

Book Outline *Acts, Products, and Content*

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General Description

Contemporary semantics is dominated by the view of meanings as abstract objects. This holds in particular for the meanings of sentences, which generally are conceived as propositions, that is, mind-independent abstract objects that carry truth conditions. Propositions are generally conceived of as sets of circumstances or structured propositions (n-tuples consisting of properties and objects). Abstract propositions raise some serious difficulties, though, such as the question of how they can be grasped and figure as the contents of propositional attitudes and how, as formal objects of one sort or another, they can have truth-conditions and the particular truth conditions they are supposed to have. In view of such problems for abstract propositions, alternative, act-based conceptions of propositional content have recently been proposed, most notably by Scott Soames and Peter Hanks. On that view, types of cognitive acts play the role of propositions, in particular acts of predicating a property of objects.

This book will develop a novel approach to a cognitive conception of propositional content, which is based not on the notion of a cognitive act, but on the notion of the cognitive product of an act, in roughly the sense of the distinction between actions and products that the Polish philosopher Kasmierz Twardowski drew at the beginning of the 20th century. The book argues that cognitive products should be understood as abstract artifacts (in Amie Thomasson's sense) resulting from the acts. For example, what we describe as a 'judgment' is the cognitive product of an act of judging and what we describe as a 'thought' is the cognitive product of an act of thinking. Cognitive products generally do not last longer than the act of producing them, but they have fundamentally different sorts of properties from the acts. Most importantly, unlike the acts, cognitive products may have truth- or satisfaction conditions, may carry normative properties, have a part structure based on partial content (rather than temporal parts), and enter similarity relations on the basis of being the same in content.

The book argues that cognitive products play a central role in propositional attitudes and the semantics of attitude reports, and more generally the semantics of (independent and embedded) sentences. The product-based semantics the book develops can shed a new light

on a range of problems in the philosophy of language. These include the underspecification problem of the content of attitudes and ‘what is said’, the connection between modals and propositional attitudes, and the truth-conditional completion of *de se* contents. The product-based semantic also permits novel analyses of various linguistic constructions. Besides attitude reports and modal sentences of different sorts, these are in particular the semantics of different sentence and clause types, the semantics of quotation and the semantics of unbound anaphora.

Cognitive products, while hardly considered part of ontology in contemporary analytic philosophy, are extremely well-reflected in natural languages, namely in the most common nominalizations of attitude verbs, such as, in English, *judgment, thought, belief; claim, demand, and desire*. The semantic behavior of such nominalizations with different sorts of predicates matches the sorts of properties that distinguish cognitive products from the corresponding actions. However, cognitive products are not strictly tied to such nominalizations (or other sorts of terms) in particular natural languages. Rather, cognitive products should be considered part of the more general ontological category of (materially realized or abstract) artifacts. The distinction between actions and products that may lack a material realization is found in the very same way with cases from social ontology not tied to particular terms in natural language, such as the distinction between a work of art and the act of artistic creation or a law and the act of declaring or passing it. The recognition of cognitive products thus goes along with the recognition of artifacts as an important ontological category besides events, material objects, and abstract objects.

Not only is the notion of a cognitive product well-motivated, from natural language terms and social ontology. There is also particularly good linguistic motivation for the product-based semantics. Natural language itself reflects an ontology of the mind involving cognitive products both in the sorts of nominalizations and the various constructions involving embedded sentences that it displays. In contrast to cognitive products, abstract propositions are hardly reflected in non-technical terms in natural language, or in fact constructions involving embedded sentences and attitude verbs.

The book will pay attention not only to relevant semantic generalizations, but also to the syntactic basis for the analyses to be developed (taking generative syntax to be the theoretical background). In particular, it argues for a novel type of syntactic structure for quotation, allowing lower-level linguistic structures (such as phonological structures) to be part of the syntactic structure that is input to semantic interpretation and permitting a compositional, act-related interpretation of quotational structures of different sorts.

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Chapter 1

Propositions, Cognitive Products, and Abstract Artifacts

This chapter will introduce and motivate the notion of a cognitive product against the standard notion of a proposition as well as recent act-based conceptions of propositional content, without as yet developing any semantic analyses in which the notion figures. The chapter argues that cognitive products or kinds of them are, to a great extent, to play the roles that propositions play on the view in philosophy that is standard in language, philosophy of mind, as well as linguistic semantics. A cognitive product such as a judgment is the (enduring) product of an act of judging. As such, it has very different sorts of properties from the act. Most importantly, unlike the act of judging, the judgment is an entity that can be true or false. The chapter argues that cognitive products are to be understood as (abstract) artifacts produced by the corresponding actions. While the distinction between actions and their (possibly non-enduring) products was first explicitly made by Twardowski (1911), this chapter introduces a much greater range of distinguishing characteristics of actions and products and puts this distinction into the greater ontological perspective of artifacts and the actions that create them. The importance of products derives not only from their ability as truth bearers, but rather their more general ability of bearing representational as well as normative properties and thus the notion of a cognitive product should have importance beyond the context of semantics, which this chapter will indicate in a number of places.

Cognitive products are motivated not only by general philosophical considerations, but also by linguistic considerations; Cognitive products act as the referents of nominalizations of the sort *John's judgment that S*. In fact, the product-based semantics developed in this book is itself well-reflected in the semantics of terms for cognitive products. Thus, frequent appeal is made linguistically reflected intuitions involving such nominalizations. Yet the action-product distinction is not strictly tied to particular terms in a particular language, but has sufficient independent motivations.

1.1. The standard notion of a proposition and recent act-based approaches to propositional content

It is the standard view in philosophy that the notion of a proposition plays a central role for the meaning of sentences, including embedded sentences and propositional attitudes.

Propositions are traditionally conceived as entities that play particular roles, namely as the meanings of sentences (and the meanings of embedded *that*-clauses in particular), as the objects of propositional attitudes, as truth bearers, and as the semantic values of ‘propositional’ anaphora and quantifiers of the sort *that* or *something*. As such, propositions are generally conceived as mind- and language-independent entities that have their truth conditions essentially. Making use of propositions for those roles has become standard in both philosophy of language and mind as well as in linguistic semantics. However, propositions are associated with a range of conceptual and empirical problems, some of which have received significant attention in the recent philosophical literature (Moore 1999, Jubien 2001, Iacona 2003, Moltmann 2003, Soames 2010). These are in particular:

- [1] the problem how abstract propositions can be grasped and act as the contents or objects propositional attitudes
- [2] the problem of the truth directedness of propositions and, related to that, the problem of the unity of the proposition, that is, the problem of how an abstract object such as a set or n-tuple could be a truthbearer in the first place and if it is a structured proposition, how it can have the particular truth conditions it is supposed to have (that is, why, say the pair <Happy, John> should be true just in case John is happy, rather than, say, just in case John is not happy or distinct from happiness).
- [3] the problem of arbitrary identification, a problem of the same sort as the Benacerraff problem for natural numbers, namely why a proposition should be identified with one particular sort of formal object (say, a set of worlds) rather than another (say, a function from worlds to truth values)

A recent approach to overcome those problems consists in identifying propositions with cognitive acts or better types of cognitive acts, an approach pursued in particular by Hanks (2009, 2011, to appear) and Soames (2010). The relevant acts, on that approach, are, essentially, acts of predication, with the act of predication providing the ‘glue’ that constitutes the unity among the propositional constituents and guarantees the truth-directedness of the act itself. Propositional attitudes on that approach are relations between agents and types of acts.

There is a serious problem for the act-based approach, however, and that is that actions or action types are simply not suited to play the role of propositions, namely as truth bearers and the shared contents of attitudes. An act or act type just is not something that intuitively can be true or false, and it lacks a range of further properties that entities should have in order to play the role of propositions (as will be elaborated shortly).

1.2. The notion of a cognitive product

There is a different sort of cognitive entity suited to the play that role, namely entities of the sort of ‘judgments’, ‘thoughts’, ‘beliefs’, and ‘claims’. These are cognitive products or ‘attitudinal objects’, as I called them in previous work (Moltmann 2003a, b, 2004, 2013, 2014). (Entities like claims and demands may be distinguished as illocutionary products from cognitive products like judgments, thoughts, and desires. However, I will use ‘cognitive product’ as the more general term and distinguish illocutionary products from cognitive products in the narrow sense only when needed in a particular context). Judgments and claims are by nature entities that can be true or false, acts of judging and claiming are not. Judgments and claims are not propositions, though. They are not abstract objects, but cognitive entities, that is, mind- and agent-dependent, though in the sense of products of cognitive acts, not the acts themselves. Cognitive products have very different properties from acts as well as from propositions. There are further properties of cognitive products. Cognitive products depend on an agent, unlike propositions. John’s claim only exists in a world in which John exists and it is identical to another cognitive products only if the latter depends on John as well. Furthermore, unlike propositions, attitudinal objects are dependent on attitudinal force. They may also involve a particular manifestation of that force, such as a particular degree of belief. Thus John’s hope cannot be his thought even if John both hoped that S and thought that S. Moreover, Mary’s desire cannot be her decision even if she both wants to take a vacation and decides to take a vacation. Cognitive products have other properties of concreteness, such as acting as objects of perception, and having a limited temporal duration. Bill may hear John’s claim that S, and John may no longer have the belief that S.

The product-based approach to propositional content shares with the act-based approach the view that what should play the role of propositions should be cognitive entities. However, instead of cognitive acts it will be the cognitive products of such acts, or kinds of them, that will play the role of propositions.

The notion of a cognitive product will appear an unfamiliar and ontologically obscure notion and thus may seem problematic for a replacement of the familiar notion of a proposition. However, the notion of a cognitive product is in fact much better reflected in the ontology associated with natural language as well as in our social ontology. There are two equally important sources for clarifying intuitions about cognitive products. First, natural language provides a wealth of nominalizations that stand for cognitive or illocutionary products. In English products of acts generally are described by nominalizations of the sort

judgment, thought, belief, The semantic behavior and in particular the acceptability of particular types of predicates can be considered revealing as to the nature of cognitive products. Moreover cognitive products, so the present view, are entirely on a par with artifact, especially abstract artifacts, concerning a range of characteristic properties. Thus the notion of a cognitive product is not strictly tied to nominalizations found in particular languages, rather the relevant intuitions concerning cognitive products are equally well-reflected in objects not directly tied to particular linguistic terms.

On the present view, cognitive products are the primary bearers of truth and also the primary bearers of normative properties: satisfaction conditions. In fact, the semantic facts display a rather close connection between normativity and truth.

