than being 'fulfilled', decisions and intentions are 'carried out'; and in addition decisions may be 'executed' and intentions 'realized'.

What distinguishes desires, requests, and orders from intentions and decisions? Intentions and decisions bear a closer connection to their satisfiers in a particular sense. Requests and orders impose social norm on actions performed in recognition of them, and thus their satisfiers qualify as

'correct'. Desires do not impose a social norm, but they impose a standard or aim on actions or situations, as was just discussed. Decisions and intentions do not impose a norm or standard: not carrying out a decision or intention does not violate a norm or standard, it only frustrates what the agent set out to do. Decisions and intentions rather cause the actions performed in recognition of them that that carry them out, or at least attempts of performing such actions.

3.4. Conclusions

There have been specific motivations to apply truthmaker semantics to satisfiables besides the general advantages of truthmaker semantics over possible-worlds semantics and the expectation that it provide a general theory of content. These motivations include the fact that satisfiables come with a notion of partial content and that only truthmaker semantics, not possible-worlds semantics, permits formulating a unified meaning of sentences as a property applicable to satisfiables of both necessity and possibility.

Satisfiables display differences in satisfaction conditions not all of which can be accounted for in truthmaker-semantic terms. Three types of satisfaction conditions for satisfiables have been distinguished:

(35) Distinctions among satisfaction conditions of satisfiables
   a. Conditions of acceptance
      Satisfiables of possibility, which come with satisfiers, but no violators (suggestions, proposals, offers, invitations)
   b. Truth conditions
      Satisfiables that come with a word/mind-to-world direction of fit (beliefs, judgments, claims, guesses, epistemic modal objects)
   c. Fulfillment conditions
      Satisfiables that come with a world-to word/mind direction of fit (hopes, desires, requests)
   d. Realization conditions
      Satisfiables that cause attempts at their satisfaction (decisions, intentions)

Object-based truthmaker semantics is able to account only for what is distinctive about conditions of acceptance, by not attributing violators to satisfiables of possibility. It does not provide the normative notions involved in the notion of direction of fit, which underlies the distinction between truth conditions and fulfillment conditions. Likewise it does not provide causal notions at play for what distinguishes realization conditions from truth conditions and fulfillment conditions. This means that truthmaker semantics is to be embedded in a richer semantics of mental and illocutionary objects in which normative and causal notions play a role as well.

Appendix 3.1
Truth predicates in natural language and deflationist and minimalist views of truth

In object-based truthmaker semantics, truth is a property of satisfiables and as such part of a greater ranger of properties of satisfaction. This view differs significantly from deflationalist and minimalist theories of truth (Horwich 1990, Künne 2003). This appendix gives a brief critical discussion of those theories, focusing on Horwich's (1990) version of deflationism.

Deflationists and minimalists deny that *true* expresses a real property, but they do not necessarily make claims about the syntactic status of *true*. Horwich's (1990) version of deflationism only says that what constitutes having the concept of truth is the knowledge of the equivalence schema below, where [-] is a nominalization function (roughly corresponding to the complementizer *that*):

(1) [(*that*) S] is true iff S.

As stated in (1), this deflationist view still makes certain semantic assumptions. First, it gives priority to the clausal construction. (1) is applicable only when *true* applies to a *that*-clause and not when it applies to a referential DP. Given (1), the application of the truth predicate amounts to the denominalization of the proposition-referring term, the *that*-clause, and the use of the sentence thus obtained.

The assumption that *that*-clauses are proposition-referring terms, we have seen, is mistaken (Chapter 1 and also Chapter 5).

Moreover, (1) could not apply to the normative predicate *correct* conveying truth when applied to some objects but not others. *Correct*, in fact, does not even apply to propositions. It applies only to entities like beliefs and assertions. In addition, it is far from clear that there is such a thing as a mind-independent abstract proposition, a truth bearer that is not itself constituted by the intentionality of agents. Truth, on the view adopted in this book, is intimately linked to intentionality and the ability to represent. Attitudinal objects as agent- and mind-dependent objects reflect that link, abstract propositions don't.

Moreover, (1) cannot be extended to predicates of satisfaction, which on the present view include *true* as a special case. For a schema like (1) to cover predicates of satisfaction, it would have to apply to what amounts to the nominalization of an imperative, let's say to a term for a request. But the satisfaction of a request does not amount to the use of an imperative. The latter serves to *make* a request, not to satisfy it. In addition, the deflationist account could not apply to agent-related satisfaction predicates, such as *comply with* or *fulfill*.

4

Object-Based Truthmaker Semantics for Modals

The semantics of modals this chapter will develop centers on the ontology of modal objects and the application of truthmaker semantics to such objects. It can thus be called 'object-based truthmaker semantics for modals'. Modal objects, entities like obligations, permissions, needs, options, strategies, epistemic states, dispositions, abilities, and perhaps essences, are all carriers of satisfaction conditions, which will be taken to be truthmaking conditions. Modal objects come with satisfiers and some also come with violators, namely modal objects with the force of necessity. The involvement of modal objects in the semantics of modals has a range of philosophical and linguistic motivations, regarding distinctions between modal objects that underlie notions such as that of weak and strong permissions and the actual modal expressions there are in natural language.

This chapter will not deal in detail with the different types of modals, but rather focus on deontic modals with their distinction between strong and weak permissions and obligations. It will only briefly address the question of how object-based truthmaker semantics can be extended to other modals, based on modal objects such as epistemic states, dispositions, and essences.

We have seen that modal objects are to an extent overtly reflected in natural language, though less so than attitudinal objects. Nouns such as *need*, *permission*, *obligation ability*, *disposition*, *option*, and *strategy* denote modal objects. We have also seen that the distinction between weak and strong permissions is reflected in the distinction between the predicate *be permitted* (weak and strong reading) and the complex predicate *have permission* (only strong reading) with its explicit reference to a strong permission. Modal auxiliaries in English such as *can*, *may*, *must*, and *should* do not come with nominalizations. Yet modal objects should play the same role in the semantics of modal sentences whether or not the sentences contain nouns that make explicit reference to such objects.

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Quite independently of their linguistic reflection, notions close to that of a modal object figure in certain recent theories of modalities, such as the notion of an essence in Fine's (1994) theory of metaphysical modality and the notion of a potentiality in Vetter's (2015) theory of circumstantial modality. Like those approaches, object-based truthmaker semantics of modals treats modality locally, tying the truth of a modal statement to a particular modal object (which pertains sometimes to a particular individual), rather than starting out with a set of possible worlds.

Object-based truthmaker semantics when applied to deontic modals aims to account for inferences recognized as valid in standard deontic modal logic as well as inferences that are intuitively valid or invalid, but do not come out as such in standard deontic logic. There are a range of similarities with Fine's (2018a, b) sentence-based truthmaker semantics of deontic modals, and a comparison of the two approaches will be given at the end of this chapter.

In what follows, I will give a general outline of object-based truthmaker semantics of modals, with its various linguistic and philosophical motivations. I will focus on deontic modals and turn to applications to other modals only at the end.

4.1. A semantics of modals based on modal objects

4.1.1. The logical form of modal sentences

Object-based truthmaker semantics of modals leads to radically different logical forms of modal sentences than the standard semantics of modals. On the standard view, modals are represented as operators, generally interpreted as quantifying over a restricted set of possible worlds that act as parameters of evaluation for the prejacent of the modal:

(1) a. John needs to leave.
b. $\forall w'(w' \in f(w) \rightarrow [\textit{John leave}]^{w'} = \text{true})$

(2) a. John is allowed to leave.
b. $\exists w'(w' \in f(w) \,\&\, [\textit{John leave}]^{w'} = \text{true})$

Different modals involve different sets of worlds, depending for the most part on the context of use rather than the particular modal that is chosen.

The function *f* maps the world *w* at which the entire sentence is evaluated to the relevant set of worlds, depending on the type of modality or modal flavor.

Modals in natural language are actually not obviously best represented by modal operators or quantifiers ranging over worlds. Modals in natural language belong to various different syntactic categories none of which is explicitly quantificational. Modals may take the form of modal auxiliaries (*may*, *must*, *could*, *should*), modal full verbs (*need*, *is obliged to*, *is permitted / allowed to*), modal adjectives (*possible*, *necessary*, *obligatory*, *optional*), adverbs (*possibly*, *necessarily*, *perhaps*, *certainly*), and nouns (*need*, *possibility*, *necessity*, *permission*, *obligation*). In addition, there are agentive verbs that convey modality (*allow*, *forbid*, *promise*, *offer*, *order*). Generally, it appears that modals across languages do not take the form of quantifiers, in contrast to temporal expressions. For example, a quantifier like *sometimes* can be used in many languages to range over both times and events; but it generally cannot be used to quantify over worlds (as noted by Viola Schmitt, p.c.).

This concurs with a central assumption of object-based truthmaker semantics of modals. On that semantics, modals do not play the semantic role of operators quantifying over worlds, but rather, simplifying, act as predicates of modal objects of the various kinds. Thus, modal auxiliaries and full modal verbs, modal adverbs, and modal nouns are (simplified) considered predicates of modal objects. Furthermore, the prejacent, complement clause or subject clause in a modal sentence acts as a predicate of the modal object, giving its satisfaction conditions. The modal sentence itself involves existential quantification over modal objects. Thus, the logical form of (3a) will be (3b), where 'prop([*S*])' denotes the property of modal and attitudinal objects of, roughly, sharing their satisfaction conditions with the sentence *S* (as defined in the previous chapters and given again shortly):

(3) a. John needs to leave.
b. $\exists d$(need(d) & *prop*([*John to leave*])(d))

Modals of necessity and of possibility lead to the very same logical form, the difference in forces (or strengths) will reside entirely in the truthmaker-based content of the corresponding modal objects. Thus, the logical form of (4a) will be as in (4b):

(4) a. John can leave.
b. $\exists d$(can(d) & *prop*([*John to leave*])(d))

In object-based truthmaker semantics, the difference between obligations and permissions resides entirely in the satisfaction conditions of the corresponding modal objects: modal objects of necessity have both satisfiers and violators, whereas modal objects of possibility have only satisfiers.

Whereas on the standard view, modals come with a sentential scope, modals as predicates of modal objects come with what I will call a 'clausal predicate'. The clausal predicate of a modal is a sentential unit that acts semantically as a predicate of the modal object argument of the modal. The clausal predicate may be a sentential subject (for modal predicates like *is necessary* or *is permitted*), a clausal complement (for modal predicates like *is allowed* or *need*), a prejacent (for modal auxiliaries), the scope of an adverb (for *necessarily* or *essentially*), and a modifier of a noun (*obligation*, *permission*, *need*). The clausal predicate will in all cases serve to give the satisfaction conditions of the modal object.

There are also complex modal predicates like *have* (*the / a*) *need*, consisting of a light verb (*have*), a noun for a modal object (*need*), and a clausal modifier of the noun:

(5) John has a need to sleep.

Harves and Kayne (2012) in fact argue that the modal verb *need* is derived syntactically from an underlying complex predicate *have need.*[1]

Other complex modal predicates of this sort include *have the ability to*, *have permission to*, *have the obligation to*, and *have the option of*. Sometimes only the complex predicate is available, for example 'need' in French (*avoir besoin*) and Italian (*avere bisogno*). There can be semantic differences, though, between simple and complex modal predicates. In particular, the simple predicate *be permitted* and the complex predicate *have permission to* differ in interpretation (see Section 4.2.2.).

Applying the same analysis as in (3) and (4) to complex modal predicates as in (6a) and (7a) will yield the logical forms in (6b) and (7b), respectively:

(6) a. John has an obligation to leave.
b. $\exists d$(have(John, d) & obligation (d) & *prop*([*John to leave*])(d))

[1] In Chapter 5, I will endorse the view that the interpretation of attitude reports is based on underlying complex predicates as in (5), a view that will not necessarily extend to modal auxiliaries, for which a decompositional analysis has less plausibility.

(7) a. John has permission to leave.
b. $\exists d$(have(John, d) & permission(d) & prop([*John to leave*])(d))

Again, the derived meaning *prop*([*John to leave*]) of the clausal predicate *John to leave* (on which it is a predicate of attitudinal and modal objects) applies to an obligation in (6a) and a modal object that is a permission in (7a), specifying the satisfaction conditions of the obligation and the permission, respectively.

For present purposes, I will assume that the various modal expressions all have an argument position for modal objects and that the clausal predicate, whatever forms it takes, acts as a predicate of the modal object.

4.1.2. Modal objects and their truthmakers

Object-based truthmaker semantics centers on the notion of a modal object, a particular subtype of a satisfiable object. Let us therefore quickly review and extend what was said about modal and attitudinal objects in Chapter 2 in general.

Modal objects share characteristic properties with attitudinal objects, properties that jointly distinguish them from events, acts, and propositions and that are reflected both in language-based and language-independent intuitions. Most importantly, modal and attitudinal objects share content-related properties such as having satisfaction conditions and having a part structure based on partial content. While attitudinal objects generally display features of concreteness (limited lifespan, causal efficaciousness, perceivability), modal objects can be more abstract, as is the case for modal states (such as weak permissions and weak obligations). Laws, rules, commitments, permissions, and offers are modal objects that are abstract artifacts in the sense of artifacts that lack a physical realization (if they are not written down) and that may endure past the act that created them (depending on their intended validity).

Some modal objects are associated with illocutionary acts or mental states, for example deontic modal products (laws, permissions). Moral obligations, by contrast, need not have been produced by particular acts.[2] Other modal

[2] There are also views, though, according to which moral obligations and permissions are created by acts of god (pointed out to me by Kit Fine).

objects that are not modal products include abilities (circumstantial modality) and essences (metaphysical modality). Modal objects may also be constituted by evidence (epistemic modality) and conditions regarding a particular aim (teleological modality).

Illocutionary acts may at once come with illocutionary products and with modal products. An act of commanding comes with a command, an illocutionary product, and, under the right circumstances, an obligation on the part of the addressee. An act of asserting or promising comes with a promise, that is, an illocutionary product, as well as an enduring commitment, a modal product. Modal products share with the corresponding illocutionary product their content-related properties (but not necessarily their duration).[3]

Given object-based truthmaker semantics, not only sentences are associated with a content consisting of a set of satisfiers and a set of violators, but also modal (and attitudinal) objects. The satisfiers of modal objects may be of different sorts, depending on the nature of the modal object. Modal objects that are obligations or permissions generally have actions as satisfiers, whereas modal objects of epistemic, circumstantial, or metaphysical sorts generally have situations (in the narrow sense) as truthmakers. Situations and actions play the very same roles within truthmaker semantics, that is, they play the same roles in truthmaking conditions of complex sentences. Sentences regardless of what they may be embedded under have satisfaction conditions that can be met by both actions and situations. Sentences of different types may impose certain conditions on their satisfiers (imperatives generally require actions as satisfiers, declaratives require situations). In the case of clausal predicates of modals, it is the modal object that determines the type of satisfiers it may have (actions may be satisfiers of circumstantial modal objects, but not epistemic ones).[4]

I will use the symbol '⊩' to stand for the relation of exact truthmaking or satisfaction both between situations or actions and sentences and between situations or actions and modal objects. It comprises different sorts of satisfaction relations reflected in the use of different satisfaction predicates applicable to modal objects, the truthmaking, satisfaction, fulfillment, acceptance,

[3] An act of permitting comes with both a permission as an illocutionary product and a permission as a modal product; likewise for offers, which come with acts of offering. Nominalizations such as *permission* and *offer* are polysemous, denoting both illocutionary products and modal products.

[4] The view that it depends on the modal object itself what its satisfiers are differs from that of Fine (2018a, b), who makes the choice of types of satisfiers strictly dependent on types of sentence. As a consequence, Fine (2018a, b) takes deontic modals to select imperatives, which have only actions as truthmakers. Such an assumption is avoided on the present approach. That deontic modals apply to imperative sentences in some form is implausible linguistically since there is nothing imperative-like about the prejacent of a deontic modal.

compliance, manifestation, and realization relation. The symbol '$\dashv\!\Vdash$' will be used for the relation of exact falsification or violation between situations or actions and sentences or modal objects. A modal object *d* is associated with a positive extension (pos(d) = $\{s \mid s \Vdash d\}$) and a negative extension (neg(*d*) = $\{s \mid s \dashv\!\Vdash d\}$). Sentences embedded under modal predicates can semantically act as predicates of modal objects in virtue of the derived meaning below (defined already in Chapter 3, Section 3.2.3.):

(8) Truthmaker-based derived meaning of sentences
For a clausal predicate *S*, $prop([S]) = \lambda d[pos(d) = pos(\mathrm{S}) \,\&\, (neg(d) \neq \emptyset \rightarrow neg(d) = \mathrm{neg}(S))]$.

A clausal predicate can apply with the meaning (8) both to modal objects that have violators (modal objects of necessity) and modal objects that lack violators (modal objects of possibility).

Modal objects, being objects, cannot be negated; only the clausal predicates that apply to them can, as in (9):

(9) You should not open the window or the door.

(8) takes into account negated clausal predicates. According to (8), the satisfiers of the obligation described in (9) are just the actions that falsify *you open the window or the door* (and thus that fail to verify *you open the window* and *you open the door*). Less straightforward is the case of prohibitions (*You are forbidden to open the window*). The clausal predicate of a prohibition gives the violation conditions of the modal object, not its satisfaction conditions. Here decomposing the predicate syntactically is the most obvious solution (*forbidden to* VP = *obliged not to* VP).

Object-based truthmaker semantics also applies to independent sentences when uttered with a performative use of a modal in mind. Deontic modals when used performatively make the same contribution as imperatives used under circumstances under which they set up an obligation or permission (Lemmon 1962a, Portner 2007, Kaufmann 2012):

(10) a. You must leave the room!
b. You may take an apple!

As will be elaborated in Chapter 5 (Section 5.1.4.), the prejacent of a performative modal can then be taken to express a property of utterances meant to

produce a modal object (obligation or permission) of which the prejacent is true. If '$\angle$' stands for the relation that holds between things like utterances and objects produced by them, then this yields (11) as the meaning of (10a):

(11) $\lambda u[\exists d(u \angle d \,\&\, \text{must}(d) \,\&\, \textit{prop}([\textit{you leave the room}])(d)]$

That is, (10a) expresses a property of utterances whose products are modal objects of necessity that share their satisfiers and violators with the clausal predicate you leave the room.

This kind of meaning will be important also for the analysis of harmonic modals (Chapter 5, Section 5.3).

Adopting (8) as the meaning of clausal predicates applying to modal objects may seem problematic in view of the fact that clausal predicates may underspecify the satisfaction conditions of a modal object, in examples such as (12):

(12) John needs to write a book (in order to get tenure).

The need described by (12) is not simply satisfied if John writes some book or other. It is satisfied only when he writes a book in his field that gets published by a sufficiently good publisher. This suggests that in a need report, the clausal complement of *need* may give only necessary, not sufficient conditions on the satisfaction of the reported need. Cases of underspecification of this kind have been discussed by Fara (2013) in the context of desire reports. In my previous work (Moltmann 2017a, 2018a, 2020a), I took such under specification to mean that clausal predicates give only a partial content of an attitudinal or modal object to which they apply. I now take the view that they generally give the complete content, and that modal and attitudinal objects with a world-to-word/mind direction of fit (e.g., needs and desires) constitute special cases. I will discuss the issue further in an appendix to Chapter 5.

4.1.3. Modal objects and the notion of a modal base

Modal sentences are often understood against a set of background assumptions. Thus, a sentence like (13) does not claim that in all ideal worlds John is speeding. Rather (13) is understood against a background assumption on which John is speeding and claims that in ideal worlds he therefore pays a fine:

(13) John must pay a fine for speeding.

The phenomenon was a motivation for Kratzer's (1981, 1991) notion of a modal base within the standard view of modals: the modal base consists in the set of worlds in which the background assumptions are true. The ordering source, by contrast, orders those worlds according to the type of modality, deontic, epistemic, etc.

There is a way of incorporating the modal base into object-based truthmaker semantics of modals (as well as that of attitude reports). Modal objects (and attitudinal objects) may come with a background, which itself can be conceived as a modal or attitudinal object, an object whose truthmakers make the background assumptions true and whose falsifiers make them false. Such a modal object then will be a more complex object *d*/*d'* composed of a simple modal object *d* and a background *d'*. Then the following condition will obtain for the satisfaction and the violation of such a backgrounded modal object:

(14) For a backgrounded modal object *d*/*d'* with background *d'*,
for any situation *s*, $s \Vdash d/d'$ iff $\exists s \exists s''(s = s' \oplus s''$ and $s' \Vdash d$ and $s'' \Vdash d')$
for any situation *s*, $s \dashv\!\Vdash d/d'$ iff $\exists s' \exists s''(s = s' \oplus$ s'' and $s' \Vdash d$ and $s'' \dashv\!\Vdash d')$.

That is, a situation satisfies a backgrounded modal object just in case it is composed of two situations one of which satisfies the background and the other the simple modal object (foreground). A situation violates a backgrounded modal object just in case it is composed of two situations one of which satisfies the background and the other violates the simple modal object (the foreground). Thus, a situation satisfies or violates the obligation described in (13) only if it has a part that is a situation in which John has been speeding. Situations that fail to have such a part neither satisfy nor violate that obligation.

Backgrounds of modal objects correspond to presuppositions of attitudinal objects and as such will be addressed again in Chapter 5 (Section 5.1.3.). They also a play a role in certain modal paradoxes, as we will see.

4.1.4. Graded and comparative modality

The semantics of modals based on an ontology of modal objects can shed a new light on graded and comparative modality:

(15) a. There is a good possibility that it will rain.
b. There is a slight possibility that Joe might come back.
c. There is a better possibility that it will rain than that it will snow.

Cases of graded and comparative modality as in (15) have been analyzed within standard modal semantics by Kratzer (1981, 1991) making use of a preference ordering among possible worlds (ordering source) (see also Portner 2009, Chapter 3, Section 1.3.). Without going into that analysis itself, here is a quick indication of the new perspective on graded and comparative modality that object-based truthmaker semantics of modals opens up. In fact, that perspective just matches the linguistic structure of the sentences in (15): graded modality, as in (15) involves modifications of modal-object nouns (*possibility*) and thus a comparison first of all among modal objects. This then suggests that satisfiers of the compared modal objects inherit an ordering from the modal objects, as roughly below, where > is the relevant ordering 'being better / greater than' holding both between modal objects and (derivatively) between satisfiers of modal objects:[5]

(16) a. The possibility that S is better than the possibility that S'.
b. For modal objects of possibility d and d', $d > d'$ iff for any situations s and s', if $s \Vdash d$ and $s' \Vdash d'$, then $s > s'$.

The comparison of modal objects of necessity as in (17a) imposes an ordering on both satisfiers and violators, as given in (17b):

(17) a. The necessity for John to work is greater than the necessity for John to rest.
b. For modal objects of necessity d and d', $d > d'$ iff for any situations s and s', if $s \Vdash d$ and $s' \Vdash d'$, then $s > s'$, and for any situations s and s', if $s \nVdash d$ and $s' \nVdash d$, then $s' > s$.

Recasting graded modality in terms of an ordering among modal objects promises a account of the phenomenon in its full generality.[6]

Probabilities allow for an even greater range of modifiers (*high*, *low*, *slight*, *minimal*) as well as measure phrases (*zero*, *ten percent*). The semantics of probability nominals is different, though, from that of nominals for modal objects. NPs like *the probability that it will rain* denote qualities of states of affairs (or tropes with states of affairs as bearers), rather than modal

[5] Of course, the modal objects themselves may be backgrounded modal objects.
[6] See Portner (2009, chap. 3) for a discussion of the possible-worlds account and its limits for certain cases of graded modality.

objects that carry satisfaction conditions, a difference that will be elaborated in Chapter 7). This means that (16b) and (17b), which make reference to satisfiers of modal objects, cannot apply. In fact, *the probability that it will rain or it will snow is greater than the probability that it will rain* does not involve an ordering among particular situations (situation in which it snows need not stand in the relevant be ordering with respect to the situation in which it will rain). Rather it only involves a relation among entire states of affairs (one of which is disjunctive). Given the actual semantics of probability predicates, states of affairs themselves are the bearers of probability (see Chapter 7, Section 7.2).[7]

Modal verbs may themselves display different strengths, such as *must*, *ought*, and *should*. Again such differences would first of all consist in an ordering among modal objects. For example, for a modal object argument *d* of *must* - and a modal object *d'* argument of *should*, we will have $d > d'$.

4.2. Inferences with deontic modal sentences

4.2.1. Conditions on modal objects

There are general conditions on modal objects, some of which were introduced as conditions on modal and attitudinal objects in Chapter 2 and some of which are specific to modal objects only.

First of all, modal objects will have a non-empty content and thus will always have some satisfiers (which may also be impossible actions or situations) and modal objects of necessity should have some violators. A modal object with a contradictory content has only impossible situations or action as satisfiers. Moreover, the set of satisfiers and violators of a modal object should not overlap.

Another general condition on modal objects is convexity. That is, if for actions or situations s_1 and s_2 that are satisfiers of a modal object *d* and for an action or situation *s* such that $s_1 < s < s_2$, then *s* is also a satisfier of *d*.[8]

[7] See Textor (2021) for the role of states of affairs as bearers of probability and for further references on the topic.

[8] The conditions on modal objects are analogous to those imposed by Fine (2018 b) on codes of conduct, which play a similar role in Fine's account of deontic modals as the satisfiers of modal objects in object-based truthmaker semantics. See Section 4.5.

The set of satisfiers of a modal object is not generally closed under fusion and parthood. The fusion of a situation of John's winning and a situation of Mary's winning is not a satisfier of a modal object whose complete content is given by *John won or Mary won*, and the situation of lighting the gas is not a satisfier of the modal object whose complete content is given by *John lit the gas and turned on the stove*.

The notion of a partial content introduced in Chapter 3 applies to both sentences and derivatively to modal objects (which, we have seen, is reflected in the applicability of *part of* and *partially* to modal objects):

(18) Partial content of modal objects
For a modal object *d*, a set *C'* is a *partial content* of d, if for the (positive) content *C* of *d*, *C'* is a partial content of *C*.

Partial content also underlies the part-relation among modal objects. That is, a modal object d_2 is a part of a modal object d_1 only if d_2's content is a partial content of d_1's content:

(19) Condition on the part-relation among modal objects
For modal objects d_1 and d_2, if d_2 is *part of* d_1, then d_2's content is a partial content of d_1's content.

The other direction does not hold since modal objects are not just individuated by their content, but are also subject to various conditions of concreteness, origin, and agent-dependence.

Extraction consists in that for any partial content of a modal object there is a part of that modal object with that partial content as its content:

(20) Extraction of modal objects
For a modal object d_1 and a partial content *C* of d_1, there is unique modal object d_2 with *C* as its content so that d_2 is part of d_1.

The fusion of modal objects is not as intuitive as with objects that are not content-bearers. This has to do with the fact that a description of such a fusion is not always straightforwardly available. The fusion of modal objects of the same modal flavor and the same force, involving the same agent is unproblematic.[9] The fusion of John's obligation to work and his

[9] Must to make sure, modal flavors distinguish deontic modal objects (of a certain strength), epistemic modal objects, circumstantial modal objects, etc. The two modal forces are necessity and possibility.

obligation to pay taxes, a plurality of two modal objects, is John's obligation to do work and to pay taxes, a single modal object whose content is given by a conjunctive clausal predicate. The fusion of John's obligation to work in the evening and Mary's obligation to work in the evening can be described as the obligation for John and Mary to work in the evening. This is the fusion of two modal objects with different agents, but that have the same sorts of actions as satisfiers. The satisfiers of that fusion will be actions of John and Mary working in the evening distributively understood, that is, actions that would be sums $s_1 \oplus s_2$ of an action s_1 of John working in the evening and an action s_2 of Mary working in the evening. Given Extraction, it suffices to characterize the fusion of two modal objects d_1 and d_2 in terms of its content (based on the contents of d_1 and d_2) and the condition that it contains d_1 and d_2 as parts:

(21) Fusion of modal objects
For modal objects d_1 and d_2 of the same modal flavor, of the same force, with non-overlapping sets of satisfiers and violators, the fusion d_1 and d_2, $d_1 \oplus d_2$ = the modal object d with d_1 an d d_2 as parts and pos(d) = $\{s_1 \oplus s_2 \mid s_1 \in pos(d_1)$ & $s_2 \in pos(d_2)\}$ and $neg(d) = \{s \mid s \nparallel d_1$ v $s \nparallel d_2\}$

(21) does not permit fusions that would result in violating the conditions on modal objects of not having overlapping sets of violators and satisfiers. This will be relevant for inferences with modals discussed in Section 4.3.

