

Cognitive Products and the Semantics of Attitude Verbs and Deontic Modals

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On the standard, Fregean view, propositional attitudes are relations between agents and propositions, abstract entities that are bearers of truth conditions and act as the semantic values of sentences and, in particular, *that*-clauses. The standard view is reflected in what is commonly taken to be the logical form of attitude reports, namely what I call the Relational Analysis. On the Relational Analysis, (1a) has the logical form in (1b), where the clausal complement *that Mary is happy* has as its semantic value (*[Mary is happy]*) the proposition that Mary is happy:

- (1) a. John thinks that Mary is happy.
 b. THINK(John, [*Mary is happy*])

Propositions are generally conceived as formal objects of some sort, either as structured propositions (say n-tuples consisting of an n-place property and n-1 objects) or sets of possible circumstances. However, such a conception of propositions faces serious challenges. Most important are two problems: the problem of how abstract propositions conceived as formal objects can be grasped and figure as the contents of mental states, and the problem of how abstract propositions could have truth conditions and the particular truth conditions they are supposed to have.¹ A number of philosophers have therefore argued that the notion of an abstract proposition, conceived as a formal object of one sort or another, should be replaced by a cognitive notion of proposition, a mind-dependent object whose truth-directedness is tied to the intentionality of an agent. In particular, Soames and Hanks have argued that abstract propositions should be replaced by cognitive acts, or rather types of acts (of predicating a property of objects). Such acts

¹These problems may not arise when propositions are conceived as primitives that would only be modeled by formal structures rather than identified with them, see Schiffer (2003) and Merricks (2015).

are to play the role of truth-bearers, and types of such acts are to play the role of the meanings of sentences and the contents or objects of propositional attitudes. This view has important predecessors in phenomenology and early analytic philosophy.²

Soames and Hanks both adhere to the Relational Analysis of attitude reports, and thus take propositional attitudes to be two-place relations between agents and types of acts of predication. On their view, (1a) still has the logical form in (1b), but the semantic value of the clausal complement [*that Mary is happy*] will now be a type of cognitive act.

This paper argues that what should take the role of truth-bearers associated with propositional attitudes such as judgment or thought is not cognitive acts or types of acts, but the cognitive products of such acts (or types of cognitive products). The notion of a cognitive product is to be understood roughly along the lines of the distinction between actions and products of Twardowski (1912, this volume). This paper is not meant to be exegetical, though, but rather uses and further develops a range of ideas of Twardowski without adhering to all of Twardowski's views. Given the notion of a product, it is not an act of judging that is a truth-bearer, but a judgment, the product of an act of judging, and it is not an act of claiming that has truth conditions, but a claim, the product of an act of claiming. The distinction between cognitive or illocutionary acts and their products is little familiar, and Twardowski himself left the action-product distinction at an intuitive level, appealing mainly to linguistically reflected intuitions among different nominalizations in natural language. Moreover, Twardowski said nothing about the role that products play in the semantics of attitude reports, but just focused on the distinction between actions and products as such.

This paper will develop a semantics of attitude reports according to which clausal complements of attitude verbs act as predicates of cognitive or illocutionary products, or else of mental states; that is, they act as predicates of what I call "attitudinal objects." This semantics will be carried over to deontic modal sentences, which will involve "modal products" rather than attitudinal objects. Formally, the semantic analysis will make use of Davidsonian event semantics, so that attitude verbs express two-place relations between events (or states) and agents. Acts such as acts of thinking and judging will occupy the event argument position, and a function *prod* will map them onto their product, of which the clausal complement will then be predicated. Thus, (1a) will have the logical form below:

- (1) c. $\exists e(\text{THINK}(e, \text{John}) \ \& \ [\textit{that Mary is happy}](\text{prod}(e)))$

Here *prod*(*e*) is the product of the Davidsonian event argument *e* of *think*, which expresses a relation between acts of thinking and agents.

The analysis in (1c) has a range of novel applications to central issues in the philosophy of language and semantics, which will be developed more fully

² An example is Husserl (this volume).

elsewhere. This paper will focus on the distinction between actions and product as such, and on the motivations for making use of products (and mental states) instead of propositions for the semantics of attitude reports and deontic modals. The paper will further develop Twardowski's notion of a product, by introducing a greater range of characteristics distinguishing actions and products and arguing that products have the status of (abstract or physically realized) artifacts produced by the actions. Furthermore, the paper will introduce a novel notion of an (enduring) modal product, such as an obligation or permission. Modal products will be important for the semantics of deontic modals and promise a new semantics of modal sentences in general, a semantics that is based on modal objects rather than quantification over possible worlds. Both attitudinal objects and modal products generally come with truth or satisfaction conditions. For the semantics of clausal complements as predicates of attitudinal and modal objects, the paper will develop a version of Fine's (2012, 2014, forthcoming) recent truthmaker semantics. This means that attitudinal objects and modal objects will be associated with situations or actions acting as their truthmakers or satisfiers.

There is an alternative to the analysis in (1c) that also goes along with the action-product distinction. This is the neo-Russellian Multiple Relations Analysis of attitude reports, which I have pursued in previous work, along with the view that both actions and products are complex tropes or particularized properties (Moltmann 2013a, chap. 4). An appendix to this paper will outline this view and give reasons for no longer pursuing it.

1. The Notion of an Abstract Proposition and Its Recent Critique

In contemporary philosophy of language, propositions are primarily characterized in terms of their roles, namely as the sharable objects of propositional attitudes, the meanings of sentences (including the shared