Cognitive products also play central semantic roles besides that of semantic values of product nominalizations. On the present view, sentences serve to characterize cognitive products. When embedded, clausal complements give partial characterization of cognitive products, the product of the Davidsonian event argument (an action) of the verb, as in (1a, b):

(1) a. John thought that S.

b. $\exists e(\text{think}(e, \text{John}) \ \& \ [\textit{that S}](\text{product}(e)))$

Moreover, quantifiers like *something* range over cognitive products (or kinds of them), as I have argued in previous work. On the present view, according to which products are obtained from Davidsonian event arguments, this gives the logical form of (2a) in (2b):

(2) a. John thinks something.

b. $\exists e' \exists e(\text{think}(e, \text{John}) \ \& \ e' = \text{product}(e))$

The way in which *that*-clauses can characterize cognitive products and other aspects of such a product-based semantics will be discussed further in Chapter 2.

1.3. Twardowski's distinction between actions and products and the notion of a cognitive product

The distinction between a cognitive act and its product was first made explicit by the Polish philosopher Twardowski (1911), who drew a more generally distinction between what he called 'actions' and 'products'. Twardowski's distinction also comprises a less familiar

distinction between a mental action or state and its non-enduring mental product, such as an act of judging and a judgment, an act of thinking and a thought, a state of believing and a belief, a state of desiring and a desire, an act of deciding and a decision, and a state of expecting and an expectation. Furthermore, it includes the distinction between an illocutionary act and its (psychophysical) illocutionary product, such as the distinction between act of claiming and a claim, act of requesting and a request, and an act of asking and a question.

Entities such as judgments, thoughts, beliefs, desires, claims, and requests according to Twardowski are non-enduring products that exist only as long as there is the corresponding mental or illocutionary event or state. However, judgments, thoughts, desires, claims, and requests can be ‘reproduced’ by performing actions with similar products. Products allow for the ‘stabilization’ of what appears to be an enduring propositional content, which emerges from the production of actions with similar products. For Twardowski, it is products, not actions, that approximate the notion of a propositional content.

Like cognitive acts, cognitive products are cognitive entities and thus do not give rise to the problems of abstract propositions, namely how propositions could be grasped and have truth conditions. Truth and representation are tied to the intentionality of agents and thus their cognitive products (however such a tie is ultimately to be understood).

Though Twardowski took the distinction to be of major philosophical significance and shared the present interest in a cognitive notion of propositional content based on the notion of a product. Twardowski focused on the linguistic distinction between terms for actions and terms for products. In English, gerunds such as *claiming*, *thinking*, *judging*, *deciding* describe actions, as do terms with action-sortals such as *the act of claiming* and *the activity of thinking*. By contrast, nominalizations such as *claim* and *thought* describe their products. The action-product distinction, however, is not tied to a linguistic distinction between two nominalizations. Rather the book will pursue the view that it is the very same distinction that holds between an artifact, including an abstract artifact (in the sense of Thomasson 1999) and the action of producing it, for example between a law and the action of passing it and between a work of art (physically realized or not) and the action of creating it.

1.4. Properties distinguishing actions and products

Products differ from actions in the sorts of properties they can have. There are three distinguishing characteristics of actions and products that Twardowski (1911) himself, at least implicitly, mentions and that play a central role in his view -- and for the distinction as such.

First, cognitive products have truth conditions or more generally satisfaction conditions, unlike actions. Cognitive products such as judgments can intuitively be true or false, but not so for cognitive acts such as acts of judging. It is also unintuitive to call a belief state true or false, in contrast to the belief itself. Similarly, illocutionary acts such as speech acts of asserting can hardly be said to be true or false, rather it is the assertion, the product of the speech act, that is a bearer of truth or falsity.

Other products may not have truth conditions, but rather have satisfaction conditions, of various sorts. A desire may be satisfied or not, but hardly a state of desiring. An expectation or hope may be fulfilled, but hardly a state of expecting or hoping. A decision may be implemented, but not an act of deciding. There are also a great range of illocutionary acts and products that differ in that way, an observation made independently of Twardowski by Ulrich (1976). A demand may be fulfilled or complied with, but not an act of demanding. A promise may be broken, but not an act of promising. A request may be followed or ignored, but not an act of requesting -- at least not in the relevant sense of 'following' or 'ignoring'. A command may be executed, but not an act of commanding.

Predicates expressing the satisfaction of illocutionary products (or the failure to do so) make it particularly clear that illocutionary products can be neither acts nor propositions (Ulrich 1976). Propositions are not things that could (in the relevant sense) be fulfilled, implemented, complied with, followed, ignored, or executed. Illocutionary products thus must be entities of a third kind distinct from both propositions and events.

Truth-directed cognitive and illocutionary products differ from acts (and propositions) also in that they are associated with a particular correctness condition. A belief -- this is how the notion in fact applies -- is correct just in case it is true. Similarly, a claim is correct just in case it is true. The claim differs in that respect from the speech act: an act of claiming is correct just in case it fulfills whatever the contextually given norm, which may not include that of the truth of what is claimed. With truth-directed products, the fulfillment of the norm associated with the product consists in the truth of the product itself, but not so for the corresponding action.

Truth or satisfaction conditions do not pertain to all products. Some products may lack truth or satisfaction conditions, for example expressive cognitive and illocutionary products (amazements, appreciations, certain sorts of imaginations).

A second important characteristic distinguishing actions and products is that products enter similarity relations strictly on the basis being the same in content. That is, for two products of the same sort (for example two thoughts or two claims) to be exactly similar means for them to be the same in content. By contrast, for two actions to be exactly similar, they need to fulfill other conditions, such as having been performed in the very same way. John's thought 'is the same as' (that is, is exactly similar to) Mary's thought just in case the content of John's thought is identical to the content of Mary's thought. By contrast, for John's activity of thinking to 'be the same as' Mary's, sameness in content is generally not sufficient (and perhaps not even necessary), rather other conditions need to be fulfilled. For actions, the manner in which they are performed is essential for their identity, but for products the manner in which they are produced does not bear on their identity.

The applicability of *is the same as* (which expresses qualitative, not numerical identity) also shows the involvement of force in cognitive and illocutionary products: exact similarity requires the same force. Thus John's claim cannot be 'the same as' his hope, and John's desire to leave cannot be 'the same as' his decision to leave. The involvement of force is also responsible for why cognitive and illocutionary products differ in what sorts of satisfaction conditions they are associated with.

Actions and products differ in properties of understanding. An utterance may be incomprehensible, but not the act of uttering. Understanding an answer is quite different from understanding the act of answering. Only the former relates to the content of the answer, not the latter. Actions and products furthermore differ in their causal relations. If an illocutionary product has a causal effect, then the content will play a causal role, whereas content won't bear on the causal effect of an action. Thus, if John's speech delighted Mary, it is the content of the speech that has the emotional effect, but not so if John's speaking delighted Mary. Similarly, for an answer to cause surprise it is the content that triggered the surprise, but not so for an act of answering that caused surprise. Related to properties of understanding and content-based causation are properties of content-based evaluation. When attitudinal objects are evaluated, they are evaluated with respect to both their content and their force, but not so for actions. A thought being interesting is something quite different from the act of thinking being interesting. It is also something different from an abstract proposition being interesting. Similarly, John's thought process may be unusual, without his thought or the corresponding abstract proposition being unusual.

Another important difference between actions and products concerns part-whole relations. The part structure of cognitive and illocutionary products strictly involve content-

related parts rather than temporal or material parts. That is, part structures of cognitive and illocutionary products are driven by partial content. Thus, a part of a thought, a belief, or a decision is not a temporal part, but a partial content. By contrast, the part structure of actions generally consists of temporal parts and not content-related parts. Thus, parts of products are distinct from the parts of the actions. Part of John's decision cannot be part of the action of deciding. Part of John's claim cannot be part of the speech act. Part of John's answer cannot be part of John's answering.

Actions and products appear to also differ in their relation to time. Philosophical views about events and actions generally take them to have their time of occurrence essentially (most obviously when events are identified with space-time regions or property instantiations in times). But there is a strong intuition that the time of creation is not essential for (non-enduring) products. Non-enduring products such as thoughts, screams, or decisions may be spatio-temporally coincident with the action that produces them; however, a thought or scream might have occurred earlier than it did, and a decision could have been made later than it was.

1.5. Cognitive products and abstract artifacts

The same sort of distinction is very compelling in many cases not directly tied to particular types of terms in natural language. The distinction between cognitive or illocutionary acts and their products is in fact to be considered part of the more general relation between an act and the abstract or physically realized artifact that it creates. Artifacts may be 'abstract' artifacts in the sense of Thomasson (1999), that is, artifacts that lack a material realization, yet as artifacts are created at a particular time and may go out of existence.

What is particular about artifacts in general is that they are not generally strictly tied to a particular physical realization. Artifacts may lack a physical realization entirely, for example electronic files and unwritten rules as well as cognitive products such as thoughts, judgments, and decisions. Other artifacts such as poems and musical compositions may or may not come with a physical realization (as products of writing, reciting, or performing). Even illocutionary acts may come with enduring materially realized products. Thus, a particular piece of writing is an enduring product of what may be a particular illocutionary act manifested by writing, not speech. Yet other artifacts may have multiple physical realizations, for examples bronze statues and books.

Another particularity of artifacts, abstract artifacts like physically realized ones, is that they are mind-dependent. They depend for their identity on an agent and his or her intentions.

The characteristics distinguishing cognitive and illocutionary products from the corresponding actions can be found in essentially the same way with other abstract artifacts not tied directly to particular types of terms of natural language (such as product nominalizations), for example laws and rules or works of art of the relevant sort. Moreover, they can, to an extent, also be found with materially realized artifacts.

First of all, artifacts, whether or not they have a physical realization, may carry representational properties, but not so for the acts of creating them. Moreover, artifacts may bear satisfaction conditions and thus carry normative force, but not so for the actions of creating or setting up those artifacts. Laws or rules can be followed or violated and thus have normative force, but not so for the actions of establishing them. Artifacts with representational or normative properties also share the content-related types of properties that cognitive and illocutionary products display, such as properties of understanding and content-based causation and evaluation. Works of art and not the acts of their creation are meant to be the objects of aesthetic evaluation, and clearly works of art may have a range of aesthetic properties which the acts of creating hardly need to share.

Moreover, artifacts may have a part structure based on partial content rather than material parts, as is obvious from the understanding of *part of* in *part of the law* and *part of the poem*. Representational artifacts that have a material realization, such as books and letters, typically have two distinct part structures, one based on partial content and one based on material (spatial) parts. Thus, a book (token) as a materially realized artifact has two part structures at once, allowing for two readings of *part of*. *Part of* in *describing a part of that book* may mean either a part of the information object (partial content) or a physical part of the material object. (Illocutionary products, with an auditory physical realization, though, do not display two types of part structure, but only the content-related one. *Part of the claim*, *part of the demand*, and *part of the answer* can never refer to part of the speech act.)

Cognitive and illocutionary products share with works of art also their dependency on an agent. Works of art, whether abstract or physically realized, depend on their creator for their identity – at least so on a common view. Two artists could not by accident compose one and the same poem. Rather, even if the poems composed by the poets are the same in content, they are distinct works of art.