Can modal objects of different forces have a fusion, say, an obligation and a permission? How would such a modal object look? A modal object of this sort should have as satisfiers sums of a satisfier of the obligation and a satisfier of the permission. Its violators would simply be the violators of the obligation. Thus, the violators would violate just part of the content of such a fusion. For the fusion of two modal objects with the same flavor but different modal forces, the very same definition is in fact applicable.[10]

Fusions of modal objects will play a crucial role when recasting object-based truthmaker semantics within a dynamic semantic perspective. A discourse context for modals of a particular type can be conceived as a modal object itself. For example a to-do list in the sense of Portner (2007) would itself be a deontic modal object. Updating would then mean fusion of the described or produced modal object with the relevant background modal

[10] If the condition on such fusions is imposed that any satisfier of the permission contain a part that is a satisfier of the obligation, then this would be a modal object that has as its satisfiers the ideal courses of actions that form the basis of Fine's semantics of deontic sentences. See Section 4.4.

object. Just as there are separate lists for different sorts of modals, there will be separate fusions for the associated modal objects.

4.2.2. Strong and weak permissions

One central feature of the present approach is that modality is tied to particular modal objects. The involvement of different modal objects has also a particularly good reflection in natural language, and not just in the presence of complex modal predicates involving explicit reference to modal objects. One particularly striking linguistic reflection concerns the distinction between strong and weak (or explicit and implicit) permissions (von Wright 1963). Traditionally, a strong reading and a weak reading have been recognized for modal auxiliary *may*, as in (22). But the two readings are not equally available in (23b):

(22) Mary *may* leave.

(23) a. Mary *is permitted* to leave.
b. Mary *has permission* to leave.

(23a) again has both a strong and a weak reading, whereas (23b) has only a weak reading.[11] The strong reading is strictly tied to the nominalization, whereas the simple predicate allows for both readings, depending on context.[12]

Possible-worlds semantics has notorious problems dealing with the contrast between strong and weak permissions since it would give the same semantics to the two sorts of permission sentences: a permission sentence such as (23a) or (23b) is true just in case the clausal predicate is true in *some* world compatible with the agent's obligations. But having permission means more than that: it means that there was an act whose product, the permission, establishes new options that can be taken up by performing the act described by the complement clause. Giving or receiving permission does involve a change, but not, or

[11] Arsenijeviç (2020) points out that (i) has only a strong reading:

(i) Mary was permitted to leave.

Past tense in (i) is suggestive of the act of permission having taken place, thus triggering a strong reading.

[12] Similar readings arise for epistemic modals (and epistemic or doxastic attitude verbs) (Przyjemski 2017). See Section 4.6.

rather not directly, in the set of worlds compatible with what the agent is obliged to do. Rather it more directly involves a change in a set of options to act that are at the agent's disposal.[13]

On the present view, strong permissions and obligations are associated with the products of particular norm-giving acts, which are described by modal nouns such as *permission*. If the object *d* to which a clausal predicate *S* applies is a permission, then *S* will specify which sorts of actions will be exact satisfiers of *d*, that is, can take on the options provided by *d*; *S* will not just say what is true in some world in which *d* is satisfied. If *d* is an obligation, then a clause *S* applying to it will specify what sorts of actions fulfill *d* and what sorts of actions violate it; *S* will not just say what is true in all worlds in which *d* is fulfilled (which may not content-wise relate to the fulfillment of *d*).

Weak permissions and obligations, on the present view, are associated with deontic states, which are individuated on the basis of general conditions and guide a greater range of actions. The choice of different modal objects is well-reflected linguistically not only in (23a, b), but also in the semantic difference between (24a) and (24b):

(24) a. Mary appreciates the permission to leave.
b. Mary appreciates being permitted to leave.

The object of appreciation in (24a) is the (non-enduring) product of an act of permission. By contrast, in (24b) it is a deontic state or the product of an act of permission.

As products of acts, strong permissions and strong obligations are entirely independent of each other. Unlike in standard deontic logic, this allows obligations to be incompatible with each other, and it allows an obligation to be incompatible with a permission. Of course, there is a normative condition for obligations to be compatible in a given legislative context, but this is a condition on the production of certain modal objects in a given context, not on the ontology and satisfiability of modal objects as such. Only modal states, which are not the products of illocutionary acts, are themselves constituted by normative conditions, and modal states, of course, are weak permissions or weak obligations.

[13] Of course, (ia) and (ib) display only the strong reading:

(i) a. John *gave permission* for Mary to leave.
b. Mary *obtained permission* to leave.

There are normative conditions on the production of modal objects that obtain relative to a particular context. Thus, a normative condition on deontic modal objects in a given context should be that no violator of an obligation should be a satisfier of a permission. This will be part of a more general condition on modal objects, namely that in a given context no violator of a modal object of necessity should be a satisfier of a modal object of possibility (of the same flavor):

(25) Normative condition on deontic modal objects in a (legislative) context
For any legislative context C and modal object of necessity d_1 in C, for any s such that $s \nVdash d_1$, there is no modal object d_2 of possibility in C such that $s \Vdash d_2$.

(25) accounts for the validity of the inference $OS \rightarrow \neg P \neg S$ (if S is obligatory, then *not* S is not permitted). But the other direction $\neg P \neg S \rightarrow OS$ (if *not* S is not permitted, then S is obligatory) does not obtain for strong obligations and permissions. That is, the lack of a permission for not doing S does not entail the existence of an obligation for doing S. This means that strong obligations and permissions are not duals.

Unlike in standard deontic logic, in object-based truthmaker semantics there are no inferential connections between strong permissions and strong obligations as such. A strong permission is simply the product of an illocutionary act, and its content need not relate to any obligation, and vice versa for a strong obligation. But this is different for weak permissions and weak obligations. Weak permissions and obligations are modal states that are not (just) the result of particular illocutionary acts, but have various sources for their obtaining, involving conditions on how states of permission and states of obligation are to cohere with each other. Strong permissions and obligations can be inconsistent, whereas consistency is a constitutive condition for deontic modal states. It is a constitutive condition on deontic modal states that a state of weak permission does not have satisfiers that are violators of a state of weak obligation, and conversely violators of a weak state of obligation are not satisfiers of a state of permission. Extraction of course also holds for modal states (for a modal state d_1 and a partial content C of d_1, there is a modal state d_2 that is part of d_1 and whose content is C).

The maximal modal state of permission (representing the conjunction of all that is permitted) is satisfied only by actions (perhaps only impossible

ones) that take up (or carry out) all that is permitted. Due to Extraction, however smaller actions can be satisfiers of modal states of permission that are parts of the maximal state of permission.

The maximal modal state of obligation (representing the conjunction of all that is obligatory) has only actions as satisfiers that comply with all that is obligatory. But again Extraction allows smaller actions to satisfy modal states of weak obligation that are only part of the maximal state of obligation.

In contrast to strong permissions and obligations, weak permissions and obligations are duals ($OS \leftrightarrow \neg P \neg S$). Not violating a (modal state of) weak obligation now is a condition constitutive of a modal state of weak permission, defining its satisfiers. The condition is given below, where < is the part of-relation that holds between situations or actions as well as between modal objects:

(26) Condition on weak obligation

In a given context C, for the maximal modal state d_1 of weak permission in C, for any modal state d2 of weak obligation in C and any action s: $\neg\exists s'(s' < s \,\&\, s' \dashv\!\Vert\ d_2) \rightarrow s \Vdash d_1))$.

That is, any action that contains no exact violator of a weak obligation state is weakly permitted. Together with (25), (26) establishes the duality between weak permission and weak obligation, and ensures that what is obligatory is also permitted.

The context-relativity in (26) is important. There may be different maximal states that belong to different modal systems or contexts. Moreover, for a given context, there may be states of the same force but with different degrees of strength, for example a 'must-state' and an 'ought-state'. Only the former involves a duality with respect to permissions (*John ought to do X* does not imply *John is not permitted to not do X*).

4.3. Inferences with deontic modal sentences

There are a number of inference patterns that standard deontic modal semantics validates, but that are not intuitively valid, and there are some that are intuitively valid, but are not validated by standard deontic logic. Within object-based truthmaker semantics, the validity or invalidity of inferences is

not just based on the truth conditions of sentences. Rather they can be traced to the following different factors:

[1] the truthmaker-based content of modal objects and their clausal predicates
[2] the nature of the satisfiers of modal objects
[3] the ontology of modal objects
[4] constitutive conditions on modal states.

First, as already mentioned, there is no duality between strong permissions and strong obligations. While *OS* implies $\neg P \neg S$, $\neg P \neg S$ does not imply *OS*. The reason is that the absence of a modal product does not entail the presence of any other modal product.

Object-based truthmaker semantics provides a straightforward account of Ross' paradox with deontic modals as below:[14]

(27) You may take an apple.
You may take an apple or burn the house.

The invalidity of (27) (on the free-choice reading) follows from the fact that the clausal predicate in the premise does not have the same truthmaker-based content as the clausal predicate of the conclusion and thus the modal object described in the premise would fail to bear the property attributed to it in the conclusion.

The corresponding inference with statements of obligation is similarly invalid, though it comes out as valid in standard logic (and Fine's sentence-based truthmaker semantics, see Section 4.5):

(28) You must post the letter.
You must post the letter or burn it.

(28) is invalid for the same reason, because the truthmaker-based content of the clausal predicate of the premise is not the same as that of the conclusion.

The mereology of modal objects grounds the validity of the inference below:

(29) You must drink the tea and you must take the pill.
You must drink the tea and take the pill.

[14] Fine's (2018a, b) sentence-based semantics of imperatives provides an account of Ross' paradox involving imperatives by making use of the notion of partial content.

The two modal objects d_1 and d_2 described by the premise (the implicit arguments of the two occurrences of *must*) are of the same kind, involving the same agent, which means they have a fusion *d*. *d* will have as its satisfiers sums of a satisfier of d_1 and a satisfier of d_2 (which can be impossible actions). *Must* in the conclusion of (29) can then take *d* as its implicit argument.

Unlike in standard deontic logic, the corresponding inference for permissions also comes out valid:

(30) <u>You may take an apple, and you may take a pear.</u>
You may take an apple and take a pear.

Given standard deontic logic, there may not be a deontically possible world in which the prejacents in the premise are both true, in which case the conclusion does not hold. But on the present view, there will be a modal object that is the fusion of the two permissions described in the premise and that thus can serve as the implicit argument of *may* in the conclusion.

While the inference in (30) appears valid, there is in fact one type of circumstance in which it is not valid, namely in which the permissions cannot both be taken up. There is no contradiction saying *you may take an apple and you may take a pear, but not both*. What appears to go on in such cases is that there are no simple permissions given, but rather permissions that also incorporate a proscription (to take up the other permission), that is, fusions of a permission and a proscription. The permission to take an apple thus is in fact a modal object that has both satisfiers (actions of taking an apple) and violators (actions of taking the pear). It is not described that way, but that is because there are no straightforward terms for such modal objects in English and the construction for simple permissions is here used to describe the more complex modal object. The two permission-prescription modal objects do not have a fusion, because the fusion would have the same satisfiers and violators (actions of taking an apple and a pear), violating the precondition on fusions in (21).

Two permissions may have inconsistent contents (*I may stay and I may leave*). If they are just permissions, they would then have a fusion with an inconsistent content, validating the inference to *I may stay and leave*. This inference can be considered valid despite the fact that the permission described by the conclusion has only impossible satisfiers. (The following reasoning does not seem faulty: if I am permitted to stay and I am permitted to leave, then I am also permitted to stay and leave, even though this will be impossible for me to do.)

Extraction also accounts for the validity of the inference below:

(31) <u>You must drink the tea and take the pill.</u>
You must drink the tea, and you must take the pill.

Extraction means that for a modal object d with distinct conjunctive content C_1 *and* C_2, there will be two modal objects d_1 and d_2 whose content is given by C_1 and C_2, respectively.

Deontic modals cannot be stacked or iterated, that is $PP(S)$ and $OO(S)$ are impossible, as is $PO(d)$. Similarly to Fine (2018b), this follows from the requirement that the clausal predicate of a deontic modal characterizes actions. On the present view (on which P(S) is to be understood as $\exists d(P(d) \,\&\, S(d))$), the modal object (introduced by $PP(S)$) would require actions as satisfiers. But the satisfiers of deontic modal sentences themselves are certainly not actions, but entities of a different type. They are themselves modal objects (or entities closely related to the modal objects that deontic sentences quantify over, say states of a modal object meeting the conditions specified by the sentence) (see Section 4.4). This means that $\exists d(P(d) \,\&\, S(d))$ could not serve to specify satisfiers of the modal object introduced by $PP(S)$.

The nature of actions as truthmakers can also account for the invalidity of the inference below, the puzzle of the Good Samaritan (McNamara 2014):

(32) <u>It ought to be the case that Jones helps Smith who has been robbed.</u>
It ought to be the case that Smith has been robbed.

The actions that are satisfiers of the obligations described by the premise of (32) need to be understood against the background of Smith having been robbed. Actions, by nature, carry presuppositions, and it will be the modal object with its background that imposes them as preconditions on its satisfiers and violators.

As in standard logic, inferences from *John must pay taxes* or *John may pay taxes* to *John pays taxes* are not valid, since *John pays taxes* may be false in a case in which John's permission or John's obligation to pay taxes exists, but in which there are no actual truthmakers for that permission or obligation. Also, the content of *John pays taxes* won't be a partial content of *John must pay taxes* or *John may pay taxes*. Given object-based truthmaker semantics, truthmakers of modal sentences, as was already mentioned, are best taken to be modal objects themselves, or at least entities closely related to them or definable

in terms of them (states of modal objects being valid, say). Clearly, then, the content of *John must pay taxes* or *John may pay taxes* does not have the content of *John pays taxes* as a partial content, since the latter consists in actions and the former in modal objects, and actions cannot be part of modal objects (but only satisfiers of modal objects). That is, a truthmaker for the premises, a modal object, cannot have as part a truthmaker for the conclusion, a satisfier of the modal object.

4.4. Comparison with Fine (2018b)

Fine (2018b) gives an account of deontic modals within sentence-based truthmaker semantics. That account is not based on an ontology of modal objects with their truthmakers or satisfiers, yet it shares significant similarities with the present approach.

For Fine the semantics of deontic modals is based on the notion of a *code of conduct*. A code of conduct is a (contextually given) set of actions *a* with the following properties: *a* discharges all the obligation and *a* is permitted. Each action in the code of conduct is called an *ideal course of action*. The semantics of deontic modal statements involves the part-of relation among actions and is based on the following notions:

(33) For prescriptive contents (i.e., sets of actions) *X* and *Y*,
   a. *X subsumes Y* if every action in compliance with *X* contains an action in compliance with *Y*.
   b. *Y subserves X* if every action in compliance with *Y* is contained in an action in compliance with *X*.

Thus, *X* subsumes *Y* and *Y* subserves *X* just in case *Y* has a content that is a partial content of the content of *X*. The conditions for the truth of permission statements and obligation statements are then as follows:

(34) For a code of conduct *C*,
   a. *O*(*X*) is true iff *C* subsumes *X*, that is, if every ideal course of action in *C* contains an action in compliance with *X*.
   b. *P*(*X*) is true iff *X* subserves *C*, that is, if every course of action in compliance with *X* is contained in an ideal course of action in *C*.

That is, all the ideal courses of actions must contain some action satisfying a given obligation, and all satisfiers of a given permissions must be part of some ideal course of action.

Fine's notion of a code of conduct is closely related to the notion of the set of satisfiers of a deontic modal object. In fact, a code of conduct would be the set of satisfiers of the fusion of all permissions and all obligations. While such fusions are permitted on the present approach, they could not play the semantic role modal objects are supposed to play. That is because a clausal predicate of a modal object that is a fusion of a permission and an obligation could not serve to convey both the content of what is permitted and what is obligatory. The satisfiers of a fusion *d* of a permission and an obligation would consist of actions that take up the permission and satisfy the obligation, but its violators would just be the violators of the obligation. Take *d* to be the fusion of John's obligation to work and his permission to smoke. A satisfier of *d* would be the action *s* of John working and John smoking and a violator an action of not working, though not an action of refraining from smoking. But the clausal predicate *John works and smokes* could be true only of a modal object that has John's refraining from smoking as a violator.

There are two issues with Fine's notion of a code of conduct. The first is a locality issue, the second is an identification issue. For Fine, deontic modal statements are interpreted relative to a set of actions fulfilling all that is obligatory and all that is permitted. However, particular modal statements may just involve something that is permitted or something that is obligatory and that in a strictly local manner. For example, actions of making an offer or giving a permission may just license certain actions regardless of what else is permitted or obligatory. A promise may lead to an obligation whose fulfillment just depends on what has been promised and nothing else. Satisfying such modal products may go against given obligations. The satisfaction conditions of a modal product need not relate to anything beyond the modal product itself, and in particular it need not relate to given obligations or permissions. Of course, the code of conduct may be conceived of being strictly local itself and just identified with the set of satisfiers of the modal product, but this would require separating obligations and permission.

Fine's account also raises an issue if it were to serve as a semantics for the purpose of understanding and communication, namely of how to identify and convey a code of conduct. For a speaker to understand and communicate that John needs to publish a book does not require knowing what sort of book exactly John needs to publish and what else John is obliged or

permitted to do. For communicating that Bill is allowed to park the car it is not necessary to know about other actions Bill is obliged or permitted to undertake except parking the car, and even for that it is not necessary to know the details, for example for how long he may park it.

The present approach does not raise the two issues, given the role of modal objects. For the truth of a deontic statement, it is entirely sufficient to take into account the set of satisfiers (and perhaps violators) of the modal object in question. Modal objects of course may differ in 'size', and modal states may be satisfied by actions of a much greater size than modal objects that are products of illocutionary acts. Fine imposes separate conditions involving what is permitted and what is obligatory, unlike standard deontic logic, but still permissions and obligations act together to define a single set that is the basis for the interpretation of both statements of permissions and statements of obligations. On the present approach, permissions are in principle entirely separate from obligations, though they may be jointly constitutive of deontic modal states

For understanding and knowing the truth conditions of a sentence giving a particular permission or obligation, the speaker need not know the content of the maximal states of permission and of obligation, but only that the clausal predicate gives the content of the modal object in question.

There are also some differences between Fine's account and the present one regarding the treatment of particular inferences. One of them concerns the paradox of permission (von Wright 1963, Kamp 1975). Fine's sentence-based truthmaker semantics accounts for the failure of the inference below straightforwardly:

(35) John may leave the room.
John may leave the room or stay.

If the premise of (35) is true relative to a code of conduct *C*, then every action satisfying *John leaves the room* is part of an action in *C*; but not every action satisfying *John leaves the room or stays* may then be part of an action *C*, so the conclusion is not true relative to *C*.

Fine's semantics, however, does not apply to the failure of the same type of inference with modals of necessity (McNamara 2014):

(36) John must leave the room.
John must leave the room or stay.

If the premise of (36) is true relative to a code of conduct *C*, then every action in *C* contains an action satisfying John leaves the room as part. But then also every action in *C* contains as part an action satisfying John leaves the room or stays. Fine in fact considers the inference valid on one reading and distinguishes that reading (what he calls 'bounded obligation') from free-choice obligation *OP*, giving a distinct semantics for the latter as follows:

(37) *OP*(*X*) is true relative to a code of conduct *C* if *C* subsumes *X* and if *X* subserves *C*, that is, if every ideal course of action in *C* contains an action in compliance with *X* and every action in compliance with *X* is contained in an ideal course of action in *C*.

Fine here imposes the condition that *X* be a partial content of *C*, which is just what the present approach does with respect to the content of both modal objects of obligation and modal objects of permission.

I disagree with Fine that modals of obligation may fail to display a free-choice reading. For me, the conclusion in (36) has just a single reading, on which John can discharge the obligation either by leaving or staying. There is no difference in intuition between (35) and (36). Object-based truthmaker semantics treats disjunctive permissions and obligations in the very same way: the inferences in (35) and (36) are both excluded because the clausal predicates in the premise and the conclusion fail to have the same truthmaker-based content. Fine could not carry over such a simple condition to permission sentences, since codes of conduct are restricted to actions satisfying what is obligatory.

Another difference to Fine's account concerns conjunctive clausal predicates, that is, the inference in (38):

(38) <u>You may take an apple and eat it</u>.
You may take an apple.

There is a sense in which the inference below is intuitively not valid:

(39) <u>You must turn on the gas and light the stove.</u>
You must turn on the gas.

As with imperatives (as was mentioned), such inferences are not unproblematic. While for Fine the inference is simply valid, on the present approach it is valid only due to Extraction.

There is one further respect in which the present approach and Fine's are closely related, and that concerns the truthmakers of deontic modal statements themselves. For Fine, the truthmakers of deontic modal statements are closely related to codes of conduct as follows: 'Each code of conduct *C* is understood to be the state that consists in its members c_1, c_2, . . . being all and only the ideal courses of action. We might say, in this case, the code *C prevails*; and so the code is, in effect, being identified with the state that it prevails [. . .]' (Fine 2018b). The following conditions then are imposed on when an atomic deontic statement *X* is verified or falsified by a code of conduct *C*:

(40) a. *C* verifies *O*(*X*) iff *C* subsumes *X*.
b. *C* falsifies O(*X*) iff *C* does not subsume *X*.

(41) a. *C* verifies *P*(*X*) iff *X* subserves *C*.
b. *C* falsifies *P*(*X*) iff *X* does not subserve *C*.

In object-based truthmaker semantics, a modal statement about a modal object *d* would be of the form '*P*(*d*) & *S*(*d*)' (for a permission statement) or '*O*(*d*) & *S*(*d*)' (for an obligation statement), with 'S' representing the clausal predicate. Such a statement will have as truthmakers situations of *P* and *S* holding of *d* or of *O* and *S* holding of *d*. In fact, one may then take the verifiers of '*P*(*d*) & *S*(*d*)' and of '*P*(*d*) & *S*(*d*)' to be the modal object *d* itself, as *S* gives the full content of *d* and *P* or *O* ensure that *d* is the right kind of modal object.

4.5. Object-based truthmaker semantics for other modals

Object-based truthmaker semantics should apply to modals other than deontic modals as well. In fact, one may expect sentences with non-deontic modals to have the very same logical form, with the only difference being the modal objects involved.

There are a few challenges, however, in applying object-based truthmaker semantics to other modals. One of them is that identifying the modal objects for other sorts of modals is not always straightforward. Not all modal predicates come with nominalizations or nouns that would reflect the ontology of the modal objects in question, as was the case with deontic modals.

In such cases, the modal object needs to be identified on the basis of semantic and ontological considerations only. The characteristic properties of modal objects should of course be the same, namely having satisfaction conditions, having a part structure based on partial content, and entering similarity relations based on shared content, and perhaps featuring properties of concreteness. The following are just some remarks about the sorts of modal objects involved in the semantics of other kinds of modals.

For physical and circumstantial modality, there are a variety of nouns that appear to display corresponding modal objects. *Ability* and *disposition* denote modal objects. Abilities and dispositions come with satisfaction conditions in the sense of conditions of manifestation or realization. They also come with a part structure based on partial content ('part of John's ability' cannot be a temporal part, but rather is something whose manifestations are partial manifestations of John's ability).[15]

Another potentially promising application of object-based truthmaker semantics is to metaphysical modality. This application draws a connection between truthmaker semantics and Kit Fine's (1994, 1995) logic of essence. On Fine's account, (42a), on one reading, should be understood as in (42b), formalized as in (42c) with 'S_o' being the predicate 'being Socrates':

(42) a. Socrates is necessarily a man.
b. Socrates is essentially a man.
c. $O_s Ms$

The logical form of (42b) involves an essentiality operator O_F for individuals that are *F*: $O_F p$ is understood as '*p* is true in virtue of the nature of things that are *F*'. Fine makes two assumptions about O_F:

[1] *p* in $O_F p$ can only be about objects that bear on the essence of objects that are *F*

This explains for the contrast below, where only (43b), not (43a) is intuitively true:

(43) a. Socrates is essentially a member of the singleton Socrates.
b. Singleton Socrates essentially contains Socrates as a member.

[15] Dispositions play a central role as potentialities in Barbara Vetter's (2015) work on circumstantial modals. Vetter takes a potentiality not to be an object, though, but rather a property of an object, which leads to a different logical form of the corresponding modal sentences.

[2] O_F is closed under logically consequences as long as the consequences are about objects that pertain to the essence of objects that are *F*.

Object-based truthmaker semantics allows for a new perspective on essentialist statements in this sense if essence is conceived as an object separate from its individual bearer.[16] That is, an essence would be a modal object with the usual characteristic properties, in particular having satisfaction conditions. English *essentially* then will be a predicate of essences, more precisely a predicate that expresses a relation between essences and their bearers. The logical form of (44a) will thus be as in (44b), with existential quantification over essences as modal objects:

(44) a. Socrates is essentially a man.
b. $\exists d$(essentially(d, Socrates), prop([*Socrates is a man*])(d))

In order for (44a) to be true, the same condition should hold as for all modal sentences: the clausal predicate *Socrates is a man* needs to share its satisfiers with the modal object *d*.

If essences as modal objects have truthmaker-based satisfaction conditions, this means that an essence has as its verifiers just the situations that obtain wholly in virtue of the object's essence, fulfilling, roughly, conditions [1] and [2] of Fine's essentiality operator. In addition, an essence as a modal object will have violators, situations that fail to obtain in virtue of the object's essence.

The condition [2] on closure under logical consequence does not follow on this account, though. In fact, [2] does not seem intuitively valid. Given [2], (44a) should imply (45), which seems counterintuitive:

(45) Socrates is essentially a man or a tiger.

Instead [2] should be replaced by a condition of partial content or analytical entailment. This will come out given Extraction: for a modal object *d*, if *S* makes *d* true, then a sentence *S*' whose content is a partial content of *S* makes *d*' true for a modal object *d*' whose content is a partial content of that of *d*. In this way, the semantics of the essentialist operator O_F, suitably understood and reconceived as a predicate of essences, may

[16] But see Lowe (2018) for arguments against essences being objects.

be subsumed under the general object-based truthmaker semantics of modals.

Fine (1995) also proposes an essentialist conception of metaphysical necessity, on which metaphysically necessary truths are true in virtue of the essence of all objects. Again, the essence of all things may be conceived as a modal object. That is, a modal object would have as its satisfiers the situations just reflecting everything that is essential to all objects.

Epistemic modals may involve modal objects of different sorts. They also display a distinction between weak and strong readings. 'Strong' readings of epistemic modals may, for example, involve a modal object that may have been generated by a piece of evidence against a particular background, permitting or requiring particular sorts of situations, which would be their satisfiers. Epistemic modal objects of necessity permit situations and rule out situations; epistemic modal objects of possibility only permit situations. 'Weak' uses of epistemic modals would involve as modal objects states for which the duality of necessity and possibility is constitutive, just as in the case of weak permissions and obligations.

Modal objects may be generated by particular conditions, as conveyed by a particular construction. This is the case for *in order*–clauses with a teleological use of a modal:

(46) a. In order to travel to Russia, John must get a visa.
b. In order to travel to Paris, John can take a plane.

Here teleological modal objects are generated by the condition given by the *in order*–clause. In (46a), the modal object has as its satisfiers actions of John getting a visa and as violators actions in virtue of which John does not get a visa. In (46b) the modal object has as its satisfiers actions of John taking a plane and no violators.

The distinction between weak and strong permissions generalizes to teleogical modality, which is reflected linguistically in the difference below:

(47) a. It is *possible* to open the bottle.
b. *There is a possibility* of opening the bottle.

In contrast to (47a), (47b) claims the existence of a particular way (i.e., a particular type of actions) that leads to the satisfaction of the goal, the opening of the bottle, and it suggests that the speaker has practical knowledge about

it.[17] The strong cases would be 'strategies' or possibilities when referred to, for example, as 'a possibility of opening the bottle'. Strategies and possibilities come with other predicates of satisfaction than *fulfill*, *accept*, or *realize*, namely *take on*, *pursue*, or *follow*. The reason appears to be that strategies and possibilities fail to be associated with a norm, unlike permissions, and unlike decisions and intentions, they fail to have violators.[18]

To summarize, modal objects of the different sorts have various sources; they may be products of illocutionary or mental acts, they may be constituted by various norms or rules, they be based on pieces of evidence, and they may be grounded in objects, as in the case of dispositions, abilities, and essences. Finally, modal objects may be generated by particular conditions.