1.6. Sharing of content

If cognitive products are to replace propositions, this raises the challenge of how to account for the sharing of content as well as the apparent endurance of a propositional content. What is crucial about cognitive products is that they enter relations of (exact or close) similarity on the basis of being the same in content. Similarity among products in fact is a relation prior to the notion of a propositional content. This means that the sharing of a propositional content can be understood as the production of (exactly or closely) similar products. Likewise the apparent endurance of a propositional content of a cognitive product should be understood as continued production of (exactly or closely) similar products. Sometimes sharing of a content requires a causal relation among products. Thus, the understanding of a claim does not just consist in the production of a cognitive product that is exactly similar to the claim, but requires the claim to cause the production of that product, to be a reaction to it. There another way in which two agents may be said to share a propositional content, which is well-reflected in natural language, namely if the agents engage in the same kind of cognitive product. Thus, sharing means either exact (or close) similarity of cognitive products or else joint participation in a kind of attitudinal object. The two options are reflected linguistically in two ways of reporting shared content, as in (3a) and (3b):

- (3) a. John's claim is the same as Mary's.
 b. John and Mary made (each) the claim that S.

The claim that S is a term that stands for a kind of cognitive product, a kind whose instances are cognitive products of the sort John's claim that S (Moltmann 2013, Chap 1, 4).

Making use of kinds of cognitive products does not amount to a return to abstract objects. Rather, kinds are strictly derivative upon their instances, which all stand in the relation of exact or close similarity. Kinds systematically inherit properties from their instances, in particular conditions on truth or satisfaction. They thus do not pose the problem of truth-directedness and of the unity of propositions. Kinds moreover do not pose the problem of arbitrary identification: kinds of cognitive products are not any different from other sorts of kinds, whether conceived as mere pluralities of instances or objects of some sort. Of course, on the former construal, there is the problem of uninstantiated kinds, which natural language appears to allow reference as in *the claim that S has never been made*. However, the problem with uninstantiated kinds of products is to be sharply distinguished from the problems with

abstract propositions. Abstract propositions raise the problem of how they can have the particular properties they are supposed to have given their formal nature. Kinds of cognitive products if they are uninstantiated still inherit their properties from instances even if merely possible or merely conceived instances, they are not formal objects whose properties could not be accounted for give their formal nature.

There is a further characteristic that distinguishes products from actions and that is their part structure. The notion of part that applies to products is that of partial content. By contrast, actions have the part structure of events, consisting of temporal parts. Thus, a part of John's claim or part of Bill's thought can only be a partial content of the claim or the thought. The same holds for abstract artifacts such as laws. Materially realized artifacts such as books may have two distinct part structures: one consisting of spatial parts (the pages, say), another consisting of partial contents.

1.7. Correctness, truth, and satisfaction

The ability of cognitive products to bear satisfaction conditions is linked to their ability to carry relevant normative properties, an ability they share with artifacts in general. Thus, satisfying directive products means doing an action that satisfies its associated norm.

In one case, it is the product itself that needs to satisfy the associated norm. The norm associated with truth-directed products such as beliefs and assertions, it is the truth of the product. This is reflected in the way *correct* applies to truth-directed products. Thus, John's belief that S is correct just in case it is true, and John's claim that S is correct just in case it is true. While views that try to link truth to the normativity of content when relating it to the norms for belief states and acts of assertion, a link naturally obtains when limiting the norm to that product of belief states and acts of asserting: beliefs and assertions.

Note that the normativity of truth-directed products can be viewed as parallel to that of directive products: the norm of a truth-directed product is fulfilled just in case there is a situation making it true.

1.8. Truthmakers and satisfiers for cognitive products

Cognitive products such as judgments, beliefs, and claims are truth-directed and thus the bearers of truth conditions. A number of philosophers hold the view that truth goes along with truthmakers, entities in virtue of which truthbearers are true. The truthmaking idea has been

pursue in the interest of grounding truth as well as in the interest of conceiving of an alternative notion of content to that based on possible worlds, the latter especially in Fine's (2012, 2014, ms) recent truthmaker semantics. In fact, there are a range of semantic reasons to make use of a truthmaking relation as a relation between situations and truth-directed cognitive products (Chapter 3). Truthmaking, given Fine's truthmaker semantics, is the relation of exact truthmaking that holds between a truthmaker (an actual or possible situation or state) and a truthbearer (a proposition or sentence) just in case the truthmaker is wholly relevant for the truth of the truthbearer. If a cognitive product has truth conditions, then, given the truthmaking relation, it should also bear truthmakers. That is, the truthmaker relation should hold between truthmakers and cognitive products (of certain sorts). In fact, there are several advantages for taking to truthmaking relation to obtain primarily between truthmakers and cognitive products, rather than between truthmakers and sentences (Chapter 3).

The truth-making relation naturally extends to the relation of satisfaction. Products such as demands, promises, intentions, and decisions do not have situations as truthmakers; rather they have actions as satisfiers, which play an analogous role to that of truthmakers. I will call products whose satisfiers are actions *directive products*.

Not only situations and actions may act as truthmakers or satisfiers of products, but also cognitive or illocutionary products themselves. Certain types of products characteristically require cognitive or illocutionary products as satisfiers. In particular, questions require as satisfiers answers, which themselves are either illocutionary or epistemic products. Questions themselves are either illocutionary products, the products of asking as in (5a), or cognitive products, the products of inquiry. As illocutionary products (of askings), questions are satisfied by illocutionary products of assertions. As cognitive products (of wonderings), questions are satisfied by cognitive products that are pieces of knowledge.

Thus, different kinds of kinds of satisfiers may characterize different types of cognitive or illocutionary products, in particular those associated with declarative, imperative, and interrogative sentences.

1.9. Products of states

Entities such as beliefs, hopes, expectations, and regrets share the general characteristics of products, such as having truth or satisfaction conditions, entering similarity relations on the basis of being the same in content, and having a part structure driven by partial content. However, they appear to be products of mental states, rather than acts. This is a difficulty for

the view that cognitive products are artifacts, since artifacts generally are created by actions. Yet there are also notions of artifacts applicable to products correlated with states. Here it is useful to go through the different conceptions of belief that have been offered by philosophers of mind -- which will ensure that the product-based semantics can remain neutral as to how mental states or representations are to be conceived.

On one conception of belief, beliefs are mental representations with representational character, say sentences in a language of thought. On that conception, beliefs are enduring products, presumably set up by an act of judging and since placed in a 'belief box', as an enduring mental artifact. On a functional variant of that conception, beliefs as mental representations are functionally individuated, in terms of their causal roles regarding the external environment. A notion of artifact is applicable to that conception as well: there are functionally individuated artifacts, say a piece of wood that gains the status of an artifact by being habitually used as a table. On another, dispositionalist conception of belief, beliefs would be based on judgments (or other mental acts) produced regularly over time. Again such a conception could be subsumed under the notion of an artifact since artifacts include unwritten rules or habits which, like other artifacts, may carry normative properties. Finally, there is the interpretationalist conception of belief according to which beliefs result from an interpretation of behavior of the agent (Dennett's 1987 intentional stance). Beliefs on this conception are what can be called *recognitional products*, products that do not result from the creation of a new object but from the recognition of an entity in a given situation. Recognitional artifacts can be found in other areas of social ontology, for example certain works of art such as Chinese scholar rocks. Chinese scholar rocks, in the best tradition, do not involve any material interference on the part of the artist, but only recognition of a stone as an object of art on the basis of its natural aesthetic properties. Thus, independently established notions of an artifact apply to products associated with mental states, such as beliefs -- on the various conceptions of belief there are.

1.10. Laws and modal products

Cognitive and illocutionary products generally do not endure past the action that produced them. However, actions that set up products with a normative force may lead at the same time to enduring normative products. For example, a law that is established by an act of declaring or passing it will endure beyond the act itself.

A range of illocutionary acts may lead to enduring normative products. An act of promising will not just produce a promise, but also an enduring commitment on the part of the agent making the promise. The commitment itself is also a cognitive product, an abstract artifact resulting from the act of promising. That is because it comes into existence by the act of promising and it has satisfaction conditions, which is something only cognitive products can have. In fact, the commitment has the very same satisfaction conditions as the promise which it goes along with, and it shares the same satisfiers with the latter.

Also an act of permitting may set up an enduring normative product, namely a permission which may endure beyond the time of the act. Similarly, an act of offering creates an enduring product, the offer that may obtain beyond the duration of the act, and an act of commanding may produce a lasting obligation on the part of the addressee.

Normative products such as laws, commitments, permissions, offers, and obligations are products that may endure past the time of the action that set them up. They do not require subsequent sustaining actions ensuring their persistence, but only the initial act that establishes them.

I will call the enduring normative products that go along with non-enduring illocutionary or cognitive products *pure normative products*. Pure normative products may be considered parts of the illocutionary or cognitive products to which they belong. The relation between pure normative products and cognitive or illocutionary products will play a central role for a range of linguistic facts, discussed in Chapter 3.

Pure normative products are clearly part of our social ontology in general, and they are well-reflected in natural language, namely in the semantics of nominalizations of the sort *commitment, obligation, permission, and offer*. Pure normative products, unless acts and ordinary cognitive products, may go along with existence predicates other than *exist*, namely *obtain, hold* and *have*. An obligation may ‘obtain’ at a time later than the time of the action that establishes it, and an agent may ‘have’ the obligation for a long time. Similarly, an offer may ‘hold’ or ‘be valid’ for a long time past the act of making it, just like a law may ‘hold’ or ‘be valid’ past the act of establishing it.

1.11. The internal composition of cognitive products and the problem of the unity of the proposition

A core assumption of current act-based approach is that the act of predication is constitutive of the unity among propositional constituents. Predication as a cognitive act is considered the

source of the truth-directedness of propositional content. This view can be carried over to the product of such acts, taking cognitive products to be the product of truth-directed acts of predication. Or rather, in the case of a simple subject-predicate sentence, the product of the composition of a referential act and a predicational act (or, alternatively, a complex product consisting of referential product and a predicational product).

There are different views as to whether the act of predication should be associated with a particular force or whether it could be neutral. Hanks (2007, 2011) takes the first view, tying truth-directedness to a positive force, whereas Soames (2010) takes predication to be neutral, constituting an act of entertaining a content. The present view will be that predication aims at truth even if in a weak sense, that of hypothetical acceptance. This is reflected in natural language: natural language hardly involves reference to products of ‘mere entertainings’, not even in constructions that appear to report the sharing of a propositional content, such as *John thought what Bill thought* (see Chapter 2, Section 2.2.).

Given this view, what the act of predication aims for may be specified by the mood of the sentence, but it may also be influenced by the content of the predicate, a predicate leading to an expressive or normative content. This is one of the advantages of the act-based account over the standard view of propositions, which will have truth conditions regardless of the content of the predicate.