4.6. Conclusions

This chapter has outlined a novel semantics of modal sentences, object-based truthmaker semantics, based on an ontology of modal objects and their truthmaker-based content. On that semantics, modal sentences all convey existential quantification over modal objects, which themselves determine what sorts of situations count as satisfiers and possibly violators, perhaps against a particular background. This means that there is no difference in logical form between sentences with modals of necessity and sentences with modals of possibility. The focus of this chapter has been on applying object-based truthmaker semantics to deontic modals, while only hinting at further applications to epistemic, metaphysical, and circumstantial modality.

The semantics of modals based on modal objects is to an extent motivated by linguistic data that are not generally taken into account, in particular the fact that modal predicates may take the form of simple predicates and complex predicates, a contrast that may go along with strong and weak interpretations of the modal.

[17] The same semantic effect is not associated with *possibility* when used with circumstantial modals that are not action-directed, as in *There is a possibility that it rains tomorrow*.

[18] This was pointed out by Kaufmann (2020). Kaufmann suggests that strategies and possibilities may have violators in that when all other strategies have been eliminated, only the pursuit of one strategy allows reaching the goal. But this does not mean the strategy can be violated. It means that there are no other strategies that can be pursued. But what has violators in that case appears to be a second-level attitudinal object, to pursue the goal by adopting strategies. When presenting it as a 'necessity', though, the pursuit of other strategies counts as a violation.

5

The Syntax and Semantics of Basic Attitude Reports

Just as modal objects, on the view developed in this book, are at the center of the semantics of modals, attitudinal objects are at the center of the semantics of attitude reports. The semantics of attitude reports that this and the following two chapters are developing can thus be called *attitudinal-objects semantics*. Attitudinal objects, not propositions, on the present view, play the role of truth bearers. More precisely, on the present view, attitudinal objects are the bearers of truthmaker-based satisfaction conditions, which the clausal complement of an attitude verb such as *believe* or *claim* serves to ascribe.

I will call attitude verbs like *claim* and *believe* 'basic attitude verbs'. Basic attitude verbs are just the verbs with which the clausal complement acts as a predicate of the attitudinal object that the verb describes, attributing to it its satisfaction conditions. Attitude reports with such attitude verbs can be called 'basic attitude reports'. Non-basic attitude verbs include factive verbs like *regret* and *realize* as well as what Cattell (1978) called 'response-stance verbs', such as *repeat*, *agree*, and *confirm*. Clausal complements have a different function in the context of such non-basic attitude verbs, as will be discussed in Chapter 7, namely that of specifying a modal object as an argument of the attitude verb (in an extended sense of modal objects which includes facts and 'thin assertions').

There are other verbs whose clausal complements act as predicates of the described content bearers, but which I will discuss separately in Chapter 6, namely verbs of saying. Verbs of saying take *that*-clauses as well as quotations as complements, both of which, I will argue, act as predicates of objects described by the embedding verb. But they act as predicates of an extension of the domain of attitudinal objects, consisting of locutionary and phatic objects.

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One considerable challenge that attitudinal-objects semantics faces is to allow for a compositional semantics of attitude reports based on an independently justified syntactic structure, just like any semantics of attitude reports that takes syntax seriously. What distinguishes the present approach from standard views of attitude reports is that it focuses on attitude reports with complex attitude predicates such as *make the claim that* S and *have the belief that* S. The view that is being pursued will be that complex attitude reports also underlie simple attitude reports with verbs like *believe* and *claim*.

Another challenge any semantics of attitude reports faces is to give a semantic analysis of special quantifiers such as *something*, which can take the place of clausal complements of most attitude verbs. In earlier work, I had argued that special quantifiers as complements of basic attitude verbs are nominalizing quantifiers ranging over the same things as are semantic values of the nominalization of the attitude verb.[1] In this chapter, I will propose a novel semantic analysis of special quantifiers as nominalizing quantifiers, making use of a complex-predicate analysis of attitude verbs and the theory of light nouns in Kayne's (2005, 2010) sense.

All the syntactic proposals in this and the next two chapters are cast within what I call 'simplified syntax'. This means that the syntactic analyses make use only of basic syntactic notions that [1] should be accessible with only a minimal background in generative syntax and [2] do not involve the adoption of syntactic views beyond what is motivated by the linguistic facts involving the ontology of attitudinal and modal objects.

The main part of this chapter will consist in elaborating the syntax and semantics of basic attitude verbs, both when they take clauses as complements and when they take special quantifiers as complements. In addition, it will more briefly address further issues, such as the semantics of independent sentences, presuppositions in attitude reports, and modal concord ('harmonic modals') in attitude reports. One appendix will propose a way of dealing with opacity in attitude reports. A second appendix will discuss the question whether clausal complements should be taken to give the full content (truthmaking conditions) of attitudinal (and modal) objects, as I assume in this book, or whether they should rather be taken to give only a partial content, as I had assumed in some of my previous work on attitudinal-objects semantics.

[1] See Moltmann (2003a, b, 2013a).

5.1. Basic attitude reports

5.1.1. The semantics of basic attitude reports

The present approach differs from standard approaches to the semantics of attitude reports by taking as its point of departure not simple attitude reports such as (1a), but complex attitude reports, as in (1b):

(1) a. John claimed that it will rain
b. John made the claim that it will rain.

Complex attitude reports contain complex attitude predicates consisting of a light verb such as *make* and an NP that makes explicit reference to an attitudinal object such as *a claim*, an attitudinal-object NP. Languages often display both simple attitude verbs and corresponding complex attitude predicates, as English illustrates below:

(2) a. believe – have a belief
b. assume – make an assumption
c. intend – have an intention
d. plan – make a plan
e. order – give an order

But the complex-attitude predicate may also be the only option, as is the case for English *have the impression* as well as German *Angst haben* and French *avoir peur* 'have fear'. Moreover, there are cases in which the simple attitude predicate does not come with a complex version, as is the case for English *say*, *whisper*, *hold*, and *maintain*.

Setting aside differences in the availability of simple and complex attitude predicates in particular languages, what is important in the present context is the fact that complex-attitude predicates are a common (and sometimes the only) way of conveying propositional attitudes, and they involve explicit reference to attitudinal objects. Recall from Chapter 1 (and I will return to the issue in Section 5.2.2.) that not only do complex attitude predicates make explicit reference to attitudinal objects, special quantifiers range over such objects when they take the position of complements of basic attitude verbs.

Complex attitude predicates display different light verbs (such as *have*, *do*, *make*, *give*). The choice of a light verb in a complex attitude predicate is to

an extent semantically determined: *have* indicates possession, *do* and *make* causation, *give* transfer of an attitudinal object.[2]

Based on the ontology of attitudinal objects, the semantics of complex attitude reports is straightforward. In complex attitude reports, the embedded clause is a modifier of the attitudinal object NP and as such is to be interpreted by predicate modification (Moulton 2009). This yields the semantics of attitudinal-object nouns modified by *that*-clauses in (3) and of complex attitude reports such as (4a) (= (1b)) as in (4b):

(3) $[\textit{claim that it will rain}] = \lambda d[\text{claim}(d) \,\&\, \text{prop}(\textit{that it will rain})(d)]$

(4) a. John made the claim that it will rain.
b. $\exists d(\text{make}(\text{John}, d) \,\&\, \text{claim}(d) \,\&\, \text{prop}([\textit{that it will rain}])(d))$

The logical form in (4b) involves existential quantification, rather than a definite description of a kind of attitudinal object ('the claim that it will rain'). There are two reasons for using existential quantification in (4b). First, that way (4b) will then represent the logical form of the simple attitude report (1a), which will not strictly be derived from (4a), but from *John made claim that it will rain*, without a determiner (Section 5.2.1.) Moreover, Srinivas and Legendre (2022) have argued that even in *the claim that it will rain* the definite determiner is in fact a weak determiner, to be interpreted existentially. But not too much hinges on this choice for the logical form of complex attitude reports.

In (4b), *prop*(*S*) is a derived meaning of the sentence *S*, the property of modal and attitudinal objects, as defined in Chapters 3 and 4 and again below:

(5) Truthmaker-based derived meaning of sentences
For a sentence S, $\text{prop}(S) = \lambda d[\text{pos}(d) = \text{pos}(S) \,\&\, (\text{neg}(d) \neq \emptyset \rightarrow \text{neg}(d) = \text{neg}(S))]$.

Recall from Chapter 3 that the underived meaning of a sentence *S* is a bilateral content consisting of the set *pos*(*S*) of verifiers of S and the set neg(*S*) of falsifiers of *S*. Thus, *prop*(*S*) is the property that holds of a satisfiable object *d* iff *d* shares its satisfiers with *S* and, in case *d* has violators, *d* shares its

[2] There is also interlinguistic variability as to the choice of a light verb (*make a judgment*, in German *ein Urteil faellen* 'to make fall a judgment', though the verb *fällen* does not look like a light verb. Furthermore, there is intralinguistic variability, e.g., English *conclude – draw / reach the conclusion*.

violators with *S*. I will assume that *that* has no particular semantic contribution to make, which means prop(*that S*) = prop(*S*).

Making use of such a truthmaker-based meaning of *that*-clauses ensures that the content attributed to an attitude is sufficiently fine-grained to provide a notion of subject matter or aboutness, as well as a notion of content ordered by the relation of partial content (as discussed in Chapter 3).

Recall also that the derived meaning *prop*(*S*) of a sentence *S* is applicable both to attitudinal (and modal) objects with the force of necessity (that is, objects such as claims, demands, requests, and insistences) and to attitudinal (and modal) objects with the force of possibility (that is, objects such as hints, suggestions, proposals, and invitations). Thus, (5a) will have the same logical form as in (4a), namely as in (6c), based on the complex-predicate version in (6b):

(6) a. John hinted that Bill is insane.
b. John gave a hint that Bill is insane.
c. ∃d(gave(John, d) & hint(d) & prop([*that Bill is insane*])(d))

One manifestation of the difference in force among attitude verbs is the appearance of different harmonic modals in the complement clause. *Insist*, which conveys strong necessity, goes with the harmonic modal *must*, whereas *suggest*, which conveys possibility, goes with the harmonic modal *might*:

(7) a. John insisted that Bill *must* be at home.
b. John suggested that Bill *might* be at home.

A semantic analysis of harmonic modals within attitudinal-objects semantics will be given later (Section 5.3).

5.1.2. Attitudinal-object nouns, clausal modifiers, and determiner choice

In the last section, the assumption was made that clauses following an attitudinal noun have the status of modifiers, to be interpreted by predicate modification (with respect to the external argument of the noun). This requires further elaboration. It has long been observed that clauses modifying

certain nouns like idea, hypothesis, story, theory, myth, belief, claim, assumption, and hope do not have the status of complements. One reason is that the clause can be dislocated from the noun in so-called specificational sentences:

(8) a. John's claim / belief is that he won the election.
b. The hypothesis / idea was that the world is round.
c. John's idea was to climb the mountain.

The nouns that permit dislocation in specificational sentences are precisely the nouns that express one-place properties of attitudinal objects (the attitudinal object acts as their only, external arguments). They contrast with nouns like happiness, realization, acknowledgment, likelihood, attempt, pretense, and refusal. Clauses with those nouns do have the status of complements and do not allow for dislocation in specificational sentences:

(9) a. * John's happiness is that he won the election.
b. * Mary's realization was that Bill lost the election.
c. * The likelihood was that John would win the election.
d. * John's attempt was to climb the mountain.
e. * Bill's refusal was to leave the meeting.

Such clauses do not give the content of an attitudinal object, but rather stand for an entity which the mental state (or attitudinal object) described by the noun is about or directed toward, an internal argument of the noun. Such nouns take two arguments: an external argument that the NP itself will refer to, and an internal argument given by the clausal complement.

There are also nouns like *proof* and *explanation*, which permit two clauses in specificational sentences, one appearing after the noun and one after the copula:

(10) a. The explanation that there was no water was that the pipes broke.
b. The proof that Joe is at home is that the light in his house is on.

The generalization here is that the clause after the copula cannot have complement status, but can only give the content of the attitudinal object, whereas the clause after the noun provides an internal argument (a fact).

Another difference between the two sorts of clauses with nouns has been noted by Moulton (2009). Nouns that take internal arguments generally allow for such a argument to be given by such an NP followed by *of*:

(11) a. the brother of John
b. the construction of the house.

Likewise, nouns that take clausal complements, permit *of* NPs and in particular *of that*, unlike nouns taking clausal modifiers such as *claim*, *belief*, and *idea*:

(12) a. the likelihood of John's election win
b. Joe's realization /* belief /* claim /*idea of that

As expected with *explanation* and *proof*, an *of*-phrase can only stand for an internal argument, not a content of the attitudinal object:

(13) There is no explanation / proof of that.

Such data substantiate the now widely accepted view that clausal modifiers of attitudinal-object nouns such as *claim*, *belief*, and *idea* act semantically as predicates of the described content bearer (Elliott 2017, Moulton 2009, 2015, Moltmann 2014, Bondarenko 2021a, 2022). Syntactically, it goes along well with syntactic views according to which *that*-clauses are relative clauses (Kayne 2008, 2010, Arsijenevic 2009), though it is compatible with other views about the syntactic status of the clausal modifier as well. The semantics of specificational sentences will then consist in the attribution of the propositional content given by the postcopula clause to the attitudinal object denoted by the subject. This means, in present terms, the logical form of (14a) will be as in (14b):

(14) a. John's belief is that S.
b. prop[that S](ιd(belief(d, John))

There are also challenges, though, for the view that clausal modifiers act semantically as predicates. One of them is the choice of the determiner. With a range of nouns such as *fact* and *idea*, *that*-clause modifiers require a definite singular determiner (*the fact that it was raining*, * *the facts that it was*

raining, * *a fact that it was raining*; *the idea that the problem is unsolvable*, **the ideas that the problem was unsolvable*, * *an idea that the problem is unsolvable*). In general, state-related attitudinal-object nouns need to be definite and singular, even if there could have been different (say, temporally separated) states or state-related attitudinal objects:

(15) a. Mary's belief that she won the race
b. ??? Mary's two beliefs that she won a race

(16) a. Everyone had the belief that something unusual would happen.
b. ??? Everyone had a belief that something unusual would happen.

(17) a. Mary's intention to write a book is well known.
b. ??? Mary's various intentions to write a book are well known.

This might suggest that the construction noun-clausal modifier conveys in fact an identity between the semantic value of the clause (however it is conceived) and the attitudinal object. That is, *Mary's belief that she won the race* would be of the logical form ιd[belief(d, Mary) & d = [*that she won the race*]].[3]

But there are also certain types of nouns that do not require the definite (singular) determiner with a clausal modifier, but permit an indefinite article or the plural. Nouns describing act-related attitudinal objects generally are of that sort, as in (18), as are nouns describing teleological or physical possibilities, as in (19) and (20):

(18) a. Mary's repeated claims that John is guilty
b. a rumor that Joe is sick
c. Mary's various decisions to write a book

(19) a. Mary mentioned another possibility of opening the window
b. numerous possibilities of avoiding liabilities

(20) a. an offer to buy the house
b. a special ability to convince everyone

[3] An alternative view that has been proposed is that the relation between clausal modifier and attitudinal noun is one of identification with the clause and the attitudinal noun standing for the same proposition (de Cuba 2017).

A syntactic explanation of the difference has been suggested by Hankamer and Mikkelsen (2021), who argue that when a noun with a clausal modifier requires a definite determiner, the construction has a syntactic structure on which the definite determiner syntactically selects the CP. That is, *the belief that* S has the underlying structure [*belief* [*the that*-S]$_{DP}$]$_{NP}$ with subsequent raising of the determiner *the* to yield [*the* [*belief* [e *that* S]]$_{NP}$]$_{DP}$. Since only the definite determiner is able to syntactically select a CP, it is obligatory.[4] The proposal does not explain, though, the correlation of state-related attitudinal objects with the requirement of a definite determiner; it only gives a proposal how the requirement is to be understood.

5.1.3. Backgrounded attitudinal objects

Like modal objects, attitudinal objects may come with a background, an attitudinal object or modal itself. The background represents presuppositions and may account for at least some of the roles the common ground plays on standard semantic views that derive from Stalnaker (1984). I will not develop an account of presuppositions and of other dynamic phenomena in any detail. The following points are just as an indication of how such phenomena may be treated within the overall approach of attitudinal-objects semantics.

The background of a claim may be a belief or perhaps just an attitudinal object of 'acceptance', a constative object with a weaker degree of commitment than an assertion or a belief. The background of a request, for example, may be an acceptance or a previous request. Thus, in (21a, b), the *that*-clause applies to an attitudinal object whose background supports the situation in which Bill failed the exam before:

(21) a. Mary claimed that Bill repeated the exam.
b. Mary requested that Bill repeat the exam.

[4] The present approach allows for an interpretation of such a structure, of very roughly the following sort. *The* + *that* S is first interpreted as the most general modal object determined by *S*, the state of affairs in which *S* (see Chapter 7). Subsequently, the noun in the higher position will trigger a mapping of that modal object onto a belief, fact, or thin generic assertion with the same truthmaking conditions.

Like modal objects with a background, an attitudinal object *d* with a background *d'* can be taken to be a complex, backgrounded object of the form *d*/*d'*, with the verification and falsification conditions below, where ⊕ is the operation of fusion:

(22) For a backgrounded attitudinal object *d*/*d'* with background *d'*,
for any situation *s*, *s* ⊩ *d*/*d'* iff ∃*s'*∃*s''*(*s* = *s'* ⊕ *s''* and *s'* ⊩ *d'* and *s''* ⊩ *d*)
for any situation *s*, *s* ⊣ *d*/*d'* iff ∃*s'*∃*s''*(*s* = *s'* ⊕ *s''* and *s'* ⊩ *d'* and *s''* ⊣ *d*).

That is, a situation satisfies a backgrounded attitudinal object just in case it consists of two situations one of which satisfies the background and one of which satisfies the attitudinal object that is the foreground. A situation violates a backgrounded attitudinal object just in case it consists of two situations one of which satisfies the background and one of which violates the foregrounded attitudinal object.

Backgrounded attitudinal objects promise an account of dynamic semantic phenomena, by being subject to a (antisymmetric) operation of dynamic fusion below:

(23) Dynamic fusion for backgrounded attitudinal objects
For attitudinal objects *d* and *d'* with background *b*, *d*/*b* ⊕ *d'*/*b* = *d'*/*d* ⊕ *b*.

That is, two backgrounded attitudinal objects *d*/*b* and *d'*/*b* undergo dynamic fusion ⊕ by applying fusion in the ordinary sense to *d* and the background *b* to obtain a new background *d* ⊕*b* for *d'*. This will account for well-known facts about presuppositions in conjunctions as below:

(24) a. Mary claimed that Bill once took the exam and (she claimed that) he now repeated it.
b. Mary requested that Bill take the exam and repeat it in case he fails the first time.

This will have to suffice as an indication of the semantic role of backgrounds in potential future account of presuppositions and other dynamic semantic phenomena within object-based truthmaker semantics. Backgrounds may also figure in the treatment of opacity in attitude reports (Appendix 5.1).

5.1.4. The semantics of independent sentences and performative attitude verbs and modals

Attitudinal-objects semantics is meant to apply not only to embedded sentences but, as a general theory of sentence meaning, to independent sentences as well. Independent sentences will naturally be regarded as predicates of utterances, which in turn are part of, or better, ground, the attitudinal objects produced through the utterances. Thus, declarative sentences will, on a literal use, act as predicates of utterances that are the basis for illocutionary objects with a word/mind-to-world direction of fit, produced through the utterance of the sentence. Then, the meaning of (25a) will be the property of utterances in (25b), where 'M' stands for 'world/mind-world direction of fit' (see Chapter 3) and '$\angle$' stands for the by- relation, the relation of level- generation or grounding that holds between phatic objects (utterances) and locutionary or illocutionary objects (as well as between locutionary and illocutionary objects):

(25) a. Mary is a genius.
b. λu[∃d(u d & M(d) & prop([*Mary is a genius*])(d)]

Imperatives will act as predicates of utterances on which illocutionary objects are based that come with a world-to-word/mind direction of fit. Taking 'W' to stand for the property of having a world-to-word/mind direction of fit the meaning of (26a) will be as in (26b):

(26) a. Leave!
b. $\lambda u[\exists d(u \angle d \,\&\, \mathrm{W}(d) \,\&\, \mathrm{prop}([Leave])(d)]$

Declaratives and imperatives can be assigned the same truthmaker-based meaning as *that*-clauses, but they presuppose different conditions of direction of fit of the attitudinal object of which they are predicated.

Attitudinal-objects semantics allows for a straightforward account of performative sentences. On that account, the meaning of (27a) will be the property of utterances in (27b):

(27) a. I am hereby making the claim that John is guilty.
b. $\lambda u[\exists d(u \angle d \,\&\, \mathrm{make}(\mathrm{S}(u), d) \,\&\, \mathrm{claim}(d) \,\&\, \mathrm{prop}([\textit{that John is guilty}])(d))]$

Here '$S(u)$' stands for the speaker of the utterance u. (27b) as the meaning of (27a) amounts to the following: when a speaker utters (27a), on a literal meaning and having a performative use of *make the claim* in mind, then by that utterance a claim is produced whose content is given by *John is guilty*. The presence of the relation $\angle$ in (27b) can be attributed to the adverbial modifier *hereby*, which states that the by-relation obtains between the utterance and the described illocutionary object, and which can be taken to be implicit when it does not appear overtly on a performative use of the sentence. With a constative use of an illocutionary predicate, in the absence of overt or silent *hereby*, no grounding relation between the utterance and the illocutionary object is established.

The utterance of an imperative may at the same time produce a modal object which shares its satisfiers and violators with the illocutionary object. This permits an account of performatively used modals, namely on which sentences with such a modal will express properties of utterances as in (28b) for (28a):

(28) a. John may leave.
b. $\lambda u[\exists d(u \angle d \,\&\, \text{may}(d) \,\&\, \text{prop}([\textit{John leave}](d))]$

That is, (28a) expresses the property of an utterance of producing a (deontic) modal object of possibility with the content of *John leaves*. I will make use of that account of performatively used modals later for the semantics of harmonic modals (Section 5.3).

5.2. Compositional semantics of basic attitude reports

5.2.1. The syntax and semantics of complement clauses

The present approach is to consider attitude reports with complex attitude predicates as (roughly) in (29a) as basic and to syntactically derive from them attitude reports with simple attitude predicates as in (29b):

(29) a. John made the claim that he won the election.
b. John claims that he won the election.

This will permit interpreting simple attitude reports on the basis of the underlying complex ones, whose semantics obviously involves reference to attitudinal objects rather than propositions.

For present purposes, I will adopt a very simple proposal along the lines of Harves and Kayne (2012). On Harves and Kayne's analysis, which has been motivated by purely syntactic considerations, (30a) has the underlying structure in (30b):

(30) a. John needs to sleep.
b. John has [need to sleep].

In (30b), *need* is the head of a determinerless NP modified by what is taken to be a relative clause (*to sleep*). (30a) is obtained from (30b) by raising *need* and incorporating it into the verb. (30b) involves explicit reference to a modal object, and as the underlying structure of (30a) that is input to semantic interpretation, it suits the present semantics based on modal objects perfectly. Assuming that the NP *need to sleep* is interpreted by existential quantification over modal objects, the literal interpretation of (30b) below is then also the interpretation of (30a):

(31) $\exists$d(have(John, *d*) & need(*d*) & prop([*John to sleep*])(*d*))

On that analysis, the complement clause, being treated as a relative clause modifying a noun, is not a referential term referring to a proposition.

In the same spirit, (32a) will be derived from (32b), with subsequent movement of *claim* into SPEC(VP) and incorporation into the verb, as in (32c). The interpretation of (32a) will then be as in (32d):[5]

(32) a. John claims that S.
b. John made [$_{NP}$ claim] [$_{CP}$that S]
c. John [[claim] made [$_{NP}$ ~~claim~~ [$_{CP}$that S]]
d. $\exists$d(make(John d) & claim(d) & [*that* S](d))

Such an analysis of attitude verbs matches the theory of lexical decomposition in syntax of Hale and Kayser (2002), according to which a verb like *walk* is derived from a light verb-noun combination *take walk*.

One question (32b) raises is the absence of the determiner with *claim*. Harves and Kayne take *need* to be derived from *have need* (light verb NP),

[5] I will leave it open whether incorporation should be based on phrasal movement of the NP *claim* into the verbal specifier position or on adjunction of the noun *claim* to the verb, the more traditional view of incorporation.

without determiner, an analysis that was taken over in (32b), which means that (29a) is not strictly derived from (29b).

The analysis in (32c) (within simplified syntax) raises one important issue, and that is to explain the obligatoriness of the clause. Clausal modifiers of nouns are optional, but clausal complements of verbs are often obligatory, for example with the verbs *claim* and *believe*. This requires a clarification as to the nature of the obligatoriness of clausal complements with attitude verbs. One might think that any attitude verb describing a content-bearer, an attitudinal object, requires a clausal complement. However, this is not the case.[6] *Lie*, *confess*, and *agree* always describe contentful acts, but they do not require a clausal complement, and neither does *think*; *talk*, a verb that describes content-bearers of the locutionary sort (Chapter 6), does not even allow for CP complements. Those verbs contrast with *whisper* and *scream*, which describe content bearers only with a CP complement, not in the absence of it (in which case, they just describe acts of making noises). Thus, the obligatoriness of clausal complements with attitude verbs appears to be a matter of syntactic selection, not semantic selection.

A simple way of casting the obligatoriness of a clausal complement with verbs like *claim* and *believe* may be as follows: the CP involves a functional projection FP hosting a feature [+prop] ('propositional content'), which needs to be selected by the noun *claim*. The noun *claim* in turn carries the same feature [+prop], as does the verb, which in turn may enforce movement of the noun *claim* into the specifier position of the VP (or adjunction to the verb):

(33) John [[$_{\text{SPEC(VP)}}$ claim [+prop]] [made [$_{\text{F}}$+prop]][$_{\text{NP}}$ ~~claim~~ [$_{\text{F}}$ +prop]] [$_{\text{CP}}$that [[$_{\text{F}}$+prop] S]]]]

There is an alternative proposal in the literature that would be able to explain the obligatoriness of the clause, namely the analysis of attitude reports by Arsijenevic (2009). Arsijenevic takes clausal complements of attitude verbs to be special relative clauses involving an attitudinal noun in the specifier projection of a functional projection FP, which is taken to be the force projection (following Rizzi 1997 and others) and to be headed by a feature [+assert]. Simplifying and slightly modifying Arsijenevic's proposal for current purposes, the syntactic structure underlying (34a) would be the one in (34b),

[6] Thanks to Keir Moulton for pointing the generalization out to me.

with subsequent phrasal movement of the NP into the complement position and then the specifier position of the VP, as in (34c):[7]

(34) a. John claims that S.
b. John make $[_{NP}]$ $[_{CP}$ that $[_{FP}$ $[_{NP}$claim] $[_{F'}[_{F}$ +assert] $[_{CP}$S]]]]]
c. John $[_{SPEC(VP)}$ $claim_i]$ $[_{V'}$ make $[_{NP}$[claim] $[_{CP}$ that $[_{FP}$ ~~claim~~ [+assert] S]]]]

In (34b), *claim* occupies the specifier position of the force projection. The presence of an attitudinal object noun like *claim* in the specifier position of the force projection is required by the feature [+assert], which explains why verbs like *claim* that result from incorporation require complement clauses.[8] There is one major issue with Arsijenevic's analysis, however, and that is the lack of an independent justification of the assumption that nominal roots of attitude verbs generally originate in the left periphery of the embedded clause.

Let us then assume that the interpretation of (29b) will be based on (29a) on a syntactic analysis along the lines of (32). The interpretation of (29b) is then obtained as follows. First of all, the sentence *S* will have a truthmaker-based bilateral content as its denotation, that is, a pair consisting of a set of verifiers *A* and a set of falsifiers *B*. The feature [+prop] itself will denote a function *prop* from such bilateral contents (pairs consisting of a set of verifiers and a set of falsifiers) to properties of attitudinal or modal objects, as below:

(35) $[+prop] = prop = \lambda A \lambda B \lambda d[A = pos(d) \,\&\, (neg(d) \neq \emptyset \rightarrow neg(d) = B)]$

That is, [+prop] denotes the function mapping the set (of verifiers) *A* and the set (of falsifiers) *B* onto a property of attitudinal or modal objects *d* such that *A* is the set of satisfiers of *d* and *B* is the set of violators of *d*, if *d* has violators. The noun and the *that*-clause will then be interpreted by predicate

[7] See also Arsenijeviç (2020) in the context of a discussion of attitudinal objects.