Even though predication may be attributed the same role in cognitive products as being constitutive of unity and truth-directedness, the product-based view is less tied to predication playing such a central role. First of all, the product-based semantics of attitude reports does not require all cognitive products to be constituted by an act of predication. Clausal complements are considered predicate of cognitive products and as such may just specify their truth conditions without imposing any condition on their structure. Only the illocutionary products of utterances of independent sentence will have to have a structure partly specified by the sentence, as consisting of smaller products such as referential, predicational products and perhaps others such as products of modification and quantification.

There is another reason why predication need not be central on the product-based semantics. In fact, if predication is what is responsible for the truth-directedness and unity of propositional content, this imposes severe constraints on compositional semantics, which does not seem to be adequate for natural language. It does not allow expressions to act syncategorematically, for example connectives, quantifiers, and negation. More generally, the features of cognitive products that contribute to their truth conditions in the semantic composition need not all be attributed to the acts that set up the product. That is, semantic

composition of cognitive products need not go along with the composition of acts setting up the cognitive product. Part of the act of setting up a cognitive product may consist in contributing a syncategorematic concept and establishing relations among components of a cognitive product. It may make an overall contribution to the compositional semantics of the cognitive product, but without that contribution being reflected in the structure of the act.

This allows a treatment of connectives and operators as syncategorematic expressions, contributing to the overall truth conditions, but not involving an act of predication.

Appendix: Comparison with the trope-based account of attitudinal objects in Moltmann (2013)

In Moltmann (2003a, 2013, Chapter 4), I have explored a neo-Russellian ‘Multiple-Relations Theory’ of attitude reports (Russell 1912, 1913, 1918) in order to account for the substitution problem as well as the conceptual problems for propositions. On that view, attitude verbs are multigrade predicates in their second position (Oliver / Smiley 2004). That is, they take a potentially unlimited number of propositional constituents as arguments, rather than a single object that is a proposition so that (1a) will have the logical form in (1b), rather than that in (1c):

- (1) a. John thinks that Mary is happy.
- b. think(John; HAPPY, Mary)
- c. think(John, the proposition that Mary is happy)

An attitude verb, on that view, specifies an intentional mode of predication, with which an agent, in the case of assertion or belief, aims at truth (Jubien 2001). Thus, in (1a) John predicates, in the thinking way, the property of being happy of Mary. This book does not pursue the multiple relations analysis of attitude reports, but rather the view that clauses serve as predicates of cognitive products. This allows the semantic account as such to be independent of a particular ontological account of products and to not tie the action-product distinction as such to the neo-Russellian account of attitude reports. Products, though, may be composed, just like on the older view, of a predication relation applying to an agent

Previous publications on which Chapter 1 is based:

'Propositions, Attitudinal Objects, and the Distinction between Actions and Products'. *Canadian Journal of Philosophy*, supplementary volume on propositions, edited by G. Rattan and D. Hunter, 43.5-6, 2014, pp. 679-701.

'Cognitive Products and the Semantics and Attitude Verbs and Deontic Modals'. To appear in F. Moltmann / M. Textor (eds.): *Act-Based Conceptions of Propositional Content*, Oxford University Press, New York, 2015, 35pp.

'Truth Predicates in Natural Language'. To appear in D. Achourioti et al. (eds.): *Unifying the Philosophy of Truth*. Synthese Library Springer, Dordrecht, 30pp.

Previous relevant publications

Abstract Objects and the Semantics of Natural Language, Oxford UP, 2013, Chapter 4.

'Propositional Attitudes without Propositions'. *Synthese* 135, 2003a, pp. 70-118.

'Nominalizing Quantifiers'. *Journal of Philosophical Logic*.35.5., 2003b, pp. 445-481.

Chapter 2

The Semantics of Attitude Reports

This chapter gives an outline of the semantics of simple declarative sentences and attitude reports on the basis of the notion of a cognitive product. The general view pursued is that sentences express properties of cognitive products and thus can act as predicates of cognitive products. This holds both for independent sentences and sentences embedded under attitude verbs, which this chapter will focus on. The chapter will start with the semantics of attitude reports since the advantages of using cognitive products for their semantics are particularly striking. It will focus on simple attitude reports with attitude verbs of the sort of *think*, *believe*, and *claim*, which take *that*-clause complements, as well as constructions with the corresponding nominalizations. Attitude verbs involving a more complex semantics such as factive verbs and attitude verbs taking infinitival or interrogative complements will be discussed in Chapter 3. This chapter will also discuss the way the product-based semantics applies to nonattitudinal predicates and nouns with clausal complements.

The product-based semantics of attitude reports allows for a novel account of two problems in the philosophy of language regarding the semantics of attitude reports: to the problem of underspecification of attitudes by clausal complements and the semantics of attitudes *de se*.

2.1. The semantics of simple attitude reports

The standard view of propositions goes along with the Relational Analysis of attitude reports on which an attitude verb express a two-place relation between agents and propositions and the clausal complement denotes a proposition that is to serve as an argument of the relation expressed by the attitude verb . Thus, a sentence like (1a) has the logical form in (1b):

- (1) a. John thinks that S
 b. think(John, the proposition that S)

Apart from making use of the problematic notion of an abstract proposition, the Relational Analysis is problematic in that it treats the *that*-clause as a singular term, providing an argument of the relation expressed by the verb. Treating *that*-clauses as singular terms raises

well-known problems of substitution (Bach 1997, Schiffer 2003, King 2007, Moltmann 2003a, 2003b). These include the invalidity of the inference in (2a), with an unacceptable conclusion and the inference in (2b), with a conclusion that means something from the premise:

(2) a. John thought that S.

John thought the proposition that S.

b. John fears that S.

John fears the proposition that S.

An important fact about verbs like think and fear that do not permit inferences as in (2a,b) is that they allow for noun phrases syntactically, namely special quantifiers and pronouns of the sort *something* or *that*, as below:

(3) a. John thought something / that.

b. John fears something / that

The product-based semantics of attitude reports gives an immediate account of the substitution problem. It does not consider complement clauses singular terms providing an argument of the verb, but restricts that function to ordinary referential NPs, such as *the proposition that S* in the conclusion of (2a, b). In the conclusion of (2b) *fear*, taking a proposition as an argument, occurs with a different meaning from that it has in the premise, namely with a meaning consisting of a relation between agents and objects of fear. Think lacks such an additional meaning, which is why the conclusion of (2a) is unacceptable.

The ontology of cognitive products as the products of mental or illocutionary acts goes along with a very different role of *that*-clauses in the semantics of attitude reports. Cognitive products are neither the objects of attitudes nor their contents. This means they do not, at least not primarily act as arguments of a relation expressed by an attitude verb and do not act as the semantic values of clausal complements. Rather cognitive products correspond to the attitude as a whole, not just the content of the *that*-clause. They stand in the relation of being products to attitudes. Semantically, this means that clausal complements should be considered giving a characterization of attitudinal objects, targeting their content-related aspects.

Formally the semantics of simple attitude reports will then look as follows. Making use of Davidson's semantics of events, verbs will have an additional argument position for events. In

the case of attitudinal and illocutionary verbs, these will be mental acts and illocutionary acts, which have products, entities that can be obtained from an act e by a function *product*. The clausal complement of an attitude verb will then be predicated of the products of the event argument of the verb, as in the semantic analysis of the simple attitude report (4a) in (4b):

(4) a. John claims that Mary is happy.

b. $\exists e(\text{claim}(e, \text{John}) \ \& \ [\text{Mary is happy}](\text{product}(e)))$

When modifying a noun phrase describing a cognitive product as in (5a), a *that*-clause will simply be predicated of the cognitive product itself, as in the analysis of (5a) in (5b):

(5) a. John's claim that Mary is happy

b. the $e[\text{claim}(e, \text{John}) \ \& \ [\text{that Mary is happy}](e)]$

This matches the well-known syntactic observations that *that*-clauses modifying nouns do not behave as complements. Instead their semantic function of being predicated of the cognitive product described by the head noun naturally goes along with the syntactic status of *that*-clauses as adjuncts.

The product-based semantics of attitude reports in (5b) is supported by the fact simple attitude verbs often alternate with complex attitude predicates, as below, which generally are composed of a product noun and a light verb (a verb almost devoid of lexical meaning, such as *have* or *make*):

(5) c. John made the claim that Mary is happy.

Natural languages sometimes display both simple attitude verbs and complex attitude predicates, and sometimes only one of them. Complex attitude predicates are not generally derivative upon the simple one, since the noun need not have been derived from the verb and the complex form may be the only one available (as in English (*have the impression that S* or *have the idea that S*). The same holds for modal predicates. Thus, *needs to VP* alternates with *has the need to VP*, and *must* with *has the obligation*.

The product-based analysis in (5b) suits the syntactic view (held by in particular by Richard Kayne) that there are no complement clauses and that verbs that appear to take complement

clauses are generally derived from the light-verb-product NP-construction with the clause acting as an adjunct of the product noun.

2.2. Special quantifiers as quantifiers over cognitive products

Propositions, on the standard view, also act as the kinds of things that ‘propositional’ anaphora such as *that* in (6a) stand for and ‘propositional’ quantifiers such as *something* quantify over, in valid inferences such as (6b) (Schiffer 2003):

(6) a. John thinks that S. Mary thinks that too.

b. John thinks that S

Mary thinks that S.

There is something John and Mary think.

Such ‘special’ pronouns and quantifiers do not stand for propositions nor they have a substitutional function (Moltmann 2003, 2013). *Something* cannot range over propositions because it permits restrictions that could not be predicates of propositions, for example *nice* in *John said something nice*. *Something* cannot be a substitutional quantifier because it can relate to two syntactic positions that impose incompatible requirements on a substituent (*say* takes clausal complements, but *about* noun phrases in *John said something Mary never thought about*)

Special quantifiers and pronouns rather act as *nominalizing quantifiers*. This means they range over the very same things as are the semantic values of the corresponding nominalizations, that is, nouns describing cognitive products or kinds of cognitive products, without such cognitive products acting as arguments of the verb. Thus, (7a) will the logical form in (7b) or in (7c):

(7) a. John thought something interesting.

b. $\exists y \exists n \exists e(\text{think}(\text{John}, e) \ \& \ y = \text{product}(e) \ \& \ \text{interesting}(y))$

c. $\exists e \exists e'(\text{think}(e, \text{John}) \ \& \ \text{nice}(e') \ \& \ e' = \text{product-kind}(e))$

Quantification over kinds of cognitive products is involved when *what* or *the same thing* is used to report the sharing of a propositional content:

(8) a. John thought what / the same thing Mary thought, namely that S.

On the present view, *what* and *the same thing* stands for a kind of cognitive products, namely *the thought that S*. This view that *the same thing* does not stand for a propositional content, but a kind of cognitive product is supported by observations about restrictions on *the same thing* with different sorts of attitude verbs, for example the unacceptability of (9a, b):

(9) a. ??? John hopes what Mary thinks, namely that it will rain.

b. ??? John claimed what Mary believes, namely that it will rain.