[8] The force projection is meant to be able to host evidential, attitudinal, or modal material as features in its head or as phrases in its specifier position. Arsijenevic argues that the specifier position of FP can also be occupied by adverbials that introduce an intensional context (*reportedly, according to Joe*):

(i) Reportedly, John left the competition.

Just like the noun *claim* in (29a), such adverbials will act as predicates of epistemic attitudinal objects whose content is given by the sentence they modify and thus seem to play the very same role as the attitudinal noun.

modification, as in (36a), and the entire sentence (29a) will have the logical form in (36b):

(36) a. [the claim that [+prop] S] = λd[claim(d) & [+prop](<pos(S), neg(S)>)(d)]
b. $\exists d$(make(John, d) & [the claim that [[+*prop*] S]](d))

That is, the *that*-clause *that* S denotes the property of attitudinal (and modal objects whose content is given by *S*, and *John claimed that* S states that there is a claim by John falling under the property denoted by the *that-S*. Again, on this analysis, *that* does not make a particular semantic contribution, and existential quantification is taken to be associated with the bare NP modified by the *that*-clause (a special relative clause).

There is one apparent difficulty for the derivation of simple attitude predicates from complex ones, and that is the considerable number of verbs that are not obviously derived from a corresponding noun, such as *think*, *assume*, *assert* (*thought* is derived from *think*, *assumption* from *assume*, and *assertion* from *assert*). In order to apply the analysis in full generality to all attitude verbs, it is necessary to posit a more abstract nominal root that is distinct from the apparent deverbal nominalization (say, a nominal root *assum* for *assume* / *assumption*). The deverbal nominalizations of those verbs would then be based on a more complex structure such as $[[[\text{assum-MAKE}]_V]\ \text{ion}]_N$. Positing more abstract lexical roots is a move that is entirely legitimate syntactically given the development of Distributive Morphology (Halle and Marantz 1993, Harley and Noyer 1999), where a categorical abstract roots are posited in the lexicon, from which both verbs and nouns (and other lexical categories) are derived when they appear in a particular place in a morpho-syntactic structure.

If syntactic analyses like this are to be generalized, then all attitude and modal verbs that take clausal complements are underlyingly complex predicates of the form light verb-noun (denoting satisfiables). This is not entirely implausible given certain theoretical views in syntax. The generalization about attitude verbs would go along well with the lexical decomposition approach to non-attitudinal verbs of Hale and Kayser (2002), which derives verbs like *walk* from *take a walk* and *nap* from *take a nap*, etc. It would also go along well with an overall syntactic view on which nouns are the primary syntactic category and there are ultimately only a small number of light verbs, an exploratory view put forward by Pawley (2006).

Still, it may look like the semantics of attitude reports that I have proposed is based on rather thin grounds, supported only by quite particular views

regarding lexical decomposition of verbs in syntax and the primacy of particular syntactic categories. But then little is certain about the right syntactic analysis of clausal complement structures in the first place, and there is no particular reason to hold onto the standard view on which clausal complements are referential terms referring to propositions when that view faces a range of serious problems of both linguistic and philosophical sorts.

However, it should be pointed out that there is another option for predicativist analysis of clausal complements of attitude verbs that does not rest on the decomposition of attitude verbs and may yet just involve attitudinal objects, rather than propositions. This is the analysis proposed by Moulton (2009, 2017). Moulton takes clausal complements to act as predicates of content bearers that occupy an argument position of the embedding predicate. On that view, the clausal complement (or subject) itself does not occupy an argument position, but is only linked to an empty element in argument position (which may but need not be an NP). Thus (37a) has the syntactic structure in (37b) and the logical form in (37c):

(37) a. John claims that S.
b. John claims e_i [that S]$_i$.
c. ∃d(claim(John, d) & [*that* S](d))

What is unsatisfactory about this analysis, though, is that it does not draw a distinction between clausal complements of basic attitude verbs and of other clause-embedding predicates such as factive predicates (as well as predicates applying to states of affairs and to contextually given claims discussed in Chapter 7). This distinction is very clear semantically as well as syntactically (as will be discussed in Chapter 7). All clausal complements would play the same semantic role, on Moulton's analysis, with the only difference being the kind of content bearer that is an argument of the embedding predicate. However, there are significant semantic differences between clausal complements of basic attitude verbs and other clause-embedding predicates (see Chapter 7).

5.2.2. The syntax and semantics of special quantifiers as complements of attitude verbs

An important fact about attitude verbs is that with most of them the clausal complement can be replaced by what I call 'special quantifiers'. In English,

special quantifiers comprise quantifiers like *something*, *everything*, *several things*, *a lot*, and *little*, the deictic pronoun *that*, and the interrogative and relative pronoun *what*. Special quantifiers and pronouns are clearly NPs. What makes them special is that when they take the place of clausal complements of attitude verbs, they generally do not lead to the Substitution Problem. They are thus unlike full NPs such as *some proposition*, *some entity*, or *some thing*, which, with most attitude verbs, display the Substitution Problem (exceptions being a few verbs like *believe*, *assert*, *accept*, *prove*).[9] *Claim* is representative of attitude verbs accepting special quantifiers but not ordinary NPs:

(38) a. John claimed something / nothing / several things / a lot.
b. John claimed that.
c. John claimed what Mary claimed.
d. ??? John claimed some proposition / some entity / some thing / some content.

The semantic behavior of special quantifiers is an important additional motivation for attitudinal objects being at the center of the semantics of attitude reports. Special quantifiers and pronouns generally stand for just the sorts of things that the corresponding nominalizations of the embedding verb stand for (which is also why they can be called 'nominalizing' quantifiers, see Moltmann 2003a, b,2013a, 2014, 2017a).

On the standard, Relational Analysis of attitude reports, special quantifiers as complements of basic attitude verbs are taken to stand for propositions. Only if they stand for propositions, according to the underlying assumption, can they validate inferences such as those in (39a) and in (39b):

(39) a. John thinks that Mary is happy.
John thinks something.
b. Mary believes everything Bill believes.
Bill believes that it is raining.
Mary believes that it is raining.

However, the actual semantic behavior of special quantifiers and pronouns indicates that such quantifiers and pronouns do not stand for propositions,

[9] The few verbs in English that permit the substitution of the clausal complement by an ordinary NP are *believe*, *prove*, and *accept*. This means that those verbs can also be used as ordinary transitive verbs denoting a relation between agents and content bearers.

but rather for attitudinal objects or kinds of them (as was already pointed out in Chapter 1).

First, restrictions and predicates of special quantifiers cannot generally be understood as predicates of propositions; rather what they are predicated of is attitudinal objects (or kinds of them):

(40) a. John said something nice (namely that Mary is talented).
b. John thought something daring (namely that he will build a house).
c. John claimed something that made Mary very upset.
d. Joe overheard what Mary requested.

It is not a proposition that is said to be nice in (40a), but rather something like John's remark or John's claim. It is not a proposition that is said to be daring in (40b), but a thought. It is not a proposition that could have made Mary upset according to (40c), but rather a claim. Finally, it is not a proposition that Joe overheard according to (40d), but Mary's request.

Second, constraints on reports of the sharing of the content of different attitudes indicate that special quantifiers or pronouns in such reports stand for kinds of attitudinal objects rather than propositions:

(41) a. John believes what Mary believes, namely that Bill was elected president.
b. ?? John screamed what Mary believes, namely that Bill was elected president.
c. ?? John expects what Mary believes, namely that Sue will study harder.
d. ?? John assumes what Mary expects, namely that it will rain.

The sentences in (41b–d) are just as unacceptable as statements of identity or sameness with the corresponding nominalizations:

(42) a. ?? John's scream was / was the same as Mary's belief.
b. ?? John's expectation is / is the same as Mary's belief.
c. ?? John's assumption was / was the same as Mary's expectation.

This indicates that the free relative clause *what Mary believes* stands in fact for a belief, a (kind of) attitudinal object, rather than an abstract proposition; similarly, *what Mary expects* stands for a (kind of) attitudinal object that is an expectation.

Data of this sort support the view that special quantifiers range over the sorts of things that the nominalization of the verb would stand for, namely attitudinal objects or kinds of them, rather than what could be the semantic values of a *that*-clause.[10]

Special quantifiers are not only special semantically. They are also special syntactically in that they contain a light noun in the sense of Kayne (2005, chap. 4, 8, 7, 10).[11] This is the morpheme *thing* in *something*, *everything*, and *several things*. Light nouns are a syntactic category distinct from ordinary nouns. One characteristic feature of light nouns is that they can stay silent in the absence of an antecedent, unlike ordinary nouns (which can be unpronounced only through deletion under identity). The silent version of *thing* is also arguably part of *what*, *that*, *little* and *a lot* (Moltmann 2022b). Thus, if THING is the light noun in its silent or pronounced version, the underlying structure of those quantifiers will be *a lot THING*, *what THING*, and *that THING*. Other languages, such as German, have even fewer light nouns appearing in special quantifiers. For example, no light noun appears in German *alles* 'everything', *nichts* 'nothing', and *etwas* 'something'. But that does not mean that a silent version of THING is not present there as well.

The meaning of the light noun *-thing* is distinct from that of the full noun *thing*. The latter describes enduring material objects, the former any entity whatsoever (which makes light quantifiers such as *everything* particularly suited for the expression of absolute generality). Other light nouns than THING include PERSON (which is an unpronounced part of *everyone*), TIME (which is part of *sometimes*), and PLACE (which is a pronounced part of *someplace else* and an unpronounced part of *everywhere*). Unlike the light nouns PERSON, TIME, and PLACE, THING can have a particular nominalizing function, allowing it to occur in non-referential positions.

Light nouns form a universal inventory and serve to classify things, either just as entities (THING) or as entities of a particular type. In their general classificatory semantic function, light nouns are on a par with classifiers in languages such as Chinese or nouns like *piece* or *amount* in English (*a piece of bread*, *an amount of water*). Their ability to act as classifiers appears

[10] This generalization has been made first in Moltmann (2003a, b,2013a).
[11] See also Kishimoto (2000) on light nouns.

crucial for understanding their semantics when they take the place of clausal complements. Let us consider (43):

(43) John claimed something.

Using simplified syntax, the light noun *thing* here acts as a classifier selecting an NP headed by *claim*, as in (44), where 'ClP' stands for 'classifier phrase':

(44) John make [$_{QP}$ some [$_{ClP}$ thing [$_{NP}$ claim]]]

Claim subsequently moves up into specifier position of the VP:

(45) John [$_{SPEC(VP)}$ claim]$_i$ [$_{V'}$ makes] [$_{QP}$ some [$_{ClP}$ thing [$_{NP}$ ~~claim~~]]]]

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

The analysis immediately accounts for the fact that the Substitution Problem arises with ordinary NPs, but not light NPs. *John claimed some thing* and *John claimed some proposition* are impossible because the full nouns *thing* and *proposition* do not act as classifiers selecting NPs, which would provide a position for *claim* to originate in.[12] The light noun THING as a classifier selects NPs, and it is the only light noun that can select an NP like *claim* since light nouns such as PERSON, PLACE, TIME cannot form special quantifiers.

Given that special quantifiers as complements of attitude verbs range over attitudinal objects, their restrictions will be predicates applied to attitudinal objects. Constraints on reports of the sharing of contents of different attitudes are also straightforwardly accounted for. The only thing that gives rise to complications is the syntactic structure of such reports. Let us take (46):

(46) John claimed what Mary claimed.

There is no unanimity about the syntax of free relative clauses such as *what Mary claimed* in (46). To the contrary, there is a major debate about

[12] The analysis might provide a novel account why adjectives need to follow *something* (*something nice*, **some nice* thing), given the underlying structure [$_{QP}$ *some* [$_{ClP}$ *thing* [$_{AP}$ *nice* [$_{NP}$ *claim*]]]]. See the discussion of the phenomenon in Kishimoto (2000) and Larson and Marusic (2004).

their syntactic analysis as well as significant crosslinguistic variation.[13] For present purposes I will adopt the view that free relatives are ordinary relative clauses restricting a silent quantifier ALL. In (46), *what* will be the head of a DP that consists also of a silent classifier THING and a nominal root *claim*. I will assume that the classifier *thing* is polysemous, being able to map the content of an attitudinal noun like *claim* both onto a property of individual claims ($THING_1$) (as in the examples in (40), e.g., (40c), *John claimed something that made Mary very upset*) and to a property of kinds of claims ($THING_2$) as in (46). Reports of sharing of the content of attitudes obviously involve $THING_2$.

(46) then is derived from the structure in (47a), with subsequent phrasal movement of the two occurrences of *claim* as in (47b), which permits *claim* to be incorporated into *made* in the embedded clauses as well as *made* in the matrix clause:

(47) a. John made [$_{DP}$ ALL [$_{CP}$ [$_{DP}$ what [$_{ClP}$ $THING_2$ [$_{NP}$ claim]]] [Mary made what [$THING_2$ claim]]]

b. John [$_{SPEC(VP)}$ claim [$_{V}$ made] ALL [$_{CP}$ [what [$_{ClP}$ $THING_2$ ~~claim~~]] [Mary [claim [$_{V}$ made]] [$_{QP}$ what [$_{ClP}$ $THING_2$ ~~claim~~]]]]]]]

If the wh-phrase [*what* [$THING_2$ *claim*]] is the head of the relative clause, *claim* in the upper position will be able to move into the specifier position of VP in the main clause. Moreover, *claim* in the complement inside the relative clause can move into the specifier position of the VP in the embedded clause. What is crucial in this syntactic structure is that there are two copies of the wh-phrase [*what* [$THING_2$ *claim*]]. This conforms with a common assumption about syntactic movement in contemporary generative syntax, namely the Copy Theory of movement (Chomsky 1993).

[13] There are two major views in the contemporary syntactic literature on free relatives. One view takes free relatives to be light headed relatives, modifying a pronominal element PRO or pro (Grosu 2003, Chierchia and Caponigro 2013). Another view takes the wh-category to be directly selected by the matrix verb, which means that free relatives are headless. Cecchetto and Donati (2011) propose a version of that view according to which words, but not phrases, have the power to change the label of the category they attach to. This is meant to explain why free relatives are introduced only by wh-word: a wh-word can turn a CP into a nominal constituent whereas a wh-phrase cannot. The problem is that the free relative *what Mary claimed* on the analysis in (47a) involves wh-phrases (*what* THING *claim*), not just wh-words, and so their analysis is not applicable.

If the free relative is interpreted as standing for the maximal entity satisfying the relevant open sentence, the logical form of (48a) will be as in (48b):

(48) a. John claimed what Mary claimed.
b. made(John, max d[[THING$_2$ claim](d) & make(Mary, d)])

That is, the making relation obtains between John and the maximal entity consisting of (kinds of) claims made by Mary. The interpretation of (46) based on THING$_2$ ensures that what is shared is a kind whose instances are attitudinal objects.

As was mentioned, here are well-known exceptions to the generalization that sharing requires the same kind of attitudinal object, often involving focusing on the use of adverbials (e.g., *John actually believes what Bill just assumes*, *Joe finally said what everyone just thought*). This appears due to a re-analysis of the verb into a more general concept (e.g., acceptance) and a modifier, as I proposed in Moltmann (2003a, 2013a). It is then the more general concept that describes the (kind of) attitudinal object.[14]

The proposed semantics of special quantifiers faces certain challenges, namely data that suggest that special quantifiers do not stand for attitudinal objects but rather only their content. Davis (2020) notes that *acquire* is applicable to *Mary's belief*, but not to things referred to as *what Mary believes*, where *what* is a special pronoun (??? *Mary did not acquire what she believes yesterday* vs. *Mary did not acquire her belief yesterday*). Likewise, *break* is applicable to promises, but not to what is referred to as *what Bill promised*. The reason does not seem to have to do with the kind of meaning conveyed by such predicates. *Come to share* is applicable to the same free relative clauses with attitude verbs (*Joe came to share what Bill believes*), as are predicates of satisfaction (*Mary fulfilled what she promised*, *Sue kept what she promised*,

[14] In Moltmann (2003a, b, 2013a), I suggested a different analysis, on which the morpheme *-thing* in (ia) moves up from its lower position and incorporates into the verb *think*, as in (ib), leading to the logical form in (ic). Making use of the logical form of attitude reports with clausal complements in (ib), V-*thing* will express the relation between events, agents, and attitudinal objects in (id):

(i) a. John claimed something.
b. John claim-thing$_i$ [some e$_i$]
c. Some x: claim-thing(e, John, x)
d. [claim-thing] = λexd[claim(e, x) & d = att-obj(e)]

This gives the logical form of (iia) in (iib):

(ii) a. John claimed something daring.
b. ∃e∃e'(claim(e, John) & daring(e') & e' = att-obj(e))

However, the movement of *-thing* was not further justified and independently motivated.

Sue complied with what Joe requested, Bill carried out what he decided to do). Instead, the reason is the fact that the predicates *acquire* and *break* ordinarily apply to material objects and have a derivative or idiomatic reading when applied to ordinary NPs standing for attitudinal objects, a reading that is available only in the presence of a full NP, not a light NP.[15]

5.3. Harmonic modals

Attitudinal-objects semantics has a particular application to modals in embedded contexts when they exhibit modal concord with the embedding verb, that is, harmonic modals (to use Kratzer's 2016 term).[16] Attitudinal-objects semantics provides a straightforward semantics of harmonic modals and avoids difficulties that arise for the standard semantics of modals when applied to the phenomenon.

Harmonic modals such as *should* and *must* below occur in clauses embedded under speech-act verbs in a way in which they do not contribute to the content of the reported speech, but rather just reflect the inherent modality associated with the embedding predicate:

(49) a. John requests that Mary *should* leave.
b. The general demands that the troops *must* leave.

There are also harmonic uses of modals of possibility, with suitable embedding verbs:

(50) a. John suggested that Bill *might* leave.
b. The document indicates that Bill *might* be guilty.
c. John thought / hoped that the package *might* have been for him (when he opened it).

Given possible-worlds semantics, it is tempting to consider harmonic modals as devices that spell out the inherent modality of the attitudinal object

[15] One might speculate that *acquire* and *break* on the idiomatic reading become light verbs and that the combination of light verb–light DP is ruled out as a matter of general principle. Thus, (ib) as an inference from (ia) is likewise impossible, *make* being a light verb:

(i) a. John made Mary happy.
b. John made something

Thanks to Clementine Raffy for suggesting this explanation to me.

[16] See Portner (2009), Zeijstra (2007). Yalcin (2007), and Yanovich (2017) for a discussion of harmonic modals of various sorts.

of which the clause is to be predicated (Kratzer 2016). The harmonic modal in the embedded clause in (49a, b) then spells out universal quantification over the possible worlds that make up the content *cont*(*d*)(*w*) of the attitudinal object *d*, as below, where *w* is the actual world:

(51) $\lambda d[\forall w'(w' \in \text{cont}(d)(w) \rightarrow \text{Mary leaves in } w')]$

However this could not carry over to modals of possibility.[17] In (50a–c), the modal *might* should spell out existential quantification, which would yield the following meaning of the *that*-clauses:

(52) $[\textit{that}\ \text{S}] = \lambda d[\exists w'(w' \in \text{cont}(d)(w)\ \&\ \text{S is true in } w')]$

But in (50a), the *that*-clause does not just specify what is the case in some world in which John's suggestion is taken up; it specifies (at least) what is the case in all the worlds in which the suggestion is taken up. Similarly in (50b), the *that*-clause does not just say what is the case in some world compatible with what the document says, but what is the case in all such worlds, and likewise for John's thought or hope in (50c).

Attitudinal-objects semantics is able to account for harmonic modals of both necessity and possibility. The idea is that harmonic modals act as performative uses of modals in embedded contexts.[18] Recall that a sentence with a performatively used modal such as (53a, b) will express properties of utterances by which a modal object of the relevant sort is produced, as in (54a, b):

(53) a. You must leave!
b. You may leave!

(54) a. $\lambda u[\exists d(\text{u} \angle d\ \&\ \text{must}(d)\ \&\ [\textit{leave!}](d)]$
b. $\lambda u[\exists d(\text{u} \angle d\ \&\ \text{may}(d)\ \&\ [\textit{leave!}](d)]$

With a harmonic modal acting as a performative modal in an embedded context, (49a) will have the logical form in (55a) based on the meaning of

[17] See Moltmann (2018b, 2020a).

[18] Modals can be used performatively also in other contexts, most obviously in sentences embedded under verbs of saying. Thus, (i) can report a demand by John, uttering *Mary must leave* and using *must* performatively:

(i) John said that Mary must leave.

the embedded clause in (55b), now formulated as the property of objects in virtue of which there is a modal object of weak necessity that shares its truthmaking with the prejacent of the modal:[19]

(55) a. $\exists d$(make(John, d) & request(d) & [*that Mary should leave*] (modal-part(d)))
b. [*that Mary should leave*] = λd[$\exists d'(d \angle d'$ & should(d') & [*Mary leave*](d'))]

Similarly, (50a) will have the logical form in (56a), based on the meaning of the embedded sentence in (56b):

(56) a. $\exists d$(make(John, d) & suggestion(d) & [*that Bill might be guilty*] (modal-part(d)))
b. [*that Bill might leave*] = λd[$\exists d'(d \angle d'$ & might(d') & [*Bill be guilty*](d'))]

Here 'modal-part(d)' picks out the modal object that is a non-temporal part of the attitudinal object d, an object that shares the very same satisfaction conditions with d. An act of demanding produces a demand as well as possibly an obligation with the very same satisfaction conditions. An act of permitting produces an illocutionary and a modal product of permission with the same satisfaction conditions.

Harmonic modals are another phenomenon in which object-based truthmaker semantics has a significant advantage over possible-worlds semantics with its quantificational analysis of modals.

Appendix 5.1
Truthmaker-based content of attitudinal objects and opacity

A semantics of attitude reports needs to be able to account for opacity, the failure of substitutivity of co-extensional terms, such as the failure for (1a) to imply (1b):

(1) a. The joker believes that Bruce Wayne is a wimp.
b. The joker believes that Batman is a wimp.

[19] In Moltmann (2017a, 2018a), I took modal objects described by performatively used embedded modals to be products produced by the very same illocutionary acts as the attitudinal objects. This led to slightly different logical forms, involving Davidsonian events and two different product functions applying to them.

While attitudinal-objects semantics does not make a specifically novel contribution to the issue, here is a way of taking care of opacity within the approach.

Opacity may arise with the choice of one term over a different, co-referential one, but it may also arise with a particular use of the same co-referential name and with different co-referential uses of a pronoun, so that substitution itself won't make a difference. Relevant cases are familiar from the philosophical literature (Kripke's 1979 Paderewski case, Crimmins and Perry's 1989 phone-booth case). In all cases of substitutional or referential opacity, what is commonly considered a 'mode of presentation' associated with a name or use of a name or pronoun is part of the content of a described attitude and bears on the overall truth conditions of the attitude report.[20]

Let us first of all note that the semantics so far predicts the non-identity of beliefs that have the same truthmaking conditions, but would involve different modes of presentation. Thus, given the truth of (2a, b), (2c) is predicted to be false:

(2) a. Pierre believes that Londres is pretty.
b. Pierre believes that London is not pretty.
c. Pierre's belief that he known London is Pierre's belief that he knows Londres.

That is because beliefs as attitudinal objects do not just have a truthmaker-based content; they may be more specific than that and involve various components or features that, as cognitive particulars, would amount to modes of presentation. However, this would not account for the way modes of presentation may influence the truth conditions of the overall attitude report on a particular intended meaning, that is, the difference in truth conditions between (1a) and (1b).

The following is a way of accounting for the way 'modes of presentation' figure in the intended meaning of an attitude report involving an attitudinal object and its satisfaction conditions. It involves making use of a background attitudinal object. Thus, an agent may have different background beliefs regarding a particular object, and those may involve the use of a particular name as in (2a, b). Also, two agents may have different background beliefs regarding a particular object. It is when such background beliefs are part of the intended meaning of the utterance that modes of presentation come into play.

This will not account, though, for potential differences in modes of presentation associated with different occurrences of the same pronoun or the same name when those occurrences stand for the same individual, as on the variant of (2a, b) when the same version of the name *London* is used. For that purpose, one may take modes of presentations to be cognitive particulars that are components of background beliefs.[21] Those elements, moreover, may be connected to elements in what the belief is about, the subject matter of the belief. This is, formally, the fusion of the set of the truthmakers and the set of falsity makers of the belief d, $fus(pos(d) \cup neg(d))$ (Chapter 3). Modes of presentation will be associated with elements in such a belief content in the sense of those elements being individuals playing particular roles in situations, not just individuals per se (in order to account for the various cases of opacity).

[20] There is also a pragmatic tradition pursued by Soames and Salmon among others that takes modes of presentation not to be part of the intended meaning of attitude reports, but to be implicated by them. I will set that tradition aside in this appendix.

[21] See Crimmins and Perry (1989) for a related approach.

Very generally, then, for (3a) there will be a relation $R_{u(S)}$ determined by the intentions of the speaker when uttering *S* (*u*(*S*)) and which holds of *fus*(*pos*(d) ∪ *neg*(*d*)).[22] The logical form of a belief report *John believes that* S will then be as in (3b):

(3) a. John believes that S.

b. $\exists d(\text{have}(\text{John}, d) \,\&\, \text{belief}(d) \,\&\, R_{u(S)}(d, \text{fus}(\text{pos}(d) \cup \text{neg}(d))) \,\&\, \text{prop}([\textit{that}\ \text{S}])(d))$

That is, for a belief *d* had by John that has the satisfaction conditions given by *S*, features or components of *d* relate to elements in what *d* is about in the way intended by the speaker when uttering the *that*-clause.

Where should the condition $C_{u(S)}$ come from, that is, what is its syntactic basis? A plausible view is that it is associated with the head of the functional projection ('force projection') FP, just like the feature [+prop] that mediates between the truthmaker-based bilateral content of the clause and the property of attitudinal or modal objects denoted by the *that*-clause as a whole. This would explain why not only attitude verbs set up an opaque sentential context, but also attitudinal adverbials (*According to Pierre, London is pretty; Reportedly, John smokes*) (Section 5.2.2.), as noted by Bach (1997). Attitudinal adverbials, as pointed out by Arsijenevic (2009), can occupy the specifier position of the functional projection FP in both embedded and independent sentences. In fact, $C_{u(S)}$ can be considered part of the interpretation of the feature [+prop], as proposed in Section 5.2.1., and thus would be part of a compositional, syntax-based semantics (rather than added as a matter of pragmatics).[23] However the proposal may be elaborated further, what is certain is that truthmaker-based attitudinal object semantics of attitude reports allows for an account of opacity.[24]

Appendix 5.2
Do clauses give the complete content or a partial content of a satisfiable?

Both in Chapters 3 and 4 and in this chapter the assumption was made that a clause when predicated of a satisfiable object gives its complete satisfaction conditions, that is, it shares its satisfaction conditions with the satisfiable and thus is subject to an equal-content

[22] A simpler condition, suggested to me by Gary Ostertag, would be the one below, where Φ* is a mode-of-presentation property selected by the speaker.

(i) $\exists d(\text{have}(\text{John}, d) \,\&\, \text{belief}(d) \,\&\, \Phi^*(d) \,\&\, [\text{that S}](d))$

However, that condition is less constrained than that in (3b), which restricts intended (types of) modes of presentation to what an attitudinal object *d* is about and modes of presentation to what is contained in *d*.

[23] This differentiates the proposal from that of Crimmins and Perry (1989) and Crimmins (1992), who take modes of presentation to make up an additional argument position of the belief relation and thus adopt a hidden-indexical theory.

[24] For the particular case of verbs of saying, the ontology of attitudinal objects provides yet another way of dealing with hyperintensionality if the complement involves quotation. In that case it serves to (also) characterize the form of a phatic object. See Chapter 6.

condition. There are some data that may seem problematic for that assumption, data have been discussed in particular by Fara (2013) with examples such as (1):

(1) Fiona wants to catch a fish.

Fiona's desire is not satisfied if she catches some fish or another, but only if she catches, let's say, a fish she can eat. Fara argued that such data show that the satisfaction conditions of a reported desire are underspecified by the complement clause, which means that the equal-content condition would not obtain.

The phenomenon is not limited to desire. The same kind of underspecification can arise for modal objects like *need*, as in the statement about the telic modality corresponding to (1) below:

(2) Fiona needs to catch a fish (in order to have something to eat for dinner).

For that reason, in previous work (Moltmann 2014, 2017a, 2020a), I had imposed a partial-content condition on clausal complements:

(3) The Partial-Content Condition
For a sentence *S* and a satisfiable object *d*, part-prop([*S*])(*d*) iff the content of *S* is a partial content of the content of *d*.

Recall from Chapter 4 that a set of situations *A* is a partial content of a set of situations *B* iff every element in *A* is contained in an element of *B* and every element of *B* has an element of *A* as a part.[25]

Not all satisfiable objects display this sort of underspecification, though. What appears to play a role is a difference in the direction of fit between attitudinal and modal objects. Needs and desires come with a world-to-word/mind direction of fit and as such permit an underspecification of their satisfaction conditions by the clausal complement. By contrast, beliefs, claims, and epistemic states, which come with a word/mind-to-world direction of fit, do not seem to display the same sort of underspecification:

(4) a. Fiona believes that she caught a fish.
b. Fiona claims that she caught a fish.
c. Fiona might have caught a fish.

Fiona's belief and Fiona's claim in (4a, b) intuitively are true just in case Fiona caught a fish, whether edible or not.
The same holds for the likelihood or probability in (4c) for Fiona to have caught a fish.

[25] The Partial-Content Condition had been defined with non-quantificational sentences in mind. As such it applies well to conjunctions: the content of *A* is a partial content of the content of *and B*. Even though it seems intuitive, it is actually not obvious how to apply the Partial-Content Condition formally to the set of satisfiers of *Fiona catches a fish* and of *Fiona catches an edible fish*. *Fiona catches a fish* will have as the set of its verifiers possible situations of Fiona catching a particular fish. Some of those situations will contain actual fish that are not edible by nature. This requires making use of impossible situations as extensions, situations in which those fish are edible.

The lack of underspecification also holds for the existence conditions of facts (that is non-worldly facts as denotations of explicit fact descriptions): the fact that Fiona caught a fish obtains regardless of whether she caught a fish she can eat or not. The condition moreover holds for the realization conditions of states of affairs.[26] The state of affairs in which Fiona caught a fish obtains just in case she caught any fish whatsoever.[27]

Another semantic argument against the partial-content condition is the reading of *completely* below:

(5) John completely agrees that Joe is incapable of doing the job.

If the *that*-clause specified just part of the content of the object of agreement, then *completely* could have a reading relating to a richer, in part contextually given, content; but it just cannot have such a reading. The same holds for *completely* with factive verbs:

(6) John completely understood that the problem is unsolvable.

With *that*-clauses specifying a partial content it would also be hard to make sense of *namely* as below, which requires displaying the entity or plurality mentioned by the preceding indefinite in its entirety:

(7) a. ?? John invited some women, namely Mary and Sue. (He in fact invited Mary, Sue, and Anna.)
b. ?? John expects something, namely that Mary will be invited (in fact he expects that Mary and Joe will be invited).

Yet another argument against the partial-content condition is that *that*-clauses cannot be stacked, as seen in (8a), unlike relative clauses, as in (8b) (Moulton 2009 pp. 29–30, Elliott 2020):

(8) a. * John believes that it is raining that it is cold.
b. John saw the woman that he met yesterday that had impressed him so much

The semantic explanation would be that *that*-clauses give the full content of the described attitude, which can be achieved by a *that*-clause.[28] There may be an alternative, syntactic explanation, though, for the impossibility of stacking. For example, it can be accounted for on Arsenijeviç's (2009) analysis on which clausal complements require

[26] See Chapter 7, Section 7.2, for more on the ontology and semantic role of facts and states of affairs.

[27] Braun (2015) argues that underspecification arises for all attitudes, including beliefs. He argues in favor of an agent having multiple attitudes as a solution to the underspecification problem. That is, in (1) Fiona has both the desire to catch any fish whatsoever as well as a desire to catch an edible fish.

[28] Note that a *that*-clause may be chosen that reports a content is more specific than the *that*-clause. That is the case for a specific use of an indefinite, e.g., when Mary's belief that Bill stole the picture is reported as:

(i) Mary believes that someone stole the picture.

raising of an attitudinal noun from the left periphery of the clause into a position within the main clause, an operation that would be inapplicable to two or more stacked clausal complements. Stacking of clausal complements of nouns would moreover be excluded by Hankamer and Mikkelsen's (2021) account, on which the definite determiner syntactically selects the clausal complement.[29]

Given the validity of the other arguments, the challenge then is to account for why the complement of *need* and *desire* appears to give only a partial specification of the content of the need or the desire. One might suggest that what matters is the infinitival form of the complement of *need* and *desire* that is responsible. But in fact, the choice of a finite or an infinitival complement does not seem to matter. The underspecification effect obtains in (9c) in the same way as it does in (9a, b) and it fails to obtain in (10b) in the same way as it fails to obtain for (10a, b):

(9) a. Fiona must catch a fish.
b. Fiona needs to catch a fish
c. Fiona hopes that she will catch a fish.

(10) a. John must have caught a fish.
b. Mary claims that John caught a fish.
c. Mary claims to have caught a fish.

Of course, it is implausible that clausal complements should express different properties of content-bearers depending on the directions of fit of the attitudinal or modal object that the embedding predicate describes. In fact, some of the diagnostics for an equal-content condition apply to predicates involving a world-to-word/mind direction of fit as well, such as the impossibility of stacking and the understanding of *namely*-phrases:

(11) a. * Fiona wants [to catch a fish] [to buy some wine].
b. Fiona wants something, namely to catch a fish.

Clearly, for satisfiable objects with a world-to-word/mind direction of fit (such as a desire or a need) the completion of the satisfaction conditions conveyed by the clause must

[29] Elliott himself observes that CP-complements can be conjoined:

(i) John claimed that he solved the problem and that he solved the problem this morning.

Semantically, (i) should be allowed since the verb describes two events associated with two different attitudinal objects. Note that conjoined CPs can modify plural nouns as in (iia), though not singular nouns as in (iib):

(ii) a. John's claims that he solved the problem and that he solved the problem this morning.
b. ?? John's claim that he solved the problem and that he solved the problem this morning.

Conjunctions of *that*-clauses appear to be better with singular *belief*, as pointed out to me by Bob Matthews:

(iii) John has the belief that it is raining and that he is not dressed for the weather.

This seems related in some way to the fact that *belief* relates to a state, rather than an act.

come from the context. But it can't be a background belief or common ground that would provide the completion. Rather what completes an incomplete specification of an attitudinal or modal object with a world-to-word/mind direction of fit is conditions constitutive of an ideal situation in which what is desired or needed is fulfilled. Only with those conditions as background can the clausal complement give the full satisfaction conditions of the desire or need. This suggestion, of course, needs to be spelled out in detail, a task that will have to be left for another occasion.

6

Levels of Linguistic Acts and the Semantics of Saying and Quoting

Attitudinal-objects semantics of attitude reports has an important extension to verbs of saying and to quotation, based on an extension of the domain of modal and attitudinal objects to speech-related objects. This extension makes use of Austin's (1962) insight that illocutionary acts are performed by performing lower-level linguistic acts, in particular locutionary acts (roughly, acts of conveying a content without commitment) and phatic acts (roughly, acts of uttering expressions, with a particular conceptual meaning). Just as illocutionary acts come with illocutionary objects, locutionary acts come with locutionary objects ('utterances' or what we may refer to as 'sayings') and phatic acts with phatic objects (what we also refer to as 'tokens'). As with attitudinal objects in general, it is locutionary and phatic objects that play the semantically important role.

Verbs of saying include *say*, *write*, *whisper*, *scream*, *repeat*, and *praise*, as well as *think*, a locutionary verb in the realm of the mental. Verbs of saying all take *that*-clauses as complements as in (1a), as well as pure quotes as in (1b), and direct quotes as (1c):

(1) a. John said that he won the race.
    b. John said 'shh'.
    c. John said 'I won the race'.

Like basic attitude verbs, verbs of saying display the Substitution Problem, illustrated in (2a), though they permit special quantifiers, as in (2b), which is a valid conclusion of (1a), (1b), as well as (1c). Special quantifiers with non-mental locutionary verbs include NPs headed by *word(s)*, that is, '*words*-NPs,' as in (2c):

(2) a. * John said a proposition / a content / a sentence / a verb.
    b. John said something.
    c. John said a few words.

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The main idea for the semantics of verbs of saying is that their complements (*that*-clauses or pure or direct quotes) may express not just content-related properties (specifying satisfaction conditions), but also form-related properties, to be predicated of phatic objects.[1] While *that*-clause complements of verbs of saying act as predicates of locutionary objects, giving their satisfaction conditions, pure quotes as complements of verbs of saying as in (1b) act as predicates of phatic objects specifying their form. Direct quotes as in (1c) act as predicates of complexes of phatic and locutionary objects, specifying their form as well as their content. A similar account may apply to mixed quotation (*Mary 'resides' in Munich*).

By extending the ontological domain to locutionary and phatic objects, attitudinal-objects semantics allows for a unified account of attitude verbs and verbs of saying with their various sorts of complements.

Making use of phatic objects of different kinds and taking quotations to serve as predicates of phatic objects furthermore promises a novel, unified compositional semantics of quotation of the different sorts. Pure quotes on that semantics convey properties of phatic objects, and direct quotes (and perhaps mixed quotes) convey properties of both phatic and locutionary objects. Meanings of quotes as properties of such objects can be obtained compositionally, it will be suggested, based on a novel type of syntactic structure in which lower-level linguistic structures (phonetic, phonological, or morpho-syntactic structures) form part of the syntactic structure of the sentence that is input to interpretation (Logical Form or LF, in the tradition of generative syntax).

The main part of this chapter will consist in elaborating the ontology of locutionary and phatic objects and extending attitudinal-objects semantics to verbs of saying with their various complements (including special NPs headed by *word(s)*). At the end, it will give an outline of the semantics of quotational complements against the background of a novel conception of their syntax and their semantic composition.

[1] The theory of quotation of Ginzburg and Cooper (2014), which is an application of an act-related view of meaning to quotation, shares similarities with the present approach to quotation, for example by making use of 'locutionary propositions' for direct quotation. However, its empirical motivations and theoretical framework are rather different, and the present space does not permit a more detailed discussion.

6.1. The ontology of locutionary and phatic objects

6.1.1. Austin's levels of linguistic acts

Illocutionary acts (acts of asserting, requesting, promising, or asking a question) are performed by performing lower-level linguistic acts, acts of uttering sentences with a particular structure and words with particular lexical meanings. This hierarchy of linguistic acts plays a central role in Austin's (1962) theory of speech acts. Austin distinguished first of all *locutionary acts* as acts below the level of illocutionary acts. He further distinguished between *rhetic act*s, acts (roughly) of uttering the words in the sentence with a specific meaning and reference, *phatic act*s, acts of uttering words, and *phonetic act*s, acts of producing sounds. For Austin locutionary acts consist of rhetic, phatic, and phonetic acts.

Rhetic acts are meaning-related acts below the level of illocutionary acts. They are characterized as acts of using words with a specific meaning or reference.[2] For a given use of a sentence a rhetic act could not generally be a single act. Rather it generally consists of a plurality of acts involving the words or relevant constituents of the sentence.[3] This in turn could not be a mere plurality of acts of using the words in the sentence, but only a coordinated or structured plurality of acts of using expressions with particular meanings *and* with semantically relevant relations that will lead to the composition of the meaning of the sentence. A rhetic act thus is best taken to be a plurality of acts of conveying semantic values of subsentential expressions *as* entering relations leading to the composition of the meaning of the entire sentence. The product of such a plurality of acts will itself be a plurality of products, namely products of meaning-related acts involving subsentential occurrences of expressions in a particular meaningful configuration. Natural language as a matter of fact reflects products of rhetic acts as pluralities, not as single entities, namely, with plural *words*-NPs (*a few words*, *those words*), as we will see in the next section.

The linguistic acts of the various levels are ordered by a grounding relation, what one may call the *by*-relation or what Goldman (1970) calls the relation of 'level-generation', a relation used already in the last chapter. That is, an illocutionary act is performed by performing a locutionary act, a

[2] Austin actually gave various not entirely consistent characterizations of the notion of a rhetic act. I will focus on just one of them. See Searle (1968) for further discussion.

[3] This was noted by Searle (1968).

locutionary act by performing a phatic act. The *by*-relation, symbolized by '∠', orders spatio-temporally coincident acts.[4]

Phatic acts come with products as well, even though those do not have satisfaction conditions. Products of phatic acts will be bearers of phonologically, morpho-syntactically, or semantically relevant properties as opposed to the various properties that can be borne by performances. The distinction between phatic acts and phatic objects may be harder to accept. However, the action-product distinction clearly applies more generally to performances with aesthetic aims: a musical performance comes with a product as an entity that just carries aesthetically relevant features, as opposed to the 'mere' performance that carries properties irrelevant for aesthetic evaluation.

6.1.2. The distinction between illocutionary and locutionary objects

Not strictly following Austin, I take locutionary objects to be the products of acts of saying, the sorts of entities described by verbs of saying (locutionary verbs) when taking *that*-clause complements. Verbs of saying include neutral verbs of saying (*say*, *write*, *think*), verbs of manner of speaking (*whisper*, *scream*), discourse-related verbs of saying (*repeat*, *comment*, and *remark*), and verbs of saying with an attitude (*praise*, *criticize*, *boast*).[5] Locutionary acts are acts of saying something, or presenting or considering a content without commitment to its truth. Thus, a locutionary act of saying is an act of putting forward a content without that amounting to an assertion, for example.

Just as there are illocutionary objects that correspond to illocutionary acts, there are locutionary objects, 'sayings' or 'utterances', that correspond to locutionary acts. Locutionary objects can be constitutive of illocutionary objects of different forces.

The way locutionary objects are to be conceived will be guided by how they are reflected in natural language, given the approach of descriptive metaphysics on which this book is based. Locutionary objects are just as

[4] One may take it to be a kind of part relation. Note, though, that it is not reflected as a part relation in natural language: *part of* when applied to a claim can pick out only a partial content, not a phatic or phonetic object on which the claim is based.

[5] According to Austin (1962), indirect quotes, that is, *that*-clause complements of verbs of saying, characterize rhetic acts, whereas direct quotes characterize phatic acts (though Austin is not always consistent in what he takes indirect quotes to characterize).

well-reflected in natural language as illocutionary objects. Locutionary objects are the sorts of things special quantifiers range over when they are complements of verbs of saying and that free relative clauses like *what John said* refer to. As such, locutionary objects, we can observe, come with truth conditions:

(3) What John said / whispered / screamed is true.

Given that having truth conditions means coming with a word/mind-to world direction of fit, locutionary objects cannot be considered force-neutral acts below illocutionary acts; rather they are best viewed as constative acts with a very weak assertive force, involving no commitment to truth beyond the act. That is, unlike claims, locutionary objects do not come with validity.

The distinction between illocutionary and locutionary objects is strikingly well reflected in natural language, in the unacceptability of reports of content-sharing among locutionary and illocutionary verbs. Thus, (4a) is impossible as a report of sharing the contents reported in (4b) and (4c), and so for (5)–(7):

(4) a. ??? John asserted what Mary said.
b. John asserted that Bill won the race.
c. Mary said that Bill won the race.

(5) a. ??? John said the same thing that Mary demanded.
b. John demanded that Bill should leave.
c. Mary said that Bill should leave.

(6) a. ??? John said what Mary asked
b. John said 'Did Bill win?'.
c. Mary asked 'Did Bill win?'.

(7) a. ??? John promised what he said.
b. John promised that he would help Mary.
c. John said that he would help Mary.

Reports of sharing as in (4a, 5a, 6a, 7a) make use of special quantifiers or pronouns (*what*, *the same thing*) standing for kinds of locutionary or

illocutionary objects. In those reports, the one verb requires an illocutionary object and the other a locutionary object, which cannot be identical and thus lead to the unacceptability. For example, in (4a), *what Mary said* stands for a (kind of) saying, and that cannot be a (kind of) assertion.

Note that given (4a), Mary may have asserted that Bill won the race, yet she also 'said' that Bill won the race, and (4a) only reports the lower-level speech act of the saying.

The impossibility of sharing also holds for locutionary verbs of manner of speaking and illocutionary verbs:

(8) a. ?? Mary asserted what John screamed, that Bill won the race.
b. ?? Mary claimed what Bill whispered, that Bill is the winner.

The impossibility of sharing with locutionary and illocutionary verbs matches the necessary falsity of the identity statements below:

(9) a. ??? John's utterance is his claim.
b. ??? Mary's scream is her assertion.

The distinction between locutionary and illocutionary objects extends to the realm of the mental. Acts of thinking are locutionary acts in the realm of the mental and thoughts the corresponding locutionary objects. Acts like acts of deciding are on a par with illocutionary acts, involving a commitment to act. The observation then is that reports of sharing with *think* and *decide* are likewise impossible. Thus, (10a) is unacceptable as a conclusion of (10b) and (10c), as well as of (10d) and (10e):

(10) a. ??? John thought what Bill decided.
b. Bill decided that they should leave the house.
c. John thought that they should leave the house.
d. Bill decided 'let's leave the house!'.
e. John thought 'let's leave the house!'.

Decisions are on a par with illocutionary objects such as promises and requests, by carrying satisfaction conditions with a world–to-word/mind direction of fit. They are based on locutionary objects of the sort of thoughts, but they cannot be identical to thoughts.

Reports of sharing are also impossible with *think* and mental-state verbs like *hope*, *believe*, and *desire*, which thus side with illocutionary verbs:

(11) ??? Bill thought what Mary hoped / believed / desired, that the house would be sold.

To conclude, just as locutionary objects such as utterances, sayings, whispers, and screams are entities distinct from illocutionary objects such as assertions, locutionary objects in the realm of the mental, thoughts, are distinct from mental objects such as decisions, hopes, beliefs, and desires.

6.1.3. The basic semantics of locutionary *say* and phatic *say*

On the extension of attitudinal-objects semantics to verbs of saying, locutionary and phatic objects play basically the same semantic role as attitudinal objects in attitude reports. Locutionary objects are involved in the semantics of verbs of saying when they take *that*-clause complements, phatic objects when verbs of saying take pure quotes as complements. Locutionary and phatic uses are available with both simple and complex verbs of saying, including manner-of-speaking verbs, and response-stance verbs such as *repeat*.

This gives reason to adopt the same sort of syntactic structure for reports of saying as for attitude reports given in Chapter 5. That is, locutionary and phatic verbs of saying are based on an underlying structure involving a light verb-noun combination. For *say*, which is not overtly derived from a noun, the noun will be an abstract noun SAID, dividing into locutionary SAID_{loc} and phatic $\text{SAID}_{\text{phat}}$. Thus, (12a) with locutionary *say* will have the underlying structure (12b), which will be interpreted as in (12c):

(12) a. John said that Mary is happy.
b. John do $[_{\text{NP}}\ \text{SAID}_{\text{loc}}$ [that Mary is happy]]
c. $\exists d(\text{do}(\text{John}, d) \,\&\, \text{SAID}_{\text{loc}}(d) \,\&\, \text{prop}([\textit{that Mary is happy}])(d))$

(13a) with phatic *say* will have the underlying structure (13b), which will be interpreted as in (13c):

(13) a. John said 'great'.
b. John do $[_{\text{NP}}\ \text{SAID}_{\text{phat}}$ ['great']]
c. $\exists d(\text{do}(\text{John}, d) \,\&\, \text{SAID}_{\text{phat}}(d) \,\&\, [\textit{'great'}](d))$

That is, both *that*-clauses and pure quotes as complements of verbs of saying act as predicates, namely of locutionary and of phatic objects, respectively.

Support for this analysis comes from the fact that the Substitution Problem arises with locutionary and phatic verbs of saying just as with attitude verbs like *claim* and *believe*. Thus, locutionary *say* disallows substitution of a *that*-clause by a full DP standing for any entity whatsoever:

(14) a. Mary said that Bill could help.
b. ??? John said that proposition / that entity / that utterance / that suggestion as well.

Likewise phatic *say* disallows replacement of a pure quote by an ordinary expression-referring or utterance-referring NP:

(15) a. John said 'come'.
b. ??? Mary said that expression / that sentence / the verb 'come' / that utterance.

Phatic *say* differs in that respect from *utter*, which is an ordinary transitive verb that takes expressions as arguments, as denoted by ordinary expression-referring NPs:[6]

(16) John uttered that expression / that sentence / that word.

As an ordinary transitive verb *utter* does not give rise to the Substitution Problem.

The difference between *say* and *utter* manifests itself also in that *utter* and *say* cannot co-occur in reports of sharing:

(17) ??? John uttered what Mary said, 'Ich liebe dich'.

Whereas *utter* is an ordinary transitive verb, taking an expression as an argument, phatic *say* has the underlying structure and semantics of attitude verbs. With *utter*, direct quotes act as referential arguments referring to

[6] In English, *whisper* behaves more like *utter*, but not so, for example, in German:

(i) ??? Hans fluesterte den Satz 'Ich komme'.
'John whispered the sentence 'I am coming'."

expressions; with phatic *say*, they act as predicates of the phatic object that is being described.

Pure quotation complements may also act as predicates of conceptual objects, products of rhetic, concept-conveying acts, namely with the verb *mean*, as in (18a), with an agentive subject referent, and as in (18b), with an expression type as subject referent:

(18) a. By 'dislike' John meant 'hate'.
b. 'Rouge' means 'red'.

On both uses *mean* disallows substitution of the complement by an explicit concept-referring NP, but allows substitution by special quantifiers:

(19) a. ??? By 'dislike' John meant the meaning of 'hate'.
b. ??? 'Red' means the concept 'red'.
c. 'Red' means something.

The logical form of (18b) will be parallel to that of (13a), namely as in (20b), based on the underlying structure in (20a) with an abstract nominal root MEAN:

(20) a. 'Rouge' have [$_{NP}$ MEAN 'red']
b. $\exists d$(have('rouge', d) & MEAN(d) & ['*red*'])(d))

The Substitution Problems arises for locutionary verbs just as it does for phatic verbs, including when they convey conceptual meaning.

6.1.4. Pure quotations as predicates

The view of pure quotations as predicates of phatic objects deviates from current views of pure quotations. On current views, pure quotes are expression-referring terms, managing, in some way, to refer to the relevant expression types, by acting as descriptions (Geach 1970), as names (Reichenbach 1947), by involving a demonstrative (the quotation marks) which points to a displayed token (Davidson 1967, 1979, Cappelen and Lepore 2007, Clark and Gerrig 1990, de Vries 2008), or by 'presenting' the expression type (Washington 1992, Saka 1998). The present view is that pure quotations

may, but need not, act as referential terms. Their primary function rather is predicative and not referential, since pure quotations express properties of particular phatic or phonetic objects.

There is specific syntactic evidence that quotations may occur as syntactic predicates, namely from *as*-phrases modifying the verbs *translate* and *pronounce*:

(21) a. Mary translated 'red' as 'rouge'.
b. Sue pronounced 'red' as 'rett'.

As requires predicative rather than referential complements (*John as a father / *as him*, *Mary treated John as a brother / * as him*), which means the pure quotations in (21a, b) must have predicative status.[7] *As*-phrases can also act as adnominal modifiers of the corresponding product nominalizations, which are nouns denoting phatic objects:

(22) a. the translation of 'red' as 'rouge'
b. the pronounciation of 'red' as 'rett'

This supports an analysis on which the *as*-phrases in (21a, b) act as predicates of phatic objects as well, those described by the verbs *translate* and *pronounce*. In (21a), the property expressed by *'rouge'*, a property of phatic objects, is predicated of 'the translation', the product of the acts involved in translating, and in (21b) the property expressed *'rett'*, a property of phonetic objects, is predicated of the 'pronounciation', the product of an act of pronouncing.

Standard views of quotations fail to recognize a predicative function of pure quotations, but assume that pure quotes always act as referential terms.[8]

[7] By contrast, the direct object position of *translate* and *pronounce* is not predicational but referential, allowing substitution by an explicit expression-referring term:

(i) Mary translated / pronounced the word 'red' as 'rouge'.

[8] Pure quotations of course have also other syntactic functions than that of a predicate, including other non-referential roles in close appositions, as below:

(i) a. the morpheme 'un'
b. the sentence' it is raining'
c. the concept 'horse'
d. the phoneme 'a'
e. the sound 'shhh'

The non-referential status of the quotation is indicated by the impossibility of replacing the quotation by an explicit expression-referring NP (* *the word the word 'maison'*, * *the concept what 'horse' expresses*).

The present view accommodates the predicative function of pure quotation naturally.

6.1.5. The distinction between locutionary and phatic acts

Phatic verbs of saying take pure quotes as complements, whereas locutionary verbs take *that*-clauses as complements; pure quotes act as predicates of phatic objects, whereas *that*-clause complements of locutionary verbs act as predicates of locutionary objects. How is the distinction between phatic and locutionary objects to be understood? I will not strictly follow Austin's own (not always consistent) characterization of different acts below the level of locutionary acts, but rather introduce notions of my own, using in part Austin's terms.

Phatic acts are form-related acts, consisting of the utterance of simple and complex expressions with the intention of realizing a particular linguistic structure. Phatic acts include phonological and morpho-syntactic acts, that is, acts with the intention of realizing a phonological or a morpho-syntactic structure. They also include acts of uttering words with particular intended lexical meanings. The product of a phatic act carries only relevant form-related features (such as phonological or morpho-syntactic features), whereas the act may carry irrelevant performance-related features.[9]

A locutionary act is an act of saying something or thinking something, as an act displaying a truth-directed content. A locutionary act thus won't include a form-related act (unlike what Austin sometimes suggests). As mentioned in Section 6.1.2., the motivation for taking locutionary acts to be truth-directed is linguistic. Thus, free relative clauses with verbs of saying describe objects that have truth conditions, as in (23a). Such free relative

Some occurrences of pure quotations may be referential in the sense of involving an implicit close-apposition structure containing an unpronounced sortal noun. This is arguably the case for pure quotations as direct objects of *translate* and *pronounce* and as subjects, as below, where a pure quotation is replaceable by an overt close apposition of a suitable sort:

(ii) a. 'Mary' is disyllabic.
b. The name 'Mary' is disyllabic.

[9] The notion of a product of a phatic act in fact matches the familiar notion of a token (as opposed to an utterance act). A token carries only relevant properties, properties of the linguistic structure that the act is meant to realize such as phonological, morphological, or syntactic features.

clauses do not seem to be able to describe objects with fulfillment conditions, though, as suggested by (23b):[10] [11]

(23) a. What John said / wrote is true.
b. ??? What John said / wrote cannot be fulfilled / carried out.

The absence of fulfilment conditions holds even if what John said served to make a promise. It is the promise that has fulfilment conditions, not the locutionary object that is the saying and on which the promise is based:

(24) a. What John promised cannot be fulfilled.
b. ??? What John said cannot be fulfilled.

The absence of fulfilment conditions manifests itself also in the fact that only *that*-clauses can give the content of locutionary objects, as in (25a), not interrogative complements (describing a question), as in (25b), or infinitival complements (describing a request), as in (25c):

(25) a. John said / wrote / thought that he will leave.
b. * John said / wrote thought what Bill should do.
c. * John said / wrote / thought for Bill to leave.

The fact that locutionary objects have truth conditions and not fulfilment conditions does not mean that they can be part only of assertions. Reports of

[10] An exception are locutionary verbs whose content involves a performatively used modal, such as (ia), (iia), and (iiia):

(i) a. John said that Mary may leave the room.
b. ?? What John said is true.
(ii) a. John said that Bill must read the announcement.
b. ?? What John said is true.
(iii) a. John said / wrote that Mary should leave.
b. ?? What John said became later true.

The acceptability of such sentences may be traced to the fact that performatively used modal sentences entail the corresponding descriptively used modal sentences. (ia), (iia), and (iiia) may then actually display a descriptive use, though they carry an implicature of a stronger statement.

[11] For some reason truth attributions to thoughts are not very good, despite of what philosophers generally assume:

(i) a. ?? John's thought that the world is round is true.
b. ?? What John thought is true.

locutionary acts such as (26) allow for illocutionary acts such as threats and promises being performed:

(26) John said / wrote that he will leave.