In general, attitude verbs need to involve the same force and in fact be almost the same in content in order for the same thing to be acceptable in the construction in (9). According to (9a), it is not a proposition as standardly conceived that John and Mary are claimed to share, but a kind of cognitive product, and the unacceptability of (9a) resides in the fact that a hope and a thought are just not the same thing. By contrast, (8a) is fine, since what is shared here is ‘the thought that S’, as in the semantic analysis of (8a) along the lines of (8b):

(8) b. $\exists e e' e'' (\text{think}(e, \text{John}) \ \& \ e' = \text{product-kind}(e) \ \& \ \text{think}(e'', \text{Mary}) \ \& \ e' = \text{product-kind}(e''))$

A semantics based on cognitive products faces potential difficulties in cases in which there are no actual cognitive products. No particular problem actually arises for the meanings of independent sentence that have not been uttered, given the way the meanings of independent sentence have been conceived. A sentence may express a property of products without there being an actual product of which such a property holds. Special quantifiers as in *there is something no one has ever thought* pose more of an issue and appear to quantify over uninstantiated kinds. Kinds of products are entities that strictly inherit their properties from their instances. As such they do not involve the problem of how they can be grasped or the problem of truth directedness and the unity of the proposition: kinds inherit such properties from their instances even if just possible instances.

2.3. Degrees of fine-grainedness of content

In what way do *that*-clauses characterize cognitive products? The view will be that *that*-clauses can characterize a cognitive product in a variety of ways, reflecting degrees of fine-grainedness of content that attitude reports may involve. *That*-clauses on that view do not have a unique semantic content, but display flexibility in the sorts of properties of products they may express. This ranges from specifying a product as being composed of smaller products (such referential and predicational products) to specifying the overall truth conditions of the product, or better, conditions on truth-making or satisfaction regarding the product.

The contribution of *that*-clauses obviously derives from the meaning of independent sentences. In a simple subject-predicate sentence, these may be properties of products composed of two smaller products, a referential product and a predicational product. A *that*-clause may express the very same product property, for example as the complement of *say*. The range of properties that a *that*-clause may express will be derivative upon the property sentences express when characterizing assertions (or related truth-directed products) as the products produced by literal utterances of declarative sentences. Declarative sentences have as their meaning a property that characterizes assertions as composed of the various products that go along with the compositional meaning of the sentence. But a *that*-clause may also specify a more general product property, which may involve instead of a referential product, the satisfiers of referential product (in case of direct reference). A *that*-clause may also characterize a product just in terms of its truthmakers or satisfiers. More precisely a *that*-clause *that S* may express the derivative property that holds of a cognitive product *e* in case any exact truthmaker of *e* is also an exact truthmaker of some cognitive product kind of which *that S* with its literal meaning holds. This will be the derivative meaning $\text{sat}([\textit{that S}])$, which is based on the immediate meaning of a *that*-clause $[\textit{that S}]$:

(10) For a cognitive product *e*, $\text{sat}([\textit{that S}])(e)$ iff $\forall s(s \models e \rightarrow \exists e'([\textit{that S}](e') \ \& \ s \models e'))$

The satisfaction-related meaning of a *that*-clause is at stake in attitude reports regarding implicit attitudes and attitudes of animals. It is also at play with sentence-embedding nonattitudinal predicates, such as modal predicates, and in reports of ‘natural meaning’ as in *That S means that S’*.

A special case of a clausal complement characterizing a product involves direct or mixed quotation, a topic developed in Chapter 4. In such a case, the clausal complement specifies not only the content, but also the form of the cognitive product described by the attitude verb.

2.4. The underspecification of the content of attitudes by clausal complements

The product-based semantics of attitude reports has a significant application to the problem of the underspecification of attitudes. This is the problem that a clausal complement may not give the full content of the attitude that is reported and not even its full truth or satisfaction conditions. The problem is a serious one for the standard view on which propositions as expressed by clausal complements are the contents of attitudes. The problem concerns in particular the modes of presentation that may be involved in attitudes of belief, other sorts of unarticulated constituents, as well the underspecification of desire in desire reports. The product-based semantics of attitude reports has a straightforward account of the problem of underspecification. Clausal complements only serve to partially characterize the cognitive product in question. They need to prove the full content of the attitude, not even a truth-conditionally complete content.

[1] The mode of presentation problem

Most philosophers think that attitude reports require positing modes of presentation for referential terms as part of the meaning of a *that*-clauses, allowing, for example, (11) to be both true and false, depending on the mode of presentation associated with (a version of) the name *London*:

(11) Pierre believes that London is pretty.

Modes of presentations, however, present notorious problems. It is far from clear what sorts of entities modes of presentation are and their identity conditions seem to be elusive since speakers need not be able to specify a mode of presentation that is part of a particular belief they may have (Schiffer 1987). Modes of presentation play a causal, behavior-guiding role. At the same time, they generally do not influence the truth conditions of what is believed.

The product-based semantics of attitude reports appears to provide a straightforward account of the problem of modes of presentation. Modes of presentation will be part of the described cognitive products, but not part of the content of a *that*-clause characterizing the product. This means that modes of presentation are no longer an issue for the semantics of

attitude reports: neither their particular nature nor their identity need to be a concern for the product-based semantics of attitude reports. Of course, what the semantics still needs to provide is a formulation of the meaning of sentences (and clausal complements in particular) as involving a partial characterization of referential products without specifying a particular mode of presentation.

Chapter 5 will give a somewhat different account of modes of presentation, making them part of the background of a cognitive product rather than the cognitive product itself. This captures more adequately the intuition that two agents may share the same kind of cognitive product, say the belief that London is pretty, even if they associate different modes of presentation with London.

[2] Implicit arguments and other context-dependent aspects of meaning.

Other implicit components or implicit arguments involved in the meaning of sentences permit the same sort of account, for example the location referred to by deictic expressions such as *here* and contextually determined quantifier restrictions. Unlike modes of presentation, such implicit components are truth-conditionally relevant. The implicit components, even if not part of the meaning of the sentence, are part of the cognitive product and as such may contribute to its truth or satisfaction conditions. Quantifier restrictions then do not require the silent syntactic presence of a phrase or an implicit argument, rather a quantificational noun phrase will be treated as giving only a partial characterization of a quantificational product.

The implicit components of products will bear on relevant similarity relations: Two agents cannot believe ‘the same thing’ if the content of their beliefs involves different truth-conditionally relevant implicit components (though this is not so for modes of presentation, see Chapter 4).

To some extent the same accounts for discrepancies between the literal content of a sentence uttered and ‘what is said’. What is said is truthconditionally complete, but this need not be so for the literal meaning of the sentence. Note that the term ‘what is said’ is a special noun phrase and thus should stand for a cognitive product, such as an assertion.

[3] The underspecification of desires in desire reports

The product-based semantics also gives a straightforward account of the underspecification desires by the clausal complements in a desire report as below (Fara 2013):

(12) John wants to catch a fish.

The clausal complement in (12) underspecifies the reported desire. Thus, John's desire is not satisfied if he catches a poisonous fish, but only a fish of a certain kind. As Fara (2013) argues, there is no solution available within the standard view according to which the clausal complement specifies the content of the desire, giving its satisfaction conditions.

The product-based semantics of attitude reports accounts straightforwardly for the potential underspecification of desires in desire reports. In (12), it is the product that is John's desire that carries the relevant satisfaction conditions; the clausal complements gives only a partial characterization of it.

2.5. Intensional descriptions

The role of products with respect to the underspecification of attitudes also plays a role in the semantics of intensional descriptions as below:

(13) The book John needs to write must be 100 pages long.

As I have argued in Moltmann (to appear), *the book John needs to write* stands for a variable object that has manifestations as books John writes in situations exactly satisfying John's need, that is the modal product of the embedding verb. What conditions the modal product that is John's needs consists in is not made explicit in (13).

2.6. Cognitive products and attitudes *de se*

Cognitive products with their status as truth bearers and products of attitudes have another important semantic application, namely to apparently truth-conditionally incomplete contents, that is, contents that, as it has been argued, consist in properties, not propositions. These are in particular:

[1] the contents of attitudes *de se*

[2] the contents of sentences that form the scope of temporal or location operators.

In both cases, the embedded sentences have been argued to stand for properties, yet at the same time they appear to stand for truth bearers and thus could not be properties. In both cases, cognitive products provide the 'natural' truth-conditional completion and thus provide the solution to two longstanding problems in the philosophy of language.

Regarding [1], an influential view of Lewis (1979) is that attitudes *de se* are not attitudes toward a proposition, but rather towards a property, as in the logical form of (13a) in (13b):

(13) a. John thinks that he himself is a hero.

b. THINK(John, λx [hero(x)])

The account is particularly meant to apply to infinitival clauses, as in (13c), which appear to be restricted to an interpretation *de se*:

(13) c. John hopes [PRO to become a hero].

One major issue left open by such an account is the question of the truth conditions of the contents of attitudes *de se*, which seem to act as truth bearers in sentences such as the following (Stalnaker 1981):

(14) a. John thinks that he himself is a hero, which is true.

b. John believes something that is true, namely that he himself is a hero.

c. John hoped to become a hero. That in the end turned out to be true.

On the present view, the contents of attitudes *de se* only correspond to objects that are truth bearers, but are not identical to them, and what they correspond are cognitive products. The products of attitudes *de se* clearly are truth-conditionally complete: John's belief that he himself is a hero is either true or false, and John's hope to become a hero can be fulfilled or not. Recall that there are independent reasons that cognitive products (or kinds of them) should form the domain of pro-sentential special quantifiers and pronouns as in (14a-c). The self-ascription of the property by the relevant agent is itself constitutive of a cognitive product. Depending on whether the self-ascription succeeds or fails, the cognitive product will come out as true or false (or satisfied or not satisfied).

The problem raised by [2] is also due to David Lewis. Lewis (1980) argued that the roles 'object of a propositional attitude' and 'object that a temporal and location operators operate on' cannot be fulfilled by one and the same thing, namely propositions. Objects of attitudes must be truth-conditionally complete, but the things temporal and spatial operators operate on are not. Temporal and spatial operators operate on truth-conditionally incomplete contents, roughly properties of time and of location. Such properties would also be ascribed to the

agent's own time or location in a propositional attitude that is 'de se' regarding the attitude's time or the agent's location. Propositional attitudes of this kind again have truth-conditionally complete cognitive products, such as 'John's belief that Mary will like Bill', which, with the future operator, clearly has truth conditions

Thus, in both cases [1] and [2], cognitive products provide the required 'truth-conditional completion'.