Locutionary objects differ from phatic objects not only in having truth conditions, but also in having a part structure based on partial content. The two different readings of *part of* in (27a) and (27b) make that clear:

(27) a. Part of what John said is true.
b. Part of what John said was inaudible.

Part of in (27a) applies to a locutionary object, picking out a partial content, and in (27b) to a phatic object, picking out a temporal part of an utterance.

Locutionary objects are like assertions except that they do not yet come with a commitment to truth, which would allow them to have validity beyond the time of the locutionary act. If commitment to truth is the one characteristic feature of assertions distinguishing them from mere sayings, the assertion that *S* will consist in the locutionary object *d* of saying that *S* together with a commitment to maintaining *d*.

Locutionary objects in the realm of the mental play a role in philosophical accounts of judgment. They roughly correspond, for example, to Brentano's notion of a presentation, with judgments being viewed as recognitions of the truth of presentations.[12]

Locutionary acts may be part of illocutionary acts, but they need not be. Certainly, there are locutionary acts that are performed without performing illocutionary acts, say utterances for the purpose of grammatical exercise and entertaining thoughts for mere consideration.[13]

Locutionary objects may seem on a par with propositions, as they appear to be force-neutral yet are truth-evaluable. However, locutionary objects are concrete objects resulting from acts of saying and thinking, whereas propositions (on the standard view) are abstract objects that are meanings of sentences and play a semantic role in all contexts in which sentences occur.

[12] See Brandl and Textor (2022) for a detailed and more differentiated presentation of Brentano's views of judgment.

[13] Searle (1968) disputes the existence of such neutral occurrences of embedded sentences, but see Green (2014).

6.1.6. Thin locutionary and illocutionary objects

Locutionary and illocutionary acts certainly could not have been performed without performing phatic acts. But there is an intuition according to which the same locutionary or illocutionary object could have been produced by performing a different phatic act. For example, John could have said what he said in French or using a different syntactic construction. Moreover, he could have made his assertion not by screaming but by speaking normally. To put it more linguistically, a particular assertion referred to as *that assertion* could have been made in a different language or by using a softer voice, and a request referred to as *that request* could have been made in writing.[14]

Note also that locutionary and illocutionary objects generally do not share the properties of the phatic object that was produced when performing the locutionary act. While locutionary and illocutionary objects may display properties such as being perceived or being causally efficacious, the properties of locutionary and illocutionary objects consist just in their relatedness to an agent, their satisfaction conditions, and their part structure based on partial content. They do not inherit the form-related properties of phatic objects on which they are based.

This means that locutionary and illocutionary objects are not dependent for their identity on the particular phatic object on which they are based. This is also reflected in reports of sharing of kinds of locutionary objects with different physical realizations. For example, (28a, b, c) can be true at once:

(28) a. John said the same thing as Mary (that Bill won the race).
b. John whispered that Bill won the race.
c. Mary screamed that Bill won the race.

The same holds for reports of sharing with illocutionary acts. (29) may be true while (28b, c) are true as well:

(29) John asserted the same thing as Mary.

[14] The same intuition applies to the actions (and their products) that are not speech acts. The murder of the king could have been done by throwing a bomb instead of by pulling the trigger.

Locutionary and illocutionary objects enter exact similarity relations and form kinds regardless of any differences in the phatic objects on which they are based.

The locutionary and illocutionary objects reported in (28a) and (29) can be called 'thin locutionary objects' and 'thin illocutionary objects', respectively. They are abstractions, in a sense, from ordinary locutionary or illocutionary products. That is, a thin illocutionary or locutionary object d_1 abstracted from an ordinary locutionary or illocutionary object d_2 will have only those properties of d_2 that relate to d_2's conditions of satisfaction and force (or direction of fit), but not properties relating to d_2's physical realization or the properties of linguistic form that it involves. I will return to the notion of a thin illocutionary object in Chapter 7.

Thin locutionary objects also play a role as denotations of subject clauses, for example with the predicate *correct*. There is good evidence that subject clauses with predicates like *correct* stand for locutionary objects. *Correct* when applied to subject clauses conveys truth, as in (30a); but *correct* is hardly applicable to propositions with a clear understanding, as seen in (30b):

(30) a. That John is late is correct.
b. ??? The proposition that John is late is correct.

Moreover, subject clauses with predicates like *correct* generally come with a topic effect, relating to a previously made suggestion or remark.

As Moulton (2020) observed, predicates of concreteness, such as causal predicates and predicates of perception, cannot be used for non-restrictive relative clauses modifying a subject clause, as seen in (31a), as opposed to NPs explicitly referring to locutionary or illocutionary objects, as in (31b):

(31) a. ??? That John is late, which caused consternation and was overheard by many, is correct.
b. The assertion that John is late, which caused consternation and was overheard by many, is correct.

This means that the subject clause in (31a) stands for a thin locutionary or illocutionary object, a thin assertion abstracted from an ordinary assertion by ignoring features pertaining to its physical manifestation.

6.1.7. Manner of speaking verbs

Manner of speaking verbs such as *whisper*, *muster*, *scream*, and *shout* have locutionary and phatic uses and thus behave just like simple verbs of saying. First, they take *that*-cause complements and thus describe a truth-evaluable object:

(32) a. John whispered / screamed / muttered that he will come.
b. What John whispered / screamed / muttered is true.

Second, like *say*, manner of speaking verbs do not take interrogatives or infinitival clauses representing the content of what would be a command or request:

(33) a. * John whispered / screamed / muttered what Bill should do.
b. * John whispered / screamed / muttered for Bill to leave.

Manner-of-speaking verbs with non-quotational CP-complements thus describe truth-directed, locutionary objects.

Manner-of-speaking verbs moreover take pure quotes as complements:

(34) a. John whispered / screamed / muttered 'hey you!'.
b. John whispered / screamed / muttered 'I will'.

On both locutionary and phatic uses, manner-of speaking verbs permit replacement of the complement by special quantifiers, including *words*-NPs. Both (35a) and (35b) are valid inferences from (34a) and (34b):

(35) a. John whispered / screamed / muttered something.
b. John whispered / screamed / muttered a few words.

Manner-of-speaking verbs involve more complex locutionary objects, though, than the simple verb of saying *say*. Let us call those 'locutionary objects of manner of speaking', as opposed to 'simple locutionary objects'.

Like simple verbs of saying, verbs of manner of speaking don't permit reports of sharing with illocutionary verbs:

(36) a. ??? John whispered what Mary asserted / demanded / asked / proposed.
b. ??? John whispered the same thing that Mary asserted / demanded / asked / proposed.

One might take this to indicate that manner of speaking verbs describe the same simple locutionary objects as *say*. But this cannot be right: reports of sharing with a manner of speaking verb and the verb *say* are unacceptable, as seen in (37a–c):

(37) a. ??? John said what Mary whispered.
b. ??? John said what he screamed.
c. ??? John said the same thing that Mary shouted.

This is in contrast to reports of sharing with the same verb of saying such as (38a) or with the same verb of manner of speaking such as (38b):

(38) a. John said what Mary said.
b. What John whispered is what Mary whispered.

What is shared according to (38a) is the same kind of simple locutionary object and according to (38b) the same kind of locutionary object of manner of speech.[15]

What is interesting is that reports of sharing are tolerable with different verbs of manner of speaking (in particular with focus on the verbs):

(39) a. ? John screamed what Mary whispered.
b. ? John shouted what Bill yelled.

This difference between the two sorts of locutionary objects can be traced to the way they ontologically depend on acts. Simple locutionary objects result from acts of conveying a content. By contrast, locutionary objects of

[15] Locutionary objects of manner of speaking can also be involved in the semantics of verbs like *laugh* and *cry*, which can take *that*-clauses as adjunct:

(i) a. John laughed that he will be back.
b. Mary cried that she was in pain.

The verbs *laugh* and *cry* describe phatic objects, but those phatic objects may ground locutionary objects to which the adjunct *that*-clauses then apply.

manner are results of both acts of conveying a content and the physical act by which the content is conveyed. It seems then that the same kind of locutionary object of manner of speaking in a broader sense is shared if the two agents produce the very same kind of locutionary object with some manner of speaking or other.[16]

6.1.8. *Words*-NPs as complements of verbs of saying

Both phatic and locutionary verbs of saying, we have seen, permit special quantifiers like *something* without giving rise to the Substitution Problem. Verbs of saying (including verbs of manner of speaking) permit the addition of special quantifiers of the form of NPs headed by the noun *word(s)*, that is, *words*-NPs. Thus, (40b) is a valid inference from (40a) with phatic verbs of saying, and (41b) is a valid inference from (41a) with locutionary verbs of saying:

(40) a. John said / whispered / screamed 'hey'.
b. John said / whispered / screamed just one word / the word 'hey'.

(41) a. John said / whispered / screamed that he won the game.
b. John said / whispered / screamed just a few words.

By not giving rise to the Substitution Problem, *words*-NPs differ from ordinary expression-referring NPs, which do give rise to the Substitution Problem when they are complements of verbs of saying:

(42) a. ??? John said a few expressions.
b. ??? John whispered a sentence.
c. ??? John screamed a noun.

Plural *words*-NPs do not range over unordered pluralities of (utterances of) words, but rather over meaningfully structured configurations of (utterances of) words. This is well-reflected in German, which shows a distinction

[16] One might suggest that manner-of-speaking verbs in sentences like (39a, b) have undergone lexical re-analysis (locutionary verb + adverbial modifier), as suggested in Moltmann (2003a, 2013a) for exceptions to the impossibility of reports of content sharing with different attitude verbs in general. But that would not explain the impossibility of sharing with manner-of-speaking verbs and the simple verb *say*.

between the plural of the special noun, *Wort* 'word', *Worte*, and the plural of the ordinary noun,*Wort Wörter* :

(43) a. Hans sagte ein paar Worte.
'John said a few words.'
b. ??? Hans sagte ein paar Wörter.
'John said a few words.'

Given the Austinian hierarchy, *words*-NPs are best viewed as ranging over ordered pluralities of products of rhetic acts (rhetic objects), that is, utterances of words with a particular meaning or reference. That they range over such concrete entities is supported by the applicability of evaluative and causal predicates to *words*-NPs:

(44) a. John said a few nice / shocking words.
b. The words John said shocked everyone.
c. Mary did not like the words Mary whispered.

One may ask whether the ordered pluralities of rhetic objects that *word*-NPs range over are truth-evaluable and thus constitute locutionary objects. Intuitions are not very sharp:

(45) a. ?? John said a few words, which are true.
b. ?? The words John said are true.
c. ?? Mary's words, the words 'The world will end tomorrow', are not true.

Certainly, though, they do not constitute illocutionary objects since they fail to have fulfilment conditions:

(46) a. ??? The words 'Finish the paper by midnight!' cannot be complied with.
b. ??? John fulfilled / broke the words 'I will help you!'.

Moreover, *words*-NPs are impossible with illocutionary verbs (Grimshaw 2015):

(47) a. ??? John asserted a few words.
b. ??? John promised the words 'I am always ready to help'.
c. ??? John demanded / asked a few words.

Whether or not *words*-NPs can range over entire locutionary objects, what is clear is that verbs of saying themselves can all be used as both phatic and as locutionary verbs, and they have the same kind of semantics on a phatic and on a locutionary reading.

6.2. The syntax and semantics of locutionary verbs

6.2.1. The syntax and semantics of simple locutionary *say*

The syntax and semantics of reports of saying can now be spelled out in some greater detail. The semantic analysis of verbs of saying on a locutionary reading will be almost the same as that of the semantics of attitude reports, except that the clausal complement of locutionary verbs serves to characterize locutionary objects, not illocutionary objects. Complement clauses of illocutionary verbs act semantically as predicates of the described illocutionary objects, specifying their satisfaction conditions. This is given in (48c) for (48a), based on the syntactic analysis of *claim* in terms of an underlying complex predicate of the sort light verb-nominal root in (48b):

(48) a. John claims that Mary is happy.
b. John make [$_{NP}$ claim [$_{CP}$ that Mary is happy]]]
c. $\exists d$(make(John, d) & claim(d) & prop([*that Mary is happy*])(d))

Recall from Chapters 4 and 5 that 'prop([S])', a derived meaning of the sentence *S*, stands for the property of attitudinal objects of sharing their (truthmaker-based) content with the sentence *S*. More precisely, it stands for the property of attitudinal objects of sharing their satisfiers with *S* and, if they have violators, sharing their violators with *S*. Such a sentence meaning is also suited for locutionary objects. Locutionary objects come with truth conditions, which means, in truthmaker-semantic terms, they come with a set of verifiers and a set of falsifiers.

Locutionary *say* as in (49a) will be derived from underlying complex predicates consisting of the light verb *do* and a nominal root SAID, more precisely the locutionary variant SAID_{loc}. SAID_{loc} will then move up to SPEC(VP), as in (49b), so as to be able to incorporate into the verb (or

alternatively, it will adjoin to the verb). The interpretation of (49a) based on (49b) is then as in (49c):[17]

(49) a. John said that Mary is happy.
b. John $[_{VP}[_{SPEC(VP)}\ SAID_{loc}]\ [_{V}$do $[_{NP}$ ~~SAID~~$_{loc}\ [_{CP}$ that Mary is happy]]]]
c. $\exists d$(do(John, d) & $SAID_{loc}(d)$ & prop([*that Mary is happy*])(d))

What determines that the derived meaning of the *that*-clause is applied to a locutionary object is simply the lexical semantics of locutionary verbs, that is, given the complex-predicate analysis, $SAID_{loc}$.

The syntactic analysis of locutionary act reports with special quantifiers will be parallel to that of attitude reports as well. That is, (50a) will have an underlying structure as in (50b), where the light noun *-thing* in *something* will be analyzed as a classifier of the nominal root $SAID_{loc}$. $SAID_{loc}$ will then move up and incorporate into the verb, as in (50c) (via phrasal movement into the specifier position of the VP or by adjoining to the verb). Based on the underlying structure in (50b), (50a) will be interpreted as in (50d):

(50) a. John said something.
b. John do $[_{QP}$ some $[_{ClP}\ [_{Cl}$ thing] $[_{NP}\ SAID_{loc}]]]$
c. John $[_{VP}[_{SPEC(VP)}\ SAID_{loc}]\ [_{V}$do $[_{QP}$ some $[_{ClP}\ [[_{Cl}$ thing] $[_{NP}$-~~SAID~~$_{loc}]]]]]]$
d. $\exists d$(do(John, d) & thing-$SAID_{loc}(d)$)

The underlying syntactic structure of (51a) will be as in (51b), which is interpreted as in (51c), where 'dd' is a plural variable ranging over ordered pluralities:

(51) a. John said a few words.
b. John $[_{VP}[_{SPEC(VP)}\ SAID_{loc}][_{V'}$ do $[_{QP}$ a few $[_{ClP}$ words $[_{NP}$ ~~SAID~~$_{loc}]]]]]$
c. FEW dd(do(John, dd) & $SAID_{loc}(dd)$ & words(dd))

[17] Major (2021, chap. 2) proposes a somewhat similar analysis, positing a *say*-phrase headed by the verb *say* which selects the CP as complement. *Say* then moves up, adjoining to the light verb *do*. Major and Torrence (forthcoming) show that in any languages *say* bears a close connection to complementizers, and in fact may act itself as a complementizer.

In addition to agentive *say*, English also has a stative version of *say*:[18]

(52) a. The sign says that access is forbidden.
b. The thermometer says that it is 30 degrees.

Here *say* applies to material content bearers, artifacts meant to convey a particular message (perhaps under particular conditions). Such content bearers are material products of locutionary acts. Material locutionary objects such as a sign or thermometer (at a space and time) have satisfaction conditions, namely just those of the message they are meant to convey. Being bearers of truthmaking conditions, material locutionary objects then fall under the nominal root SAID_{loc} as well. This allows for a straightforward semantic analysis of (52a, b). Whereas agentive *say* involves the light verb *do*, stative *say* involves the light verb *be*, which allows the clausal complement to be predicated directly of the subject referent. Thus the structure underlying (52a) is as below:[19]

(53) The sign $[_{\text{VP}}[_{\text{SPEC(VP)}}\ \text{SAID}_{\text{loc}}]\ [_{\text{V'}}\ \text{be}\ [_{\text{NP}}\sout{\text{SAID}}_{\text{loc}}\ [\text{that access is forbidden}]]]]$

It is uncontroversial to assume that *be* makes no semantic contribution except to ensure that the subsequent predicate is predicated of the subject referent at the time of evaluation. This then yields the logical form of (52a) in (54a) or equivalently (54b):

(54) a. $\lambda d[\text{SAID}_{\text{loc}}(d)\ \&\ \text{prop}([\textit{that access is forbidden}])(d)]([\textit{the sign}])$
b. $\text{SAID}_{\text{loc}}([\textit{the sign}])\ \&\ \text{prop}([\textit{that access is forbidden}])([\textit{the sign}])$

Here SAID is simply a predicate that is true of material and non-material locutionary products, entities produced by locutionary acts that come with satisfaction conditions.

[18] For a thorough discussion of the properties of active and stative *say*, see Major (2021). Not all languages display the two readings of *say*. For example, German does not:

(i) ?? Das Zeichen sagt, dass Zutritt verboten ist.
'The sign says that access is forbidden.'

[19] Major posits a rather similar structure for stative *say*, involving *be* and the absence of a voice projection. However, he does not give a semantic analysis.

6.2.2. The syntax and semantics of direct quotes as complements of verbs of saying

In addition to *that*-clauses, locutionary verbs can take direct quotes as complements, which, unlike pure quotes, convey not only a form but also a propositional content:[20]

(55) John said / wrote / thought 'I will leave'.

Also illocutionary verbs can take direct quotes as complements, of the three sentence types:[21]

(56) a. John told Mary 'I will come'.
c. John demanded 'Give me one more day!'.
d. John asked 'Where is the exit?'.

Direct quotes are complements of the verb and can be replaced by special quantifiers (Munro 1982, Grimshaw 2015):[22]

(57) John said / wrote / thought something, namely 'I will leave'.

In (55)–(56), the *that*-clause could be a direct quote or a pure quote. Yet, pure quotation is to be distinguished from direct quotation syntactically and semantically. Pure quotations can be of any linguistic category (or just be linguistic material). They may convey a (phonetic, phonological,

[20] Direct quotes may be of all three sentence types:

(i) a. John said /write / thought 'Mary is late'.
b. John said / wrote / thought 'leave!'.
c. John said / wrote / thought 'what should I do?'.

One might take this to indicate that verbs of saying may describe illocutionary objects after all. However, this cannot be, as we have seen from reports of sharing with locutionary and illocutionary verbs and with the truth-evaluability of clausal complements of locutionary verbs. Rather, more plausibly, the locutionary verbs in (i) take pure quotes as complements.

[21] See Grimshaw (2015), who argues that direct quotes of the three sentence types may satisfy the semantic selectional requirements of illocutionary verbs.

[22] It is a well-known fact that when taking quotes as complements, verbs of saying allow for parentheticals as in (ia) and quotational inversion as in (ib):

(i) a. 'I will leave', John said / wrote / thought.
b. 'I will leave', said / wrote / thought John.

These constructions are not available with non-quotational clausal complements:

morpho-syntactic) form or the conceptual content of individual words. However, pure quotations as complements of verbs of saying are syntactically NPs and as such fill in positions requiring an NP.[23] Direct quotes, by contrast, are CP-complements, though they take the form of main clauses. This difference between sentential direct quotations and pure quotations is particularly manifest in German. A sentence as a pure quotation must appear in the position of NPs, in the middle field, as in (58a), whereas as a direct quotation it must follow the verb, like all CPs, as in (58b):[24]

(58) a. weil Hans endlich 'Ich liebe dich' sagen kann
because John finally 'I love you' say can
'because John can finally say 'I love you''
b. weil Hans endlich sagen kann 'Ich liebe dich'
because John finally say can 'I love you'
'because John can finally say 'I love you''

Whereas (58a) can report only a linguistic ability (for example, the ability to pronounce a particular sentence), (58b) can report the readiness to express an emotional state (or the ability to admit to one).

Direct quotes specify both the content of locutionary or illocutionary objects as well as the form of the phatic objects on which the latter are based. In present terms, this means that direct quotes convey at once properties of phatic objects, specifying their form, and properties of locutionary or illocutionary objects, specifying their satisfaction conditions. I will address the question of how quotes can convey properties of form of phatic objects in the next section. For now let us just assume that a quoted sentence *S* conveys a property of phatic objects F(*S*).

I propose that the two properties conveyed by direct quotes serve to define a single more complex meaning of direct quotes as a property of locutionary or illocutionary objects. If F(*S*) is the property of phatic objects conveyed by a direct quote 'S', then the meaning of 'S' can be

[23] Pure quotations are not NPs in all contexts. They may also occur in positions in which no NP-complements may appear, such as in close appositions as in (ia) and following verbs that take no complements at all, as in (ib):

(i) a. the word 'hello'
b. John went 'Hey, hey, hey'.

[24] For similar syntactic observations about Dutch, see de Vries (2008).

formulated as the following complex property of locutionary or illocutionary objects:

(59) $\lambda d[\text{prop}([\text{S}])(d) \,\&\, \exists \text{d}'(d' \angle d \,\&\, \text{F}(S)(d'))]$

That is, the direct quote 'S' expresses the property that holds of an attitudinal object *d* just in case *d* shares its satisfiers and possibly violators with *S* and *d* is based on a phatic object *d'* of which F(*S*) holds. The logical form of (60a) will then be as in (60b), where ['S'] is the meaning of the direct quote 'S' as given in (59):

(60) a. John said that S.
b. $\exists d(\text{do}(\text{John}, d) \,\&\, \text{SAID}_{\text{loc}}(d) \,\&\, [\text{'S'}](d))$

Thus attitudinal-objects semantics can be extended also to locutionary or illocutionary act reports with direct quotes once more complex meanings of direct quotes as complements are admitted.

6.2.3. The semantics of pure quotes as complements of verbs of saying

An important question that quotation raises is: in virtue of what kind of compositional semantics are quotes able to act as predicates of phatic objects? I will just make a general suggestion of a compositional semantics of quotes as such predicates. Elaborating it in detail will go far beyond the present project, which is focused on the ontology and semantic role of attitudinal, modal, and locutionary objects.

On the present view, different kinds of pure quotes as complements of verbs of saying are semantically predicates of phatic objects that are products of different kinds of utterance acts:

(61) a. John said 'shh'.
b. John said 'umarina'.
c. John said 'Joe loves Sue'.

In (61a) the pure quote will be predicated of the product of a phonetic act, in (61b) of the product of a phonological act (an utterance act with the aim

of realizing a particular phonological structure), in (61c) of the product of a morpho-syntactic act (an utterance act with the intention of realizing a particular morpho-syntactic structure), and in (61c) of the product of rhetic acts (collections of utterances with the aim of referring, conveying concepts, or predicating).

The semantics of quotation faces a considerable challenge of how it can be integrated into a general compositional semantics of sentences, and how different types of quotation (pure, direct, mixed) may be analyzed in a unified way. In what follows, I will only present a general idea of how to develop the semantics of quotation so that it can meet those challenges. A detailed formal development will have to await another occasion. The proposed semantics is based on a novel syntactic view of quotation, which permits a novel form of compositional semantics.

The central idea regarding the semantics of quotation is that expressions can be interpreted not, or not just, by assigning them their usual semantic value; they can also be interpreted as properties of products of lower-level linguistic acts. This shift in interpretation is not arbitrary or 'pragmatic' but rather has a strict syntactic basis. It is based on a lower-level linguistic structure being part of at the syntactic structure that is input to interpretation. I will sketch the idea first for pure quotation and then indicate in the next sections how it can be extended to direct quotation and perhaps mixed quotation.

The proposal is that pure quotes can be interpreted as properties of phatic objects because pure quotations involve a lower-level linguistic structure as part of the syntactic structure of the sentence that is input to interpretation (L(ogical) F(orm) in the generative tradition). More precisely, a pure quotation may involve several lower-level linguistic structures as part of LF, a syntactic and a phonological structure, say. I will assume that pure quotes form quotational phrases (KPs). The syntactic structure of (61a) will then roughly be as below:

(62) John $[_{\text{SPEC(VP)}}$ $\text{SAID}_{\text{phat}}$ $[_{\text{V}}$do $[_{\text{NP}}$ ~~SAID~~$_{\text{phat}}$ $[_{\text{KP}}[_{\text{K}}$ e] shh]]]]

Following Giorgi (2016), one may assume that the head *K* of a quotational phrase reflects a quotational pause.

The suggestion then is that *K* is a special category that will act as a sort of coordinator, setting up a kind of coordinate structure involving other syntactic planes in a three-dimensional syntactic structure (Goodall 1987, Moltmann

1992). On standard three-dimensional syntactic theories of coordination, coordination consists in coordinates being syntactically represented on different planes within a three-dimensional syntactic structure, so that ordinary grammar applies to the various different planes representing the different conjuncts or disjuncts. The difference with quotation would be that the lower-level linguistic structures of quotations are represented at other planes precisely in order to escape the application of rules of ordinary grammar. Quotations need not be grammatically correct: they may be part of other languages, and they may involve linguistic structures below the relevant linguistic level of the rest of the sentence. The structures in the other planes will all be interpreted as properties of products of phonetic or phatic acts, and their conjunction (intersection) will make up the semantic value of the entire quotation. Thus, *shh* in (61a) will have a phonetic structure on a plane different from that of the rest of the sentence, and that structure will be interpreted as a property of products of phonetic acts.

6.2.4. The semantics of direct quotes as complements of verbs of saying

The difference between pure and direct quotation, on the present view, consists in the following. A clause that has the status of a pure quotation has only lower-level linguistic structures (including possibly a syntactic structure that is as such not input to semantic interpretation). This means that it does not have a syntactic structure on the same plane as the LF-structure of the sentence. By contrast, a direct quote *also* has a syntactic structure that is input to semantic interpretation, which allows it to express a property of locutionary or illocutionary objects in addition to expressing a property of phatic objects.

Direct quotation exhibits selectivity. That is, not everything inside the 'quotation marks' matters for characterizing the phatic act in question, but only whatever features the speaker intends to matter. This means that direct quotation may involve just partial lower-level linguistic structures, depending on the speaker's intentions. As with pure quotation, the level of structure(s) that plays a role for characterizing the phatic object depends on the speaker's intentions.

On the analysis given earlier, direct quotes express a complex property defined in terms of a property of locutionary or illocutionary objects and

a property of phatic objects. The former is based on the ordinary syntactic structure of the complement clause; the latter is based on a lower-level linguistic structure on a different plane.

The view I have sketched considers quotation a semantic phenomenon based on a particular kind of syntactic structure of quotational sentences. It is compositional because of the way in which sentential meaning is conceived, as a property of attitudinal and phatic objects. The account differs fundamentally from current approaches to quotation, on which the utterance of the quotation (the token) matters for what the quotation contributes to the meaning of the sentence. This holds both for the tradition of Davidson (Davidson, 1968, 1979, Cappelen and Lepore 2007) and for the more recent identity theory of quotation (Washington 1992, Saka 1998). On the present view, the semantic contribution of quotation is based on structure, and the quotational structure is interpreted as a property of phatic objects

To summarize the idea, both pure and direct quotation involve linguistic structures below the level of Logical Form, structures whose interpretation consists in properties of products of phatic acts of the various sorts. Such properties are just what those structures can be taken to stand for, given the grammatical level to which they belong, However, when those structures represent quotation and are part of a three-dimensional syntactic structure, the properties of phatic objects will make up the semantic contributions of pure and direct quotes to the composition of the overall meaning of the sentence.

6.2.5. Mixed quotation

With some further modification this proposal may also extend to mixed quotation, along the following lines. In addition to its normal semantic value, a mixed quotation conveys a property characterizing the product of a phatic act. In a sentence embedded under a verb of saying, this act may be the act described by the embedding verb, as in (63a), or a contextually given phatic act, as in (63b):

(63) a. John said that he 'resides' in Paris.
b. John 'resides' in this neighborhood.

In (63a, b) the quotation may characterize part of John's utterance, specifying John's choice of words in a statement of where he lives. Like a direct quotation,

a sentence containing a mixed quotation has two meanings: its ordinary meaning, a property of locutionary or illocutionary objects; and a property of phatic objects. The difference is that with direct quotation the utterance property is expressed by the entire embedded sentence, whereas in the case of mixed quotation, it is expressed by a subsentential part. Moreover, with mixed quotation the utterance property may serve to characterize a contextually given utterance part, rather than the product of the act described by the embedding locutionary verb.