2.7. *That*-clauses with nonattitudinal predicates

The product-based semantics of sentences appears particularly suited for the semantics of attitude reports. It is less obvious, though, how it applies to the semantics of clauses not embedded under attitude verbs. The view will be that different predicates may be associated with different semantic roles of *that*-clauses. In particular, a *that*-clause in subject position may serve either to characterize a contextually given cognitive product or else to characterize the product described by the main predicate. The first option is at stake with truth predicates as in (15a), the second with modal predicates as in (15b):

- (15) a. That S is true / correct.
 b. That S is possible.

(15a) and (15b) differ in the possibility of substituting the *that*-clause by an ordinary noun phrase. (15a) allows substitution by a term referring to a cognitive product (*the claim that S*, *the suggestion that S*) which motivates an account according to which *that*-clauses with predicates like *is true / correct* serve to partially characterize a contextually given cognitive product (or kind of cognitive product), of which *true / correct* is then predicated. For *likely*, *possible*, *probable*, *necessary*, *obligatory* such an account is much less plausible since with them clausal subjects do not permit substitution with a referential term referring to a proposition or a cognitive product: *the proposition that S is possible*, if it means anything, does not mean what *that S is possible* means, and so for *the claim that S is possible*. A more plausible analysis of modal predicates is that they take a modal product as argument with the *that*-clause characterizing the modal product in terms of its satisfiers (see Chap. 3). Failure of substitution is then explained as in the case of clausal complements of attitude verbs.

2.8. Truth and correctness predicates

The semantic behavior of truth predicates with *that*-clauses gives particular support for cognitive products. A common view about (16a) and (16b) is that here the *that*-clause stands for a proposition, with (16c) being their logical form:

- (16) a. That S is true.
- b. It is true that S.
- c. true([*that* S])

Aside from general difficulties with propositions as semantic values of *that*-clauses, (16c) is implausible semantically. First, both (16a, b) are associated with particular discourse-related semantic effects, which (16c) does not capture, presupposing that someone in the context has maintained that S. Moreover, an analysis as in (16c) would be inadequate for normative truth predicates such as *correct*. *Correct* with *that*-clauses with *that*-clauses as in (17a) means just ‘true’, but *correct* is inapplicable to propositions. Thus, (17a) and (17b) are not equivalent:

- (17) a. That S is correct.
- b. The proposition that S is correct.

Entities that would be suited for the predicate *correct* when conveying truth are truth-directed cognitive products, such as claims, beliefs, and judgments (and *correct* here conveys truth regardless of there being any justification). This means that *that*-clauses with *correct* serve to characterize contextually given truth-directed cognitive products. The very same analysis is then naturally applicable to *true* with *that*-clauses and would account for the additional discourse-related semantic effects.

Interestingly, not all truth-directed cognitive products that would be satisfied by situations allow for *true* as a predicate, yet they may still allow for *correct*, conveying truth. Thus, it is peculiar to call assumptions, speculations, and suspicions ‘true’, but they may be ‘correct’. This means that the norm-related truth predicate *correct* is more general than *true*, which appears to impose further conditions on the force of a cognitive product. In any case, the application of predicates of truth and correctness show a close connection between truth and normativity of cognitive products, and the restrictions on truth predicates show the importance of the notion of a cognitive product, as opposed to the notion of an abstract proposition.

Previous publications on which Chapter 2 is based:

‘Variable Objects and Truthmaking’. To appear in M. Dumitru (ed.): *The Philosophy of Kit Fine*, Oxford University Press, New York.

‘Truth Predicates in Natural Language’. To appear in D. Achourioti et al. (eds.): *Unifying the Philosophy of Truth*. Synthese Library Springer, Dordrecht, to appear in 2015.

‘Propositions, Attitudinal Objects, and the Distinction between Actions and Products’. *Canadian Journal of Philosophy*, supplementary volume on propositions, edited by G. Rattan and D. Hunter, 43.5-6, 2014, pp. 679-701.

Chapter 3: Sentence Types, Clause Types, and the Semantics of Modals

This chapter will give a further development of the product-based semantics of simple declarative sentences and attitude reports of Chapter 2, by extending it to different sentence types (declaratives, imperatives, and interrogatives) and different types of complement clauses (*that*-clauses, infinitival clauses, finite and infinitival interrogative complements). Two ideas guide these extensions. First, cognitive products may not only have truth conditions or satisfaction conditions, but may come with truthmakers or satisfiers. Second, different types of complement clauses characterize products in terms of different sorts of satisfiers.

The chapter will also extend the product-based semantics to attitude verbs whose complement does not just serve as a predicate of the described cognitive products, such as response-stance verbs and factive verbs.

3.1. Cognitive products as the bearers of truthmakers and satisfiers

As was said in Chapter 1, cognitive products are both bearers of truth or satisfaction conditions and of truthmakers or satisfiers. Different types of cognitive products differ not only in the sorts of satisfaction conditions they are associated with, but also in the types of satisfiers they may have. Truth-directed products such as judgments, claims, and beliefs have truth conditions and situations as truthmakers, whereas directive products such as demands and decisions have satisfaction or implementation conditions and actions as satisfiers. The distinction between truth-directed products and directive product goes along with the two sentence types of declarative and imperative sentences.

Following in part Fine's truthmaker semantics for sentences (Fine 2012, 2014, ms, NYU lectures 2014), I take the truthmakers of truth-directed products to be (actual or possible) situations and the truthmakers of directive products to be possible or actual actions. More precisely, a truth-directed product will be associated with a set of verifiers and a set of falsifiers and a directive product with a set of actions that comply with it and a set of actions that contravene it. The present approach differs from Fine's truthmaker semantics in two respects. First, it is not sentences, but cognitive products that are considered the primary bearers of truthmakers. Second, truthmakers may be of ontologically different types rather than being always situations (states). Thus, actions are ontologically distinguished from

situations. Moreover, cognitive products themselves may act as satisfiers, for example answers or epistemic products act as satisfiers of questions.

There are several reasons to consider cognitive products, rather than sentences and in particular to be the primary entities standing in the truthmaking relation to situations or the satisfaction relation to actions.

First of all, assigning truthmakers to cognitive products allows for an account of the underspecification problem of attitudes, which would not be possible if truthmakers are assigned only to sentences (and thus the content of attitudes is identified with the set of truth makers of the sentence used to characterize the attitude). On the present view, sentences express properties of products, rather than denoting sets of truthmakers (and falsemakers). Instead cognitive products are associated with sets of verifiers (or satisfiers) and falsifiers).

Moreover, associating satisfaction conditions and satisfiers with cognitive products is needed for the semantics of attitude verbs taking the same clausal complement but describing cognitive products with different satisfaction conditions. Thus, the directive product described in *John decided to leave* and the truth-directed product in *John expects to win* have different sorts of satisfiers (actions and situations), which is not specified by the clausal complement, but depends on the cognitive products themselves. A sentence-based truthmaker/satisfier semantics would be unable to account for the difference in satisfaction condition of the reported decision and the reported expectation since the clausal complement type is the same.

Note also that content should not be strictly tied to satisfaction conditions: there are cognitive products that may lack truth or satisfaction conditions, in particular expressive products, such as the products produced by literal uses of exclamation marks.

The product-based semantics also applies to modal sentences, in the following way: modal predicates take modal products as implicit arguments and their complement specifies the satisfiers or truthmakers of the modal product. Crucially, deontic modals differ from epistemic modals in their satisfiers: deontic modals have actions as satisfiers, whereas epistemic modals have situations as truthmakers. This difference is reflected in the applicability of anaphora with the noun *case*, which, as I argue in Moltmann (to appear), are restricted to situations in their role as truth makers, as in (1a), and cannot apply to actions in that role, as in (1b):

(1) a. ??? John may take an apple. In that case, Sue will take an apple too.

b. John might have taken an apple. In that case, Sue will have taken an apple too.

The semantic analysis of a modal sentence such as the first sentence of (1a) will thus be as below:

(2) $\exists e(\text{may}(e, \text{John}) \ \& \ \text{sat}([\text{John take an apple}])(e))$

Modals of obligation and permission may have the same satisfiers (*John may take an apple* and *John must take an apple* both have as satisfiers actions of John taking an apple), but they differ in their falsifiers or ‘violators’. An action of refraining from taking an apple contravenes the obligation of taking an apple. But there is no action that would contravene the permission of taking an apple. Permissions do not have violators, but obligations do. This can be carried over to epistemic modals. The only difference is that modals have situations as verifiers/falsifiers. Thus, the modal products described by *John might be at home* and *John must be at home* have the same situations as verifiers. But only the latter has falsifiers, namely those situations that make it false that John is at home.

3. 2. Connections between imperatives, directive attitude verbs, and deontic modals

Declarative sentences were treated as expressing properties of truth-directed products, products whose truthmakers are situations. Imperatives, by contrast, express properties of directive products, products whose satisfiers are actions rather than situations. The difference between directive and truth-directed products is sharply marked for utterances of independent sentences. The product-based semantics is able to account for certain connections between imperatives and reports of directive attitude and deontic modals.

First, deontic modals as in (3b) below may anaphorically relate to reports of directive attitudes as in (3a), given a suitable context:

- (3) a. John ordered Mary to leave.
 b. Mary must leave.

In such a context, the inference from (3a) to (3b) is valid (under the right circumstances) because the modal product shares the same satisfiers with the directive product described by the attitude report. Unlike the directive product, though, the modal product may endure past the action that produces it. This is reflected in the application of present tense, as below:

- (4) a. John still has the obligation to leave.
 b. The offer still obtains

The modal product, the obligation, can be considered a non-spatio-temporal part of the directive product, the order.

Deontic modals also have a performative use, making an utterance of a deontic modal sentence equivalent to the utterance of an imperative or the performative use of a sentence with an illocutionary verb:

- (5) a. You must leave the room.
 b. Leave the room.
 c. I order you to leave the room.

Given the product-based semantics of sentences, imperatives are predicated of the product produced by the utterance of the imperative sentence. Utterances of performative sentences are predicated of a product that at once acts as the product of the Davidsonian event argument, as in the analysis of the performative sentence (5c) below:

(6) $\lambda x e[\text{order}(e, x) \ \& \ \text{sat}([\textit{that S}])(\text{product}(e) \]$

Obviously, the modal product produced by the utterance of a performative modal sentence cannot be the same as would be produced by the utterance of an imperative or performative sentence because of the difference in their ability to endure. But again, the modal product may be considered a non-spatiotemporal part of the illocutionary product.

The semantics of deontic modals is based on the notion of a modal product. Deontic modal products crucially have satisfaction conditions, with actions acting as satisfiers. On the present view, modal products of obligation and permission may share the very same satisfiers. But they differ in what actions violate their satisfaction conditions. Modal products of permission generally do not come with violators, but modal products of obligations do. Thus, the permission to leave the room has no violators, but the obligation does, namely actions of staying in the room.

Deontic modal sentences then raise the question of what their own truthmakers are. The answer simply is, deontic modal sentences are made true by the modal products they describe.

Somewhat related to the distinction between declarative and infinitival sentences is the distinction between infinitival and finite clausal complements. In fact, infinitival clauses have been analysed as describing types of actions rather than propositions. Translated into current terms, this means that infinitival clauses describe properties of products whose satisfiers are actions, whereas finite clauses describe properties of products whose truthmakers are situations. Not in all contexts do infinitival clauses characterize products with actions as satisfiers; but as complements of verbs like *hope* or *want*, they certainly do. Moreover, the choice of clausal complement may distinguish between different products of hope, as in the contrast below:

- (7) a. John hopes to take part in the conference
 b. John hopes that that he is taking part in the conference.

Whereas John's hope in (7a) is fulfilled by taking part in the conference, John's (epistemic) hope in (7b) is fulfilled by a situation in which John takes part in the conference.

3.3. Nouns + clausal complement describing modal products

The semantic analysis of modal predicates can be carried over to nominalizations of modal predicates with clausal modifiers as below:

- (8) a. the permission for John to be leave
 b. the possibility that John might be home

Here the clausal complements are predicated of the modal products that are arguments of permission and possibility, characterizing them in terms of their truthmakers or satisfiers

The modal *might* in (8b) has the very same function as a performative modal in a sentence embedded under an attitude verb, ensuring that the *that*-clause expresses a property of modal products of possibility.

The same account can be applied to fact descriptions as in (9):

- (9) the fact that S or Q

(9) is a description of a non-worldly fact, which may be disjunctive or existentially quantified. Worldly facts can be considered analogous to modal products, with their verifiers being worldly facts, that is, actual situations. Falsifiers: nonfactual facts, situations contradicting fact

3.4. The semantics of interrogatives

The product-based semantics of sentences can be extended to interrogatives, in a fairly straightforward manner, by recognizing questions as cognitive or illocutionary products. An independent interrogative or an interrogative complement of *ask* will characterize questions whose satisfiers are answers, that is, truth-directed illocutionary products. As complements of verbs such *wonder*, interrogative complements characterize products of inquiry, products whose satisfiers are ‘pieces’ of knowledge.

It is common to distinguish between intensional and extensional embedding verbs taking interrogative complements, with *ask* being intensional and *tell* and *know* being extensional. Extensional interrogative verbs on the standard view take (true) propositions as arguments, whereas intensional interrogative verbs take questions as arguments. Given this distinction, the complement of extensional verbs will characterize satisfiers of questions as arguments, namely pieces of knowledge or true answers. In fact, interrogatives generally characterize questions in terms of satisfiers. This gives the analyses of intensional and extensional interrogative-embedding verbs, as below:

- (10) a. $\text{ask}(e, \text{John}) \ \& \ \text{sat}([\text{wh } S])(\text{product}(e))$
 b. $\exists e(\text{know}(e, \text{John}) \ \& \ \exists d(\text{sat}([\text{wh } S])(d) \ \& \ \text{product}(e) \models d))$

Infinitival interrogatives, as below, serve to characterize products of practical knowledge or instructions:

- (11) John knows how to open the bottle.

Their satisfactions will be actions, generally the satisfiers of infinitival clauses.

3.4. Response-stance verbs and factive verbs

The product-based semantics of attitude reports has a further application to factive verbs and the class of response-stance verbs. Factive verbs include epistemic predicates such as *know*, *recognize*, as well as emotive predicates such as *be happy*; response-stance verbs include verbs like *agree*, *confirm*, and *repeat*. Response-stance verbs characteristically describe a response to a contextually given illocutionary product.

Factive verbs share a range of properties with response-stance verbs, allowing no extraction of adjuncts and no replacement of the complement by *so* or *as*. However, there is one difference between factive and response-stance verbs. Factive verbs lose their factive presupposition in the antecedent of conditionals and the scope of modals:

- (12) a. If John realizes that he is unhappy, he will leave Mary.
 b. John might realize that he is unhappy and leave Mary.

By contrast, in such contexts, response-stance verbs such as *agree* still presuppose the existence of the cognitive product they relate to. The proposed analysis accounts for these facts. The clausal complement of response stance verbs will characterize both the contextually given illocutionary product and the product of the cognitive product described by the verb. Response-stance verbs on that view take the contextually given illocutionary products as arguments, as indicated below, where $\text{ref}_s([\textit{that S}])$ is the product the speaker *s* refers to with the utterance of *that S*.

- (13) a. John confirmed that S
 b. $\exists e(\text{confirm}(e, \text{John}) \ \& \ [\textit{that S}](\text{product}(e)) \ \& \ [\textit{that S}](\text{ref}([\textit{that S}])))$

By contrast, the complement clause of factive verbs characterizes both an epistemic product and a truthmaking fact, which itself acts as an argument of the verb. The *that*-clause here characterizes the semantic value of a nonworldly fact in the sense of a kind of actual situation (Chapter 3), an entity obtained from the semantic value of a *that*-clause by a function *fact*:

- (14) $\exists e(\text{know}(e, \text{John}, \text{fact}([\textit{that S}]) \ \& \ [\textit{that S}](\text{product}(e))))$

The situations making up the worldly fact need to be part of the world of evaluation of the knowledge statement. This explains why the factive verb will be suspended in modal and conditional contexts.

Previous publications on which Chapter 3 is based:

‘Cognitive Products and the Semantics and Attitude Verbs and Deontic Modals’. To appear in F.

Moltmann / M. Textor (eds.): *Act-Based Conceptions of Propositional Content*, Oxford University Press, New York, 2015, 35pp.

‘Cases’ as Truthmakers’. Ms IHPST.

Chapter 4

A Product-Based Semantics of Quotation

This chapter pursues an important application of the product-based semantics, namely to quotation. The product-based semantics, suitably extended permits a unified account of different types of quotation. Moreover, the account is in a sense compositional, based on a novel conception of syntactic structures for quotations.

4.1. Outline of a unified product-based semantics of quotation

Quotation is a linguistic phenomenon that raises a range of challenges for philosophy of language and formal semantics. In particular, quotation with its division into pure quotation as in (1a), direct quotation as in (1b), and mixed quotation as in (1c) poses serious challenges for a compositional and unified semantic analysis within standard formal semantic approaches:

- (1) a. John called Mary ‘Marie’.
 b. John said ‘Mary is an extraordinary woman’
 c. He said that Mary was an ‘extraordinary’ woman.

The product-based semantics of sentences and attitude reports allows for a novel account of quotation, permitting a unified account of different types of quotation (direct, pure, and mixed quotation), as well as a straightforward analysis of quotational constructions that have been neglected or ignored in the literature.

Quotation poses considerable challenges for both philosophy of language and linguistic semantics. There is disagreement whether quotation, or particular types of quotation, should be considered a pragmatic or semantic phenomenon and how quotation if treated semantically is to be integrated in a compositional semantics of sentences. A common view about pure quotation is that it involves the formation of an expression-referring term. However, there are a range of contexts in which quotation cannot have that role and for which the present product-based semantics offers a more adequate account.

Let us first look at quotation in sentences embedded under attitude verbs, namely direct quotation as in (2a) and mixed quotation as in (2b):

- (2) a. John said 'I will come'.
 b. John said that the remark was 'elegant'.

On the proposed account, clausal complements with mixed or direct quotation not only serve to characterize the content of the product of the event argument, but also its form. That is, material in mixed or direct quotation provides both properties of content-related products and properties of form-related products, or rather both properties of cognitive products and properties of utterance products. Thus in (2a), the complement clause specifies both the cognitive product that makes up the assertion and the utterance product with which the assertion is produced.

To make this more precise, I will make use of the Austinian distinction between linguistic acts of increasingly higher levels: phonetic acts (the uttering of sounds) - phatic acts (uttering of sounds as belonging to phonological, morphological, or syntactic categories) - rhetic acts (referential acts and utterances for the purpose of conveying conceptual meaning) - locutionary acts (utterances for the purpose of conveying a propositional content) - illocutionary acts (making assertions, demands etc) (Austin 1965). Ordinarily, such acts are ordered by the 'by'-relation or what Goldman (1970) calls 'level-generation'. With the utterance of a sentence the speaker aims to perform an illocutionary act, but that act is performed by performing a locutionary act, the putting forward of a propositional content, which in turn is performed by a phatic act. I take a locutionary act to consist in the performance of referential and predicational acts, and phonetic acts to be structured into syntactic acts, morphological acts, phonological acts, and phonetic acts. The different act types are ordered by the by-relation, and each act type goes along with a product. The idea is then that quoted constituents provide lower-level product types as contributions to the meaning of the sentence. This is, by performing the lower-level linguistic acts not or not only in order to perform higher-level linguistic acts. Rather they are performed in order to identify the relevant lower-level linguistic product type. Lower-level linguistic product types may play different roles in the meaning of a sentence. In the case of mixed and direct quotation, they serve to characterize the formal aspects of a cognitive product in addition to its content-related aspects. In the case of pure quotation, lower-level linguistic product types make up the semantic value itself. As such, pure quotations, may contribute differently to the meaning of the sentence, depending on the context in which they occur.

4.2. Pure quotation: presentational, predicative and argument contexts

One context of pure quotation is close appositions, as in (3a), which does not permit substitution by an explicit expression-referring term as in (3b):

- (3) a. the name ‘Obama’
 b.* the name the name of the current president of the US

Here pure quotation has a merely presentational function specifying a lower-level product type on the basis of which the noun introduces an entity of the relevant sort (Moltmann 2013, Chapter 6).

Another context is one in which pure quotation has a predicational function. This is in particular the predicate position in a small clause with a verb of calling:

- (4) a. John called Mary ‘Marie’.
 b. ??? John called Mary the name ‘Marie’.

Pronounce and *translate* are other verbs that permit small clauses with pure quotations in predicate position, here the position of the complement of *as*:

- (5) a. John pronounced Gretchen as ‘garden’.
 b. John translated rouge as ‘red’.

In this construction, the pure quotation will be a predicate of the product of the event described by the verb. This is reflected in the corresponding nominalization constructions in (6a) and (6b), where the *as*-phrase naturally acts as a predicate of the product described by the noun:

- (6) a. John’s translation of ‘rouge’ as ‘red’
 b. John’s translation of ‘rouge’ was ‘red’

The pure quotation in (5a, b) thus has a quasi-adverbial status, being predicated of an object-directed product, just like clausal complements of attitude verbs. This is further supported by the choice of proforms, which take the adverbial preforms *how* and *that way*:

- (7) a. How did she translate red?
 b. I would not translate the sentence that way.

Also pure quotations that are complements of verbs of saying can be considered predicates of the product of the described speech act, as in the analysis of (8a) in (8b):

- (8) a. John said 'hey'.
 b. $\exists e(\text{say}(e, \text{John}) \ \& \ [\text{hey}](\text{product}(e)))$

In addition, pure quotations can occur referentially, as is the case with pure quotations acting as direct objects of *pronounce* and *translate*, which can be replaced by explicit expression-referring terms (*the word 'red'*). For this context it is plausible that the pure quotation occurs in a silent appositive construction of the sort *the word 'red'*.