The syntactic structure involved in mixed quotation will be similar to that of direct quotation: the quoted expression will have an additional, lower-level linguistic structure at a different plane, which will be interpreted 'literally' as a property of products of phonetic or phatic acts. Sentences with mixed quotations will have the same sort of compositional semantics as direct quotations, which consists in interpreting an LF-structure containing an additional partial lower-level linguistic structure as a property partially specifying the form of an utterance (a phonetic or phatic product). But with mixed quotation, this property may be predicated of a contextually given utterance. This means that mixed quotation involves a pragmatic element not present with direct quotation.

6.3. Conclusion

This chapter has shown that the semantics of attitude reports developed in the previous chapter can be extended rather straightforwardly to verbs of saying and quotation once the ontology of attitudinal objects is expanded so as to include locutionary and phatic objects. This extension naturally goes along with Austin's hierarchy of speech acts according to which illocutionary acts are performed by performing locutionary acts, which are performed by performing phatic acts, an ordering that matches a corresponding order of illocutionary, locutionary, and phatic objects. Phatic and locutionary objects play the same sort of semantic roles in reports of saying as attitudinal objects in the semantics of (simple) attitude reports.

The extension of attitudinal-objects semantics was made possible by a novel account of quotations on which quotes can act as predicates of phatic objects (possibly based on a syntactic structure that allows lower-level syntactic structures to be part of the syntactic input to interpretation). The semantic treatment of quotational complements as predicates of objects

receives independent support from the possibility of quotation occurring in predicative positions of various sorts.

The semantics was able to account for the characteristic properties of verbs of saying on a locutionary and a phatic reading summarized below:

(64) a. Locutionary (uses) of verbs of saying
- take *that*-clauses and direct quotes as complements
- take special quantifiers and *words*-NPs as complements
- describe truth-evaluable, locutionary objects

b. Phatic (uses of) verbs of saying
- take pure quotes, which are NPs, as complements
- take special quantifiers and *words*-NPs as complements
- describe a phatic, non-truth-evaluable objects

Whereas *that*-clauses, infinitival clauses, and *wh*-clauses stand for properties of locutionary or illocutionary objects, pure quotes stand for properties of phatic objects. Direct quotes convey both properties of illocutionary and locutionary objects and form-related properties of phatic objects on which the illocutionary or locutionary objects are based.

A novel compositional semantics of quotation was suggested, on which quotation is based on a lower-level linguistic structure that is part of the syntactic structure that is input to semantic interpretation (Logical Form). This general idea, still to be elaborated in any detail, addresses a major challenge for the semantics of quotation, namely its integration within compositional semantics.

7

Clauses in Functions Other than as Predicates of Modal and Attitudinal Objects

Not all clauses have the function of being predicates attributing satisfaction conditions to the attitudinal object described by the embedding predicate. There are *that*-clauses (or rather functions of *that*-clauses) for which this is implausible both syntactically and semantically. These are clauses that have nominal status (in a sense to be made precise) and thus can be called 'nominal clauses'. Despite their nominal status, such clauses differ from referential NPs in their syntactic and semantic behavior.

Nominal clauses serve to denote objects that act as (internal) arguments of the embedding predicate. More precisely, given the focus on complex attitude reports on my approach, they will be internal arguments of the noun in an overt or underlying complex attitudinal predicate. I will argue that there are three types of objects that nominal clauses may denote: facts, states of affairs, and what I call 'generic thin assertions', roughly agent-independent assertions without a phatic component. All three types of objects fall under the category of satisfiables. Facts and states can naturally be conceived as modal objects. Facts and states of affairs do not, intuitively, have truth or satisfaction conditions, but they have realization conditions, with concrete situations acting as their realizers. A particularly strong argument to construe facts and states of affairs as modal objects is that like all modal objects, they display a part structure based on partial content, rather than temporal inclusion. As modal objects, facts and states of affairs will be distinct from (concrete) actual or possible situations and are suited to play the various roles traditionally attributed to them in philosophy and semantics.

This chapter will also discuss cases in which clausal complements have the apparent function of standing for truthmakers, namely with verbs of occurrence such as *happen* and *occur*. I will argue that verbs of occurrence do not involve a distinct semantics, but rather take nominal clauses that stand for

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states of affairs. Also nouns of occurrence (e.g., English *case*) can stand for situations in their role of truthmakers of clausal modifiers, though there are interesting language-particular differences between English, German, and Russian regarding the ability of nouns acting in that role.

This chapter will also discuss what I call 'topic-related locutionary verbs', verbs like *explain* and *criticize* as well as *comment* and *remark*. What is peculiar about those verbs is that they do not permit a replacement of a non-nominal clausal complement by any NP, including special quantifiers (*something*, *that*, *what*). I will argue that this has to do with the fact that those verbs involve an explicit or implicit topic argument (fact or state of affairs).

The chapter will start with the ontology of facts, states of affairs, and thin generic assertions and the nominal clauses standing for them. Then it will turn to the semantics of verbs of occurrence and topic-related locutionary verbs.

7.1. Facts as modal objects

7.1.1. Linguistic motivations for facts as denotations of *that*-clauses

Factive verbs like *acknowledge*, *know*, *regret*, and *realize* differ from basic attitude verbs like *claim* and *think* in the semantic role of their complement clause. With factive verbs the complement clause does not serve as a predicate of an attitudinal object described by the predicate; rather it stands for an entity, a fact, that will be an internal argument of the embedding predicate. There are several motivations for that view.

First, the objects denoted by factive verbs generally do not have truth or satisfaction conditions. Rather they generally are emotive and epistemic states directed toward facts described by the clausal complement. Nominalizations of factive attitude verbs resist satisfaction predicates of any sort:

(1) a. ??? John's acknowledgment that he was late was true / correct / satisfied.
b. ??? The realization that the project was manageable was true / correct / fulfilled.

The clausal complement of factive predicates rather serves to describe facts, which form the objects of the attitudes in question, not their content.

Second, nominalizations of factive verbs generally show diagnostics for a clause being a complement rather than having predicative status. Thus, they generally disallow displacement in specificational sentences:

(2) a. ??? John's happiness is that he passed the exam.
b. ??? The predictability was that John passed the exam.

In specificational sentences, the postcopula clause gives the content of the entity denoted by subject (Higgins 1979, Moulton 2006).[1]

Furthermore, nominalizations of factive verbs generally permit *of*-phrases instead of a clause, providing a fact or related object as internal argument:

(3) a. Joe's acknowledgment that he is guilty
b. Joe's acknowledgment of his guilt

(4) a. Marys's knowledge that the world is round
b. Mary's knowledge of that

Nominalizations of factive adjectives give further evidence that factive clauses do not act as predicates of content bearers described by the predicate. Nominalizations of factive adjectives denote particular qualities of agents regarding a fact, as in (5a), or else a quality of a fact, as in (5b):

(5) a. John's happiness that Mary sold her art collection
b. the predictability that John would pass the exam

There is a further, semantic diagnostics for factive clauses providing an internal argument of the embedding predicate, and that is the reading of *partly*. Ordinary transitive verbs permit a reading of *partly* on which it relates to the part structure of the object argument:

(6) John partly ate the cake.

[1] The latter, though, does not hold for certain factive verbs that describe mental states such as *regret*:

(i) John's only regret was that he did not try harder.

This suggests that clausal complement of *regret* has in fact a double function: specifying both the content of a fact (as the object of regret) and the content of the regret as a mental state.

Factive verbs are just like transitive verbs, allowing for a reading of *partly* on which it relates to a fact by picking out partial content:

(7) a. John partly realized that the students failed the exam.
b. John partly regrets that it rained on those days.
c. John is partly happy that Mary sold her art collection.

(7a) can have the reading on which John realized for some of the students that they failed the exam, and (7b) that he regrets for some of those days that it rained then. (7c) can be true if John is happy about a certain part of the collection having been sold.

Also factive predicates with subject clauses allow for the relevant reading of *partly*:

(8) a. That the collection was sold was partly predictable.
b. That John solved the problem is partly surprising.

By contrast, basic attitude verbs do not permit a reading of *partly* relating to the parts (partial contents) of the described attitudinal object:

(9) a. ??? John partly thinks that the students failed the exam.
b. ??? John partly claims that it rained on those days.

That's because clausal complements of basic attitude verbs do not provide internal arguments of a basic attitude verb. Both factive verbs and transitive verbs take objects described by the complement as arguments, but not so basic attitude verbs.

The understanding of adverbials like *partly* with factive predicates also shows that facts are entities whose part structure is based on partial content rather than temporal parts or relations of constituenthood, the sort of part relation that would apply to situations conceived as structured complexes.

7.1.2. The ontology of facts as modal objects

Attitudinal-objects semantics can be extended to factive verbs if factive clauses denote facts as modal objects. Factive clauses then denote facts by

providing their content in a particular way. How can facts be understood as modal objects whose content can be given by *that*-clauses?

First of all, a few words are required concerning the notion of a fact as such. The relevant notion of a fact is not that of a situation, a truthmaker of a sentence (a situation). This would be a notion of a worldly, fully specific fact in the sense of Austin (1979). Rather, the relevant notion of a fact is that of an entity corresponding to a true sentence, the notion of a non-worldly fact (Strawson 1950).[2] This is the same notion of a fact that explicit fact descriptions of the form *the fact that* S refer to. A non-worldly fact need not be fully specific. It can be constituted by a non-specific property ('the fact that the book is old'); it can be quantificational ('the fact that someone is in the room', which is a single fact regardless of how many people are in the room); and it can be disjunctive ('the fact that Mary or John failed the exam', which is a single fact even if both Mary and John failed the exam). In these respects, non-worldly facts differ from worldly facts or actual situations, which can play the role of truthmakers.[3]

There are not many proposals in the literature of how to conceive of non-wordly facts. One proposal was mentioned in relation to Jaegwon Kim's account of events in Chapter 2 (Section 2.4.3.). On a 'Kimian' account of facts, a (simple) fact is obtained from an individual, a property, and a time and subject to an existence condition (the fact exists in case the individual has the property at the time), and an identity condition (two simple facts are identical if and only if they are obtained from the same individuals, properties, and times). However, this notion of a non-worldly fact is unsuited for the notion reflected in natural language, since it fails to display a part structure based on partial content.

Non-worldly facts can naturally be conceived as satisfiable objects. Facts are not attitudinal objects, of course, since facts are not cognitive content bearers. But non-worldly facts can be conceived as modal objects that come with a part structure ordered by partial content. Unlike facts, modal objects, like all satisfiables, come with satisfaction conditions, though. Non-worldly facts do not, intuitively, have truthmaking or fulfillment conditions. However, they arguably have realization conditions: they are realized by the situations in virtue of which the non-worldly fact obtains or could obtain,

[2] See also Fine (1982) for the distinction between worldly and non-worldly facts.

[3] There is a historic debate between Strawson and Austin about the nature of facts. Strawson (1950) takes facts to be non-worldly; Austin (1979) takes them to be worldly situations. See Fine (1982) for more on the distinction between worldly and non-worldly facts.

namely, situations in virtue of which the fact exists. These situations are also the actual truthmakers of the fact-introducing clause.

This then motivates the following construal of non-worldly facts as modal objects when they are introduced by a sentence *S*. 'The fact that S' is a modal object satisfying two conditions: first, its satisfiers are the actual situations that are truthmakers of *S*, and second, it does not have violators. Facts are special modal objects also in that they do not come with a direction of fit, that is, they do not themselves carry a norm (of truth) nor do they impose one on their satisfiers (Chapter 3, Section 3.3.3.). A fact as a modal object can thus be informally defined as in (10a); uniqueness of a fact for a given true sentence is ensured by imposing the condition in (10b):

(10) a. A modal object *d* is a (non-worldly) fact relative to a world *w* ($[\text{FACT}]^w(d)$) iff *d* has satisfiers that are part of *w* and no violators, and *d* is non-normative.
b. For a sentence *S* that is true in a world *w* (i.e., that has satisfiers that are part of *w*) there is exactly one (non-normative) modal object *d* such that $\text{pos}(d) = \text{pos}(S)$ and $\text{neg}(d) = \varnothing$.

The denotation of *the fact that* S relative to the world will be as below:

(11) For a world *w*, $[\textit{the fact that}\ [+\text{prop}]\ \text{S}]^w = \iota d[\text{FACT}^w(d)\ \&\ \text{prop}([\text{S}])(d)]$

Thus, a clausal modifier *that* S of *fact* will be interpreted by predicate modification, which means that the fact being described shares its satisfiers with the sentence *S*. Independent support for the predicative function of the *that*-clause comes from the possibility of specificational sentences:

(12) The fact is that it is raining.

Recall from Chapter 5 that a noun permits dislocation of a clause in specificational sentences just in case the clause acts as a predicate giving the content of the object denoted by the NP in subject position, rather than as a complement providing an internal argument of the noun.

What enables (simple) *that*-clause complements of factive verbs to describe facts? Here a few remarks are needed concerning the syntax of factive clauses.

There is a long syntactic tradition that argues that factive clauses are nominal in some sense. The notion of a nominal clause, however it is to be

conceived, is to account for the fact that factive clauses differ syntactically from complements of basic attitude verbs. Among the properties distinguishing factive clauses from clausal complements of basic attitude verbs are the following. Factive clauses are weak islands: they do not allow the extraction of adjuncts and subjects (* *Why$_i$ did not know that Bill died* e$_i$?, * *Who$_i$ did John regret that e$_i$ offended Mary*?), and they do not permit topicalization inside the clause (*John believes that this man, Mary is going to marry*, **John regrets that this man, Mary is going to Mary*). Factive clauses do not allow for the proform *so* (*John believes so*, * *John regrets so*). Finally, factive clauses allow for extraposition, whereas clausal complements of basic attitude do not without a change in discourse semantic effect (*John regrets it that he lost*, **John thinks it that he lost*, ?*John believes it that he lost*).

The notion of a nominal clause, as a clause that displays those syntactic properties, comprises more than factive clauses. It comprises also clausal complements of response-stance verbs and subject clauses on their various interpretations (Cattell 1978, Kastner 2015). In fact, it is widely held that subject clauses in general are nominal clauses.[4] Thus, it has been argued that predicates that permit clauses in subject position (*is believable*, *is likely*, *is surprising*, *occurred never before*) select DPs, whereas verbs like *seem* and *appear* select CPs, which cannot appear in subject position (*It seems that* S, * *That* S *seems*, *It appears that* S, * *That S appears*) (Alrenga 2005).[5] Moreover, nominal clauses can generally be replaced by special quantifiers, but not the clausal complements of certain non-factive attitude verbs, such as the verbs of saying *remark*, *complain*, and *comment* (Section 7.6).

There has been a longstanding view according to which factive clauses are actually NPs, headed by a silent noun *fact* (Kiparsky and Kiparsky 1970, Kayne 2008, 2010).[6] A related proposal is that of Kastner (2015), who argued that factive clauses are 'reduced' DPs of the form [D CP], consisting of a silent definite (discourse-related) determiner and a CP. Other proposals take factive clauses to be referential CPs, conceiving of a syntactic difference

[4] There is also the view, though, that subject clauses are in fact in topic position, co-indexed with an operator in subject position (Koster 1978).

[5] With verbs of appearance, clausal complement should then act as predicate of content bearers, entities of the sort of appearances or seemings. This is entirely plausible semantically since appearances and seemings are entities that have satisfaction conditions (more specifically 'success conditions') and thus can be attributed truthmaker-based satisfaction conditions.

[6] Kayne (2008, 2010) proposes that factive clauses involve raising a noun *fact* from a PP *in fact* inside the *that*-clause: [$_{NP}$ fact [that it is raining in ~~fact~~]].

between referential and non-referential CPs (Haegeman and Ueroegdi 2010, Shaheen and Hinzen 2011).

There are well-known problems for the view that nominal *that*-clauses are NPs. Unlike NPs, they cannot appear after prepositions (*John talked about the fact that* S, * *John talked about that* S). *That*-clauses cannot appear as complements of verbs that only take NPs (*Bill captured the fact that* S, **Bill captured that* S). Unlike NPs, they can be complements or modifiers of adjectives and nouns (*happy that* S, * *happy the fact that* S, *happiness that* S, * *happiness the fact that* S). Finally, they can be extraposed, unlike NPs (*John knows very well that* S / *knows very well the fact that* S).

The view that nominal clauses are NPs would predict that substitution of the clause by a full NP should be possible, but that is not generally the case, as we will see below.

It is actually not clear what sorts of properties a syntactic analysis of factive clauses needs to explain. Extraction from weak islands and topicalization may very well be explained semantically, as some recent research suggests.[7] Clearly, though, an explanation is needed for the various clearly semantic properties of factive clauses (presupposition of truth, the understanding of *partly*, the unavailability of specificational sentences, and the semantics of nominalizations of factive predicates).

I will adopt simply the generalization that whereas CPs that are complements of basic attitude verbs are semantically predicates of the described satisfiable objects, nominal CPs serve to describe a satisfiable that acts as an argument of the embedding verb. I will refrain from further syntactic assumptions, for example regarding the syntactic position of CPs and potential NPs they may relate to or be part of, thus leaving out syntactic details that do not directly bear on the semantic issues (and that may be developed in different ways within particular syntactic approaches). I will adopt a simple syntactic account for nominal clauses in general and factive clauses in particular on which nominal clauses involve a nominal element that ensures their interpretation, namely a light noun, a functional element that is head of a functional projection FP in the left periphery of the embedded clause (one may call it 'Force Projection' following Rizzi (1997), but the term would be quite misleading since it has nothing to do with illocutionary force). Factive CPs thus contain the light noun FACT as head of the FP, both in subject position

[7] See, for example, Abrusan (2014).

and in complement position, ensuring the interpretation of the CP as a fact. Thus, we have:

(13) a. That Joe lost the election is interesting.
b. [$_{CP}$That [$_{FP}$[$_{F}$ FACT [+prop]] Joe lost the election]] is interesting.

(14) a. John regrets that Joe lost the election.
b. John regrets [$_{CP}$ that [$_{FP}$[$_{F}$ FACT [+prop]] Joe lost the election]].

The complement position of a factive clause can be occupied by the pronoun *it*, possibly relating to an extraposed clause as in (15a) and by special quantifiers as in (15b):

(15) a. John knows it / regrets it that S.
b. John regretted / saw / realized something / that / just one thing.

It is an important fact, though, that the complement position cannot generally be filled by ordinary NPs. Factive verbs like *see* and *realize* only permit light DP, not explicit fact-referring NPs:[8]

(16) a. Joe knew / saw / realized that it was raining.
b. ??? Joe knew / saw / realized the fact that it was raining.

The Substitution Problem with factive predicates like *know* appears to be a matter of syntactic selection: *know*, *see*, and *realize* (on the epistemic reading) selects only light NPs. *Regret*, by contrast, also selects full NPs in addition to light NPs (*regret the fact that* S).

The interpretation of factive clauses will be the very same as that of explicit fact descriptions of the sort *the fact that* S:

(17) <u>The Interpretation of Factive Clauses</u>
For a world w, [*that* FACT [+prop] S]^{w} = ιd[FACT^{w}(d) & prop([S])(d)]

[8] German makes the occurrences of light pronouns particularly clear in the appearance of the morpheme *da-* with prepositions:

(i) Er ist froh darüber, dass es regnet.
he is happy that about that it raining
'He is happy that it is raining.'

Given (17), uniqueness of a fact referent *d* of a factive clause *that* S is already ensured by *d* being characterized as a fact whose satisfiers are shared with *S*.

The interpretation of (18a) will be as in (18b):

(18) a. John is happy that FACT [+prop] Mary won the election.
b. happy(John, ιd[FACT^{w}(d) & prop([Mary wo the election])(d)]

Here it is assumed that the interpretation as a definite description is part of the clausal construction with verbs like regret, which presupposes a fact.[9]

7.2. States of affairs as modal objects

7.2.1. Linguistic evidence for states of affairs as denotations of nominal clauses

Nominal clauses may also stand for states of affairs rather than facts. Like non-worldly facts, states of affairs can straightforwardly be conceived as modal objects, that is, as objects that have satisfaction (or realization) conditions and a content ordered by the relation of partial content. The only difference with respect to facts is that states of affairs may have only non-actual situations as realizers.

States of affairs are the denotations of subject clauses with predicates like *is likely*, *is certain*, and *is desirable*, that is, predicates which do not imply the truth of the clause:

(19) That it will rain is likely / certain /desirable.

There are the same diagnostics as for factive predicates that clausal subjects with such predicates are nominal clauses.

[9] Factive verbs like *discover* may instead involve existential quantification over facts as in the logical form in (ib) for (ia):

(i) a. John did not discover that Mary is guilty (because Mary is in fact innocent).
b. ¬∃*d*(regret(John, *d*) & [that FACT [+prop] Mary is guilty](*d*))

This permits negation and other scope-taking expressions to take wide scope over the existential quantifier ranging over facts.

First, the nominalization of an adjective like *likely* does not denote an entity with satisfaction conditions, as seen in the inapplicability of predicates of satisfaction:

(20) ??? The likelihood / certainty / desirability that it will rain is true / satisfied / correct.

Rather *the likelihood that it will rain* denotes a quality of the state of affairs in which it will rain. Qualities of states of affairs differ from epistemic modal objects, such as possibilities ('the possibility that it will rain'), and from obligations ('Joe's obligation to take an exam'), by not having satisfaction conditions.

Second, *that*-clauses with the nouns *likelihood*, *certainty*, and *desirability* are complements and provide an internal argument of the noun. By contrast, clauses with nouns for epistemic modal objects are modifiers, giving the satisfaction conditions of the modal object that is described. Thus, specificational sentences are possible with the nouns *possibility* and *obligation*:

(21) a. A possibility is that it will rain.
b. Joe's obligation is to take an exam

But they are unavailable with the nouns *likelihood*, *certainty*, and *desirability*, which also permit *of*-phrases in place of a clausal complement, another indication of complementhood:

(22) * The likelihood / certainty / desirability is that it will rain.

(23) a. the likelihood of rain
b. the certainty of that.

Finally, *likely*, *certain*, and *desirable* permit a reading of *partly* or *in part* relating to the partial content given by the subject clause:

(24) a. That the collection will be sold is *partly* unlikely.
b. That the students will fail the exam is *in part* certain (since several of them are completely unprepared).

States of affairs display a part relation ordered by the relation of partial content, like modal objects in general.

For a sentence *S*, 'the state of affairs in which S' (or 'the situation in which S') will be a modal object whose satisfiers are just the situations that make *S* true, that does not have violators, and that is non-normative, as below for a light noun for states of affairs SIT:

(25) For a modal object *d* and a world *w*, $SIT^w(d)$ iff *d* has no violators (in any world) and is non-normative.

The syntactic structure of embedded clauses describing states of affairs will be parallel to that of factive clauses.[10] The only difference is that the light noun will now be a light noun for states of affairs 'SIT'. The denotation of a nominal CP denoting a state of affairs (as well as that of a NP explicitly referring to a state of affairs) will then be as below:[11]

(26) $[\text{that } [_{FP} [_{F}\text{SIT +prop}] \text{ S}]]^w = \iota d[[\text{SIT}]^w(d) \,\&\, \text{prop}([\text{S}])(d)]$

Not only subject clauses with predicates like *likely* can stand for states of affairs. Also clausal complements may, for example clausal complments of *imply* and *indicate*, as in (27a, b). Thus, (27b) will have the syntactic structure in (27c):

(27) a. That Mary met Bill in Munich implies that Bill was in Munich.
b. That Mary is nervous indicates that she is unprepared.
c. $[\text{That } [_{FP} [_{F} \text{SIT +prop}] \text{ Mary is nervous}]] \text{ indicates } [_{CP} \text{ that } [_{FP}[_{F} \text{SIT +prop}] \text{ she is unprepared}]]$

To sum up, both facts and states of affairs serve as the denotations of subject and complement clauses, based on the presence of corresponding light nouns in the left periphery of the clause.

[10] Note that like fact-referring NPs, NPs explicitly referring to states of affairs (as 'situations') permit specificational sentences:

(i) The situation is that it is raining.

[11] As Keir Moulton pointed out to me, there is some evidence that the interpretation of a clause as denoting a state of affairs is in fact the unmarked interpretation of a nominal clause and should thus not be based on the presence of a light noun. States of affairs have been considered the general interpretation of verbal gerunds (Zucchi 1993). Moreover, according to Moulton (2020), Spanish nominal CPs that denote states of affairs do not involve a silent noun, whereas those that denote facts or thin assertions involve a silent light noun (see also Section 7.3).

States of affairs play not only a role in the semantics of natural language. They have also been attributed various roles in philosophy without being tied directly to natural language, for example as objects of perception and in fact as the bearers of probability and more generally the fundamental bearers of modality.[12] The conception of states of affairs as modal objects provides a promising alternative to standard conceptions of states of affairs for those roles. States of affairs in philosophy are often conceived as complexes (involving objects, properties, and perhaps connectives and quantifiers). Such a conception, like that of propositions as structured propositions, raises the problem of the unity of states of affairs (Textor 2021). States of affairs as modal objects do not pose that problem: they are taken to be primitives, individuated in terms of the situations that are their satisfiers. As modal objects, states of affairs come with the advantage of having a part structure based on partial content, rather than the constituent structure of a formal complex.

7.3. Thin assertions and predicates of truth

There is a third type of entity that nominal clauses may stand for, generic thin assertions or, better, acceptances. The observation is that *correct* with clausal subject as in (28a) has just the reading it has with claims, suggestions, or hypotheses, as in (28b); but it is not applicable with a clear understanding to propositions, as in (28c):

(28) a. That John is the director is correct.
b. The claim / suggestion / hypothesis that John is the director is correct.
c. ?? The proposition that John is the director is correct.

Correct in (28a) conveys just truth (Chapter 3), a reading with which *correct* cannot apply to a proposition as in (28c), but only a truth-directed (constative) attitudinal object, as in (28b). This means that the clausal subject in (28a) itself must stand for a constative attitudinal object.

[12] See Textor (2021) for an overview of the notion of a state of affairs through the history of philosophy.

On the reading it has with clausal subjects, *correct* also permits modification by *partly*, picking out a partial content of a truth-directed attitudinal object:[13]

(29) That John is in charge is *partly* correct.

That-clauses with predicates like *correct* thus serve to describe a constative attitudinal object to which the speaker refers with the light NP in the subject position headed by a silent noun ASSERT. The claim or suggestion referred to need not be an actual one. It may be a kind of claim or suggestion, the sort of thing that could be referred to as 'the claim that John is the director' or 'the suggestion that John is the director' (permitting the possible truth of *The claim that John is the director has never actually been made*). Furthermore, the attitudinal object is a thin one, not containing a phatic component. This is because, as Moulton (2020) observed, predicates of concreteness are inapplicable to *that*-clauses in subject position when they stand for an attitudinal object, as in (30a) and (31a). Subject clauses differ in that respect from NPs referring explicitly to an attitudinal object, as in (30b) and (31b):[14]

(30) a. ??? That John is the new director was overheard by many.
b. The claim that John is the new director was overheard by many.

[13] *Believe* behaves somewhat differently in that it does permit a partial-content reading of *partly*, at least when focused:

(i) Joe partly believes that the collection is valuable.

The partial-content reading of *partly* is particularly easily available with proleptic *it*, as pointed out to me by Keir Moulton:

(ii) Joe partly believes it that the collection is valuable.

This can be related to the fact that *believe* has a relational use:

(iii) Joe believes the claim that the collection is valuable.

It indicates that *believe* with a *that*-clause complement can have the relational meaning as well, on which the *that*-clause stands for a constative attitudinal object, a thin assertion, rather than acting as a predicate of the described belief.

[14] Moulton (2020) uses a somewhat different example, involving the predicate *loud*:

(i) a. ??? That bike lanes hurt business was loud.
b. ? The claim that bike lanes hurt business was loud.

However *loud* does not sound particularly good with *claim* either. That is because the properties of concreteness that attitudinal objects can bear generally must relate to content as well.

(31) a. ??? That Joe won the election, which caused a commotion, is true.
b. The claim that Joe won the election, which caused a commotion, is true.

How can a generic thin assertion be understood as an object? Let us focus on the most important properties it comes with. First of all, it is a truth-evaluable attitudinal object. This means that it has a word-to-world direction of fit and thus is associated with an inherent norm of truth. Second, it can have satisfiers as well as violators. Unlike particular constative objects, it lacks properties of concreteness. But it will have instantiation conditions: a thin generic assertion *d* is instantiated by a particular attitudinal object *d'* just in case *d'* has the same direction of fit as *d* and shares its satisfiers and violators with *d*.