4.3. The syntactic basis of quotation: lower-level linguistic structure within the LF structure of a sentence

How are constituents in a sentence able to convey lower-level linguistic product types, that is, what is the formal basis for the interpretation of quotations? I will pursue that view that quotation as interpreted by lower-level linguistic product types involve a simultaneous lower-level linguistic structure as part of the syntactic structure that is input to semantic interpretation, that is, LF. The product-based semantics unlike standard semantics permits an interpretation of such lower-level linguistic structures, namely as lower-level linguistic act types. Thus, a mixed quotation such as (2b) will involve, let's say, a morphological structure as well as the standard LF. The morphological structure will be interpreted as a morphological act type, whereas the syntactic LF structure of the same expression will be interpreted as a concept. The LF of the entire sentence will be interpreted as a property of products having as a part a cognitive product of a particular type and a morphological product of a particular type, linked to the relevant part (a concept) of the cognitive product.

Direct quotations such as (2a) will be interpreted similarly, on the basis of simultaneous syntactic structures of the CP, its ordinary LF structure and a lower-level linguistic structure or several lower-level linguistic structures for the CP. The CP with will then be interpreted as a property of products consisting of a cognitive product as characterized by the LF and as

consisting of lower-level linguistic products as specified by the simultaneous lower-level linguistic structures.

4.4. A product-based compositional semantics of direct and pure quotation

In the case of direct quotation, the interpretation of lower-level CP structures as phatic product types will go along with an interpretation of the LF structure so as to form a single property of products with both a cognitive and a phatic part. Such a product property will then be predicated of the product of the act of saying described by the verb. This will allow for the interpretation of indexicals such as *I* in (2a) so as to be understood as referring to the agent of the embedding verb, rather than the speaker.

Given that illocutionary acts are performed by performing phatic acts, the products of those phatic acts will count as non-spatio-temporal parts of the illocutionary products.

The account easily extends to mixed quotations in independent sentences as well as scare quotes, if it is allowed that lower-level structures be interpreted as phatic product types to be predicated of contextually given phatic products, or kinds of phatic products.

Previous presentations:

‘Quotation and Linguistic Acts’. *New York Philosophy of Language Workshop*. NYU, May 2012

Workshop *Quotation: Perspectives from Linguistics and Philosophy*, Bochum, September 27-29, 2012.

Chapter 5: Presuppositions, Referential Products and Coordination among Referential Products

This chapter will extend the product-based semantics of independent and embedded sentences to presuppositions and anaphoric relations. It does so by introducing the notion of a background of an attitude, by making use of a relation of coordination as a relation among referential products, and by allowing referential products to impose only general conditions on their satisfiers.

The background of an illocutionary or attitudinal product represents what is presupposed in the attitude, which may be involve the same force of belief

Background of embedded represents what speakers take the presupposition of the attitude to be.

On the product-based semantics, the meaning of referential noun phrases consists in products of referential or identificational acts. This chapter will develop this view further and pursue an account of coordination in roughly the sense of Fine (2006) as a relation among referential products. On that view two referential products being coordinated means they are meant to have the same referents (or satisfiers). Coordination is primarily viewed as a relation among referential products and only derivatively as a relation among occurrences of expressions in a sentence (as in Fine 2007). A referential product may be coordinated both with previous referential products (say, using the same name), with other products that are part of the same cognitive product, or with products that are part of the background of the relevant cognitive product.

Coordination conceived of as primarily a relation among referential acts means one act is meant to refer to the same object as another. Coordination among referential acts will be involved in the interpretation of pronouns acting as variables, especially unbound anaphoric pronouns whose semantics will be recast in terms of referential acts. Moreover, it will be constitutive of the sorts of entities that nonreferential ‘empty’ NPs in referential position stand for.

5.1. Proper names and referential pronouns

A first application of coordination as a relation among referential products will to proper names. In particular, Kripke’s causal-historical theory of proper names can thus be formulated

in terms of chains of coordinated referential products involving the same name (as a morphological product type) and originating in the product of a name-giving act. A proper name, referring to a particular individual, can thus be identified with the set of coordinated referential products involving that name and originating in a name-giving product involving that individual.

Occurrences of terms in a sentence will be interpreted as coordinated referential products if they stand in a formal relation, say of coindexing. The same formal relation, interpreted by coordinated products may of course also obtain among occurrences of expressions across sentences, within the same discourse

A referential product may also be coordinated with a referential product in the background of the propositional attitude in question or the background of the discourse. This leads to an important notion that has to supplement the product-based semantics of sentences, namely that of a cognitive product acting as a background to a given cognitive product.

5.2. Presuppositions and backgrounds of cognitive products

Background to cognitive products are cognitive products that represent the presuppositions of the cognitive product in question. In the case of products produced by the utterance of independent sentences, these are products of presupposition, viewed as a propositional attitude. In the case of attitudes such a background may be a background belief, as in the case of a belief or desire. But it may also be a desire acting as a background to a product of desire. This is reflected in the two ways of presuppositions in desire reports may be satisfied, as in (1a) and (1b):

- (1) a. John believes he has made a mistake. He wants to correct the mistake.
 b. John wants to write a book, and h wants to publish the book.

More accurately a background for a described attitude should be what the speaker takes the described agent to presuppose with his attitude.

Cognitive products as backgrounds of illocutionary or attitudinal products are well suited to play just the sort of role that discourse representation structures play in Discourse Representation Theory. Cognitive products, at least of certain sorts, are composed of smaller products such as referential products. The background of the described attitude should be so structured since it arguably represents the speaker's explicit thoughts about the described

agent's attitude. The referential products may then be coordinated with other referential products that are part of the same cognitive product or part of the background. In this role, cognitive products have significant advantages over discourse representation structures (DRSs). Unlike DRSs, cognitive products are motivated independently from the semantics of unbound anaphora and presuppositions, such as from the semantics of attitude reports and their nominalizations.

Making use of backgrounds will help cast the mode of presentation problem in roughly the way envisaged by Fine (2007). For Fine, if two coreferential occurrences of the same name are associated with different modes of presentation for two agents, then this means that the two occurrences are coordinated with occurrences of expressions in different background beliefs of the two agents. On the present view, it means that two referential products involving the name are coordinated with referential products that are part of different backgrounds belonging to the two agents. In both cases, modes of presentations are constituted by coordinated background beliefs and are not part of the content of the attitude in question.

One important consequence of this account of modes of presentations is that it gets the identity conditions of products involving different modes of presentation for terms referring to the same object right. The intuition is that the inference below is valid even if John and Mary associate different modes of presentation with Paris.

(2) John believes that Paris is beautiful.

Mary believes that Paris is beautiful.

John and Mary believe the same thing.

In order for the inference to be valid, John and Mary should share the same kind of cognitive product – the belief that Paris is beautiful (a kind of product whose instances are exactly similar cognitive products). This is what *the same thing* stands for. Thus, John and Mary must have very similar beliefs, which means that their beliefs cannot contain different modes of presentation for Paris.

How do backgrounds figure in the semantics of attitude reports? One way would be to posit another function besides the product function, mapping the event argument of the verb onto a background. A better option, though, is to posit a function mapping the event argument and the utterance context onto a background, since the background should represent the speaker's presuppositions regarding the described agent's attitude.

5.3. Unbound anaphora

Coordination as a relation between referential product types also allows for a novel account of pronouns acting as variables. On that account, the semantic contribution of utterances of pronouns as well as indefinites acting as their antecedents are very general referential products, products with which the agent refers to whatever satisfies the restriction of associated with the pronoun. If the pronoun is anaphoric to another pronoun or indefinite NP in the preceding discourse this means that the antecedent will be interpreted by a coordinated referential product. The antecedent products will form part of the background of the cognitive product in question, and may provide the truth-conditional completion of the latter, as below:

(3) John thinks he made a mistake. He wants to correct it.

The desire reported in the second sentence of (3) goes along with a background belief, involving a referential product coordinated with the referential that is the semantic value of *it*. The evaluation of the truth of the desire reported in (3) must go along with the evaluation of the truth of the background. Conditions analogous to the novelty and familiarity conditions in DRT can then be imposed on unbound pronouns and indefinites: indefinites can be interpreted only as products that are not coordinated with other products in the relevant background, whereas unbound anaphoric pronouns must be interpreted as products coordinated with another product in the same product or else the background.

5.4. Intentional objects

Referential products and the relation of coordination among them will also be relevant for the semantics of noun phrases apparently referring to or quantify over nonexistent objects. It is tempting to makes use of (unsuccessful) referential products and consider them to be semantic values of apparently empty terms. However, there are reasons to better consider their semantic values intentional objects constituted by unsuccessful or pretend referential products. In any case, referential acts, or rather their products play a crucial role for the semantic values of apparently empty terms.

The most familiar context in which apparently empty terms occur is the subject position of a negative existential, as in (4a) and (4b) and as complements of intentional verbs such as *think about*, as in (4b) and (4c):

- (4) a. Vulcan does not exist.
 b. The woman John thought about does not exist.
 c. John thought about a woman that does not exist. She was tall and blond.

(4b) and (4c) contain the intentional verb *think about*, a verb describing intentional acts involving referential unsuccessful or pretend referential acts, possibly coordinated with other such acts. The occurrence of the intentional verb is essential, as seen in the contrast between (5a) (which could naturally be true) and (5b) (which sounds necessarily false):

- (5) a. There is a woman John mentioned that does not exist.
 b. There is a woman that does not exist.

Intentional objects strictly dependent on referential acts, which may be described by the verb or else are part of the nonlinguistic context, as with empty terms in the subject position of negative existence statements, as in (4a). Intentional objects appear to carry properties just like ordinary objects, namely those properties as attributed in connection with the relevant referential acts. I take intentional objects to be entities constituted by coordinated referential products. In (4a), the referential products are contextually given (products of previous failed reference acts involving the name *Vulcan*). In (4b) and (4c), they are coordinated with the products of the event argument of the intentional verbs *think about*. The identity of intentional objects depends on the products which set them up and the properties they carry depend on what is ascribed in the corresponding acts

The semantic values of apparently empty NPs should not be considered the products of intentional acts themselves. Referential products share with intentional object their existence conditions: they exist even if the act of reference is not successful. However, they have very different properties from the intentional objects. Intentional objects have or ‘hold’ the sorts of properties ascribed to them in the intentional acts that set them up or on which they depend and they carry the properties ascribed by any of the coordinated referential products. This is obvious, for example, from the anaphor *she* in (4c), which stands for an intentional object that

is ascribed properties that the referential product could not have (being tall and blond); referential products have very different sorts of properties.

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