Thus, there will be three light nouns associated with nominal CPs: 'FACT', 'SIT', and 'ASSERT'. These light nouns play an additional syntactic role with respect to the embedding verb by restricting the interpretations available for *that*-clauses as subjects. The observation is that *that*-clauses in subject position are not referentially independent. That is, what kind of entity a nominal CP stands for depends strictly on the embedding predicate. This is illustrated by the understanding of the evaluative predicate *nice* below:

(32) a. That Mary got elected is nice.
b. The fact that Mary got elected is nice
c. The situation which Mary gets elected is nice.

Sentence (32a) allows only for a reading on which *nice* evaluates a fact, making it equivalent to (32b), even though *nice* could in principle evaluate a state of affairs as well, as (32c) shows. Other predicates may apply only to states of affairs (or possibilities), for example *exclude*. (33a) can only be understood as equivalent to (33b), even though there is a sense in which facts and claims can be excluded too, as in (33c):

(33) a. That John might get elected is excluded.
b. The possibility that John might get elected is excluded.
c. The fact / The claim that John might get elected is excluded (from the discussion).

Only in the presence of a suitable predicate can a *that*-clause in subject position stand for a contextually given claim or suggestion, for example with *true* or *correct*. This means that the silent light noun in clausal subjects cannot be

freely chosen, unlike the overt head noun in the construction *the fact that* S or *the claim that* S.

Clausal predicates also make the point. *Caused surprise* is applicable to both facts and claims. But when applied to a clausal subject, it could not apply to a contextually given claim; rather it triggers a reading applying to a fact only (*That it was raining caused surprise*).

The same observations hold for nominal clausal complements of factive verbs and response stance verbs:[15]

(34) a. John recognized / appreciates that Mary is talented.
b. John recognized / appreciates the fact that Mary is talented.
c. John recognized / appreciates the assertion that Mary is talented.

(34a) has only a fact-related reading as in (34b) on which John recognizes or appreciates a fact, not the reading in (34c) on which he appreciates a contextually given claim.

The interpretation of a clause as describing a fact, state of affairs, or assertion is thus not due to semantic selection, but appears a matter of strict syntactic selection by the embedding verb. Even if a predicate could apply to different types of entities describable by a clause, a given predicate-clause relation can determine only a single kind of entity for the predicate to apply to. This generalization can be called the 'Unique Determination Property' (Moltmann 2003a):[16]

(35) The Unique Determination Property
A nominal clause has a single interpretation with a given embedding predicate, describing a unique type of entity.

Given the present view, this means that a predicate embedding a nominal clause selects CPs with a particular light noun (FACT, SIT, or ASSERT). Evaluative adjectives select nominal CPs with the light noun FACT, predicates of probability nominal CPs with the light noun SIT, and predicates of truth nominal CPs with the light noun ASSERT. Basic attitude

[15] This is a problem for an account of Kastner's (2015) account of factivity, which tries to derive factivity as a special case of a general presuppositional, discourse-related determiner. Nothing on that view should exclude an assertion-related reading for verbs like *recognize* and *appreciate*.

[16] Keir Moulton (p.c.) pointed out an interesting connection to unpronounced arguments of transitive verbs like *drink* and *eat*, as in *John drank*, *John ate*. Such implicit arguments are restricted to what is drinkable / edible, whereas overt arguments could denote something that is not, as in *John drank the ink*, *John ate the sand*.

verbs like *claim* and *assume*, which do not take nominal CPs, won't select a CP with a light noun. Instead they take CPs with just the feature [+prop], which ensures the interpretation of the clause as a property of attitudinal and modal objects.

Some clause-embedding predicates select only light NPs, that is, special quantifiers like *something* and pronouns like *that*; others allow both light NPs and full DPs such as explicit fact-referring, situation-referring, and assertion-referring NPs. Epistemic *see*, *realize*, and *know* are examples of the former; *regret* is an example of the latter:

(36) a. John saw / knew / realized that it was raining.
b. John saw / knew / realized something.
c. ??? John saw / knew / realized the fact that it was raining.

(37) a. John regrets that it is raining.
b. John regrets something.
c. John regrets the fact that it is raining.

Thus, a Substitution Problem arises also with nominal clauses and not just with clausal complements of basic attitude verbs. This kind of substitution problem seems to be due simply to a syntactic category selection of a complement that serves to provide an internal argument of the predicate (full NP vs. light NP and CP).

7.4. Clauses as predicates of truthmakers?

Given truthmaker semantics, one may expect that sentences should also be able to denote properties of truthmakers. That is, a sentence *S* would denote the property $\lambda s[s \Vdash S]$ or $\lambda s[s \in \text{pos}(S)]$. Based on its bilateral content, a pair consisting of a set of verifiers and a set of falsifiers, this would be a simpler derived meaning of a sentence than the property of attitudinal and modal objects used so far. At first sight, it looks like this is indeed the case for *that*-clauses that are complements of what I call 'verbs of occurrence', that is, verbs like *occur*, *happen*, and, in certain contexts, *be*, including *be the case* and *be so* (Moltmann 2015a, 2021d):

(38) a. It has never *occurred* that John was late.
b. It has twice *happened* that John was late.

c. Could it *be* that John is late?[17]
d. That John is late *is* often *the case*.[18]

In (38a–d), the *that*-clause *that John was late* appears to act as a predicate of truthmakers of the sentence *John was late*, occurrences or happenings which are also Davidsonian event arguments of the verbs *occur*, *happen*, and *be*. The logical form of (38a) would then be simply as in (39a), based on the syntactic structure in (39b) and a derivative meaning of the clause in (39c), on which the clause denotes the property of being one of its truthmakers (the interpretation of the feature [+tm]):[19]

(39) a. $\neg\exists e$[occur(e) & tm([*that John was late*])(e)]
b. It has never *occurred* [$_{CP}$ that [$_{FP}$ [+tm] John was late]].
c. tm([*that John was late*])= λs[$s \in$ pos(*that John was late*)]

There are, however, reasons not to posit a simple property of truthmakers as a derived meaning of *that*-clauses. If *that*-clauses denote properties of truthmakers, they will have a predicative function. However, as subjects, *that*-clauses with verbs of occurrence have nominal status, which would be incompatible with their role as predicates of Davidsonian event arguments, just as nominal clauses cannot be predicates of attitudinal objects. Further indications for the nominal status of *that*-clauses with verbs of occurrences

[17] *Be* on the occurrence use is subject to restrictions, generally requiring a context of epistemic uncertainty, as indicated by the contrast below:

(i) a. * It is that the problem has been solved.
b. It can't be that the problem has been solved.

Be can act as a verb of occurrence not requiring epistemic uncertainty when accompanied by the modifier *so*, as in (ii), though only with a sentential anaphor, such as *that* instead of a clausal subject:

(ii) a. That *is* so.
b. ?? That John is late is so.

[18] In Moltmann (2021d), I have argued that the predicate *is the case* is subject to a particular condition that enforces the presence of adverbials or particles like *often* or *not* in (38d), namely the requirement of a case space, a set of linguistically or epistemically given alternative situations.

[19] *Occur* also imposes lexical presuppositions on its implicit argument, since it accepts only *that*-clauses with eventive verbs, as the contrast between *occur* and *is the case* below makes clear:

(i) a. In John's family, it is not the case that children respect their parents.
b. ?? In John's family, it does not occur that children respect their parents.

This means that *occur* semantically selects only states of affairs that have events (eventive situations) as realizers.

are the impossibility of specificational sentences, as seen in (40a), and the possibility of *of*-phrases with nominalizations of verbs of occurrence, as in (40b):

(40) a. * The occurrence was that John was late.
b. the frequent occurrence of thunderstorms in the last weeks

Subject clauses with verbs of occurrence will thus denote satisfiable objects of some sort, rather than acting as predicates. The most plausible candidate for their denotation of course is states of affairs conceived as modal objects.

How would this account for the apparent role of the Davidsonian event argument as a truthmaker of the subject clause with verbs of occurrence? This can be attributed to a lexical condition on verbs of occurrence, namely that their Davidsonian event arguments be satisfiers of their modal-object argument, the state of affairs described by the subject clause. Given this, (41a) will have the logical form in (41b) or equivalently (41c), with the lexical condition imposed by *occur* in (41d):[20]

(41) a. It has never occurred that a student failed the exam.
b. $\neg\exists e$(occur(e, [*that* SIT [+prop] *a student failed the exam*]))
c. $\neg\exists e$(occur(e, ιd[SIT(d) & prop([*a student failed the exam*])(d))]))
d. For an event e and a state of affairs d, occur(e, d) iff $e \Vdash d$.[21]

One potential problem for the analysis is that nouns of occurrence in English generally do not take *that*-clauses as modifiers, in contrast to

[20] Note that the *that*-clause can be replaced by a special quantifier:

(i) a. Nothing special has occurred, except that John gave a speech.
b. John gave a speech. That has never happened before.

This is unproblematic on the view on which clausal subjects of verbs of occurrence stand for modal objects, which special quantifiers can then range over. By contrast, it would not be obvious how special quantifiers in place of clausal subjects were to be treated if the clausal subject was a predicate of truthmakers.

[21] The verb *occur* with a dative involves a slightly different semantics:

(i) It had never occurred to Joe that he made a mistake.

Here the event arguments of *occur* are mental events, occurring thoughts, which are not themselves truthmakers of *he made a mistake*. Thus, the lexical condition (41d) won't obtain. Rather *occur to* just takes a state of affairs as an argument, which provides the object that the occurring thought is about.

attitudinal-object nouns. This holds for occurrence nouns with both definite and indefinite determiners:

(42) a. * the / a occurrence that John was late
b. * the / an event that John won the race
c. * a being that John was late

Bondarenko (2020a) points out that this is different in Russian. Russian allows clausal modifiers (*čto*-clauses) of nouns of propositional attitudes as in (43) as well as of nouns of occurrence as in (44a, b):

(43) Mne prišla v golovu mysl' [čto belki s"eli vse orexi].
'I had a thought that squirrels ate all the nuts.'

(44) a. Na prošloj nedele byl was slučaj [čto ˇ belki s"eli vse orexi].
'Last week there was an event of squirrels eating all the nuts.'
b. Včera proizošla /slučilas' situacija [čto moj zakaz zaderžali].
'Yesterday a situation that my order was delayed happened / occurred.'

Russian verbs of occurrence, *byvat'* 'happen', *slu ˇcatsja* 'occur', and *proisxodit'* 'take place', likewise take *čto*-clauses, as of course do attitude verbs.[22]

There is a difference between English and German clausal modifiers of nouns of occurrence. English *that*-clauses can denote properties of content bearers, including modal objects that are states of affairs:

(45) That it is raining is likely.

But in English only *in which*–clauses can denote properties of particular truthmaking situations, as seen in (46a, b), or kinds of such situations, as in (46c, d):

[22] Bondarenko (2020a) posits two distinct meanings of *čto*-clauses, as predicates of content bearers and as predicates of events, and points out that the second meaning can occur with an optional modifier *takoe* 'such', but not with the first meaning:

(i) a. Slučilos' /proizošlo (takoe) čto belki s"eli vse orexi.
'That the squirrels ate all the nuts occured / happened.'
b. Maša dumaet /somnevaetsja (* takoe) čto belki s"eli vse orexi.
'Masha thinks /doubts that the squirrels ate all the nuts.'

This points at the semantic difference between nominal clauses standing for eventive states of affairs and clauses acting as predicates of content bearers.

(46) a. The cases in which a student passed the exam are rare.
b. * The cases that a student passed the exam is rare.
c. The case in which a student passed the exam are rare.
d. * The case that a student passed the exam is rare.

The cases referred to in (46a) are truthmakers of the sentence *a student passed the exam*, and so are the instances of the kind of case referred to in (46c).

In contrast to English, German *dass*-clauses can modify definite singular *case*-NPs that stand for kinds of cases, as in (47a), though this is not possible for plural *case*-NPs that stand for particular cases, as seen in (47b):[23]

(47) a. der Fall, dass ein Student das Examen besteht
the case that a student passes the exam
'the case in which a student passes the exam'
b. * die Fälle, dass ein Student das Examen besteht
the cases that a student passes the exam

The difference between Russian, English, and German nouns of occurrence with clausal modifiers can be accounted for if clauses with nouns of occurrence act as predicates of occurrences, rather than as complements denoting states of affairs. The additional assumption is that clauses across languages differ in their ability to denote properties of truthmakers. An English *that*-clause *that* S can denote only a property of attitudinal and modal objects (λd[prop([S])(d)]). A German *dass*-clause can in addition denote a property of kinds of situations that are truthmakers of the clause (λk[$\forall$s(s I k $\rightarrow$s $\in$ pos(S)], for 'I' standing for the instantiation relation). A Russian *čto*-clause can in addition denote a property of situations that are truthmakers of the clause (λs[$s \in$ pos(S)]).

Nouns of occurrence differ from verbs of occurrence in that with verbs of occurrence clauses are nominal, standing for states of affairs, rather than acting as predicates. For that reason, verbs of occurrence permit *that*-clauses in English, as well as their correlates in Russian and German. With verbs of occurrence clauses are nominal in English, German, and Russian, providing states of affairs as internal arguments of the embedding verb.

[23] See Moltmann (2021d).

There is another candidate of a construction in which clausal complements appear to act as predicates of truthmakers, namely perception verbs with bare infinitives as complements:

(48) a. John saw [Mary leave].
b. John heard [Mary sing].

Perception verbs with bare infinitival complements, which generally describe events of direct perception, were of course a motivation for introducing situations in the Situation Semantics of Barwise and Perry (1983). On Barwise and Perry's view, situations are denotata of bare infinitives and, as such, arguments of perception verbs. On the alternative, Davidsonian semantics of perception verbs of Jim Higginbotham (1983), events in such perception reports act both as the implicit arguments of the infinitival verb and of the embedding perception verb.

Truthmaker semantics offers yet another alternative for the semantics of perception verbs with bare infinitives, namely on which a perception verb would take as its argument a situation that is the truthmakers of the bare infinitive, as in the logical form of (48a) below, making use of the function *tm* defined earlier in (39c):

(49) ∃e(see(John, e) & tm([*Mary leave*])(e))

In this construction, the bare infinitival complement would thus take as its semantic value the property of being a truthmaker of the clause. However, perception reports with bare infinitives do not make a particularly good argument for clausal complements as predicates of truthmakers. Bare infinitives are syntactically distinct from *that*-clauses and are selected by only a few verbs. Perception verbs moreover do not have the same reading when they take bare infinitives and when they take clausal complements (*John saw that Mary left* can describe indirect perception). Thus, they hardly give evidence for a general function of clauses acting as predicates of truthmakers.[24]

[24] Bondarenko (2020a) points out that the Russian verbs *pomnit'* 'remember', *zamečat'* 'notice', *videt'* 'see' display a direct perception reading only with *takoe* modifying the complement clause:

(i) Lena pomnit takoe čto Mitja kuril.
'Lena remembers Mitya's smoking.' ⇒ Lena directly perceived M. smoking.

Without modification by *takoe* 'such', there is no direct perception requirement:

7.5. Topic-related locutionary verbs

What I call 'topic-related locutionary verbs' are verbs that describe locutionary acts that are about a particular issue, a fact or any topic under discussion in the context of the utterance. Such verbs include *explain*, *criticize*, and *praise* on one of their two readings, as well as *complain*, *boast*, *comment*, and *remark*, verbs that are known not to take any DPs, as complements, not even special quantifiers.[25]

Topic-related locutionary verbs like *explain*, *criticize*, and *praise* allow for two readings of their clausal complement: a topic-related reading, on which the complement serves to describe the topic that the speech act is about, and a content-related reading, on which the complement gives the content of the locutionary object that is produced. The most obvious reading of (50a) is a content-related reading, whereas (50b), with an explicit fact-referring term, displays the topic-related reading only:

(50) a. John explained that there was no water.
b. John explained the fact that there was no water.

However, (50a) also allows for a topic-related reading, as is made clear by *how*-questions as below, asking for a specification of content:[26]

(51) How did John explain that there was no water?

Likewise complement clauses of *criticize* allow for both content-related and topic-related readings:

(53) Looking at the well, John criticized that there was not enough water.

(ii) Lena pomnit (to) čto Mitja kuril, xot' ona i ne videla ego ni razu kurjaščim.
'Lena remembers the fact that Mitya smoked, despite not seeing him.'

This is indicative of the similarity of the semantics of occurrence and direct perception and suggests that both involve eventive states of affairs.

[25] Grimshaw (2015) calls *complain* and *praise* 'verbs of speaking with an attitude' and *comment* and *remark* 'verbs with a discourse function' (a distinction I used in Chapter 5). This may look like a different classification. However, her labels capture the topic-relatedness implicitly: emotional attitudes are generally about something and so are locutionary acts with a discourse function.

[26] Pietroski (2000) incorrectly assumes that there is a single, content-related reading of the clausal complement of *explain*. Bondarenko (2021b) shows that Russian allows for both readings with a much greater range of topic-related locutionary verbs.

(54) a. John criticized that there was no water, by saying that without water the project cannot be done.
b. John criticized the water shortage / the fact that there was not enough water.

In (53), the content-related reading is enforced by an indication of the topic, and in (54a) the topic-related reading is due to the *by*-phrase, rendering (54a) equivalent to (54b).

In specificational sentences, the clause in postcopula position permits only the content-related reading:

(54) a. John's explanation was that there was no water.
b. John's criticism was that there was no water.

That is because clausal complements of verbs like *explain* and *criticize* that refer to a topic are nominal clauses. With nominalizations they have the status of complements, providing an internal argument rather than the content of the described attitudinal object.

Only nominal clauses can be subjects, which means that passivization only permits the topic-related reading:

(55) That there was not enough water was not explained / criticized.

Finally, a sentential anaphor in an *of*-phrase can only pick out the topic, not the content (*the explanation of that*, *the criticism of that*).

Thus, *explain* and *criticize* permit both nominal and non-nominal clauses: the nominal clause serves to describe a fact or topic as an internal argument of the verb; the non-nominal clause gives the content of the locutionary object that is described, the explanation or critique.

The verbs *complain*, *comment*, and *remark* only permit a content-related reading of their complement clause and not a topic-related reading:

(56) John complained / commented / remarked that there was no water (??? by saying that without water the project could not be done).

However, there are reasons to assume that such verbs always syntactially realize a topic argument as well, even if it stays unpronounced. What is peculiar about topic-related locutionary verbs and what distinguishes them from

other locutionary verbs is that they do not permit special quantifiers in place of a clausal complement:

(57) a. John complained that it rained.
b. * John complained something.

(58) a. John commented that the idea was good.
b. * John commented something.

(59) a. Mary remarked that she would come.
b. * Mary remarked something.

This can be connected to the observation that with the verbs *explain* and *criticize* a special quantifier or pronoun can replace the clausal complement only on the topic-related reading, not the content-related one:[27]

(60) a. John explained something, that there is no water.
b. What did John explain?

(61) a. John criticized something.
b. What did John criticize?

The impossibility of special quantifiers on a content-related reading can be explained if clausal complements of *explain* and *criticize* occupy different positions on the two readings. On the topic-related reading, the complement clause occupies the direct-object position, a receiver of (structural) case. On the content-related reading, the complement clause occupies the indirect object position, which cannot receive (structural) case and thus excludes any NP in that position.

Now if locutionary verbs such as *comment* and *remark* always involve a topic (a fact, suggestion, or claim) as an additional argument, this allows for

[27] Elliott (2016) claims that *explain* allows for special quantifiers to replace a *that*-clause on the content-related reading, as below (his 13b):

(i) Angela explained that Boris resigned, therefore Angela explained something.

I disagree with his judgment. The use of the special interrogative pronouns *what* in place of the *that*-clause makes the absence of a content-related reading particularly clear:

(ii) What did Angela explain?

The question in (ii) clearly lacks a content-related reading.

an explanation why special quantifiers are impossible in place of their clausal complement. The only additional assumption that is required is that the topic argument is syntactically realized by a light NP even if it is not (or even cannot be) filled by a *that*-clause on the content-related reading:

(62) John [[remarked] [$_{NP}$ e]][that S]

In (62), the clausal complement is not in direct object position, but in indirect object position where no (structural) case can be assigned. This means that the *that*-clause complement of *remark* and *comment* and, on the content-related reading, of *explain* and *criticize* cannot be replaced by a special quantifier, which would not be in a position to receive case. The two readings of (51a), repeated below as (63a), will thus correspond to the two different syntactic structures in (63b) and (63c), respectively:

(63) a. John explained that there was no water.
b. John [$_{V}$explained [$_{NP}$ e]] [$_{CP}$ that [+prop] there was no water]]
c. John [$_{V}$explained [$_{CP}$ that FACT [+prop] there was no water]]

The complex-predicate analysis will apply to *explain* as well. This means that the verb *explain* is derived from a complex-predicate of the sort *give explain* with an abstract nominal root *explain*. (63a) on the two readings will then have the logical forms in (64a) and (64b), respectively, where the nominal *explain* will denote a two-place relation between an attitudinal object (the external argument) and a fact, an explanans (the internal argument):

(64) a. $\exists d$(give(John, d) & [*explain*$_{N}$](d, t$_c$) & [*that there is no water*](d))
b. $\exists$d(give(John, d) & explain$_{N}^{w}$(d, ιd'[FACT^{w}(d') & prop([*that there is no water*])(d')])

In (64a), t_c is the topic relevant in the utterance context c.

7.6. Conclusion

In this chapter we have seen that attitudinal-objects semantics can naturally be extended to clausal complements and subjects that have nominal status

and as such stand for facts or states of affairs conceived as modal objects or for thin assertions conceived as kinds of constative attitudinal objects.

A special case of verbs taking nominal clauses are verbs of occurrence such as *happen* and *occur*. At first sight, verbs of occurrence seem to give evidence for verbs conveying truthmaking as a relation between situations and sentences. However, it turns out that it is not the verb of occurrence that conveys truthmaking. Rather truthmaking is a lexical condition on the relation between the Davidsonian event argument and a state of affairs argument of the verb of occurrence that is provided by the subject clause.

Some topic-related illocutionary verbs like *explain* and *criticize* allow for clausal complements with two different linguistic roles: as predicates of the described attitudinal object and as nominal clauses standing for topics, such as facts conceived as modal objects. Other topic-related locutionary verbs like *remark* and *comment* require their clausal complement to always have a predicative, content-conveying role, yet they arguably involve a syntactic realization of the topic role as well, though one that stays silent.

There are lots of issues concerning the syntax of factive and presuppositional verbs that had to be skipped in this discussion. Making use of 'simplified syntax', I have adopted a simple syntactic view of nominal clauses, invoking the theory of light verbs. However, the main semantic and ontological contributions of attitudinal-objects semantics could very well be stated within other syntactic views.

8

Conclusions and Avenues for Further Development

The book has outlined a novel semantics of attitude reports and modal sentences based on a rather rich ontology of attitudinal and modal objects, or more generally satisfiable objects. While many philosophers and perhaps semanticists may feel hesitant to accept such a wealth of less familiar objects, from the perspective pursued in this book the acknowledgment of such an ontology for the semantics of natural language goes along with the methodology of descriptive metaphysics. This means giving priority to intuitions and in particular intuitions reflected in language, rather than philosophical preconceptions on what there is or philosophical considerations of ontological economy and of what there ultimately is.

It is notable that the rejection of propositions on the view that was presented is shared with the approach of 'metaphysics first' of Devitt (1994 2013). Devitt argues that what should play the central role in the semantics of attitude reports are not propositions, but mental entities like thoughts in a naturalized sense, entities acceptable on metaphysical grounds alone. The approach pursued in this book rejects propositions in favor of mind-dependent attitudinal objects, because it is an approach of 'descriptive metaphysics first', as one may put it.

This book has presented a range of linguistic motivations and applications of the ontology of satisfiable objects. The ontology avoids conceptual problems with abstract propositions and allows for a semantic analysis of attitude reports that avoids conceptual and empirical problems for the Relational Analysis. The semantic analysis of modal sentences differs radically from the standard semantics on which modal verbs act as quantifiers ranging over worlds, and it avoids a range of problems for that semantics when applied to deontic modals. The ontological and semantic theories this book has developed manifest a number of convergences with recent views of cognitive content bearers as well as recent localized approaches to modality. They also match

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recent emerging views on which clausal complements do not act as referential terms, but rather as predicates of content bearers.

There are a range of open issues inviting a further development of the approach. First of all, there are various philosophical elaborations and applications to pursue. The ontological account of modal objects was focused on deontic modal objects and awaits a development for the various other types of modal objects as well, such as epistemic modal objects, abilities, dispositions, and perhaps essences. The ontological account of attitudinal and modal objects requires further elaboration of the way in which they may depend on acts or in which they themselves may be individuative of acts. Moreover, an account is needed for why attitudinal objects like claims, offers, and demands may display properties of concreteness, yet endure (or have validity) past the act that had produced them. Finally, a full account is needed of how attitudinal objects may be based on or grounded in lower-level objects (the by-relation) and how that may bear on the properties that attitudinal objects can carry. The ontology of satisfiables also invites further applications and integration within the ontology of the social world (which includes artifacts and satisfiables such as laws, debts, and possessions). The ontology of satisfiables also invites an integration into the ontology of the mind in general, which includes entities like emotions, which fail to have satisfaction conditions in the way of satisfiables, and perceptual states, which do.

There are a lot of linguistic issues that are up for further development as well. The syntactic analyses proposed in this book were that of 'simplified syntax', which thus need to ultimately be elaborated within a proper syntactic theory. The semantic analysis of attitude reports was based on a syntactic view of lexical decomposition of attitude verbs in syntax (light verb-noun, with a noun denoting satisfiable objects), a view that requires further independent justification and theoretical development.

The semantics analysis of modal sentences would need to be developed for the full range of modal constructions, with or without decomposition of modal verbs.

The semantics presented in the book was based on truthmaker semantics, which, however, was used only at the sentential level. Sentence-based truthmaker semantics itself still awaits the development of a compositional semantics at the subsentential level.

The semantics of attitude reports based on attitudinal objects was applied mainly with finite clauses in mind (*that*-clauses). But it is a semantics that is

meant to be applicable to other embedded clause types as well. The application of attitudinal-objects semantics to interrogatives appears particularly promising. Questions display all the characteristic properties of attitudinal objects. But their satisfaction conditions will be answerhood conditions. This means that questions will have as their satisfiers constative attitudinal objects. Embedded interrogatives may also serve to describe mental attitudinal objects of inquiry (*wonder who / what / whether* S). Attitudinal objects of inquiry will have as their satisfiers states of knowledge, which again can be viewed as attitudinal objects. Infinitival interrogative clauses (*John knows how to open the bottle*) may be used for describing practical knowledge, that is, attitudinal objects whose satisfiers are actions.

Infinitival clauses present a general linguistic challenge, since infinitival clauses and finite clauses in languages such as English do not always come with semantic differences. In certain cases the choice of a finite or an infinitival clause indicates a difference in the satisfiers of the respective attitudinal objects: the finite clausal complement applies to an attitudinal object whose satisfiers are situations, the infinitival complements applies to one whose satisfiers are actions (*John decided that he was sick* as opposed to *John decided to leave*).

Lohninger and Wurmbrand (2019) show that some languages do display a general semantic distinction between the choice of finite clauses and infinitival clauses as complements. It would be further support for the view developed in this book if that semantic contrast can be cast in terms of a unified ontology of modal and attitudinal objects, making use of the notion of direction of fit (infinitival clauses would apply to objects with a world-to-word/mind direction of fit, finite clauses to objects with a word/mind-to-world direction of fit).[1]

The ontology of satisfiables this book has presented includes new notions of facts and states of affairs. Facts and states of affairs are considered modal objects and thus bearers of satisfaction conditions. This has allowed for a semantics of factive verbs like *regret*, on which they take facts as arguments as specified by the complement clause. This semantics may not be applicable to all factive verbs, though. The verb *know*, which displays the Substitution

[1] Lohninger and Wurmbrand themselves propose that infinitival clauses denote situations and finite clauses propositions in those languages, a view that is not compatible with that of this book.

Problem, more plausibly involves an attitudinal object of knowledge whose satisfies are restricted to actual situations.

These remarks should be an indication that the approach of this book, the novel ontology of satisfiables combined with truthmaker semantics, may allow for a much greater range of fruitful applications to modal sentences and attitude reports.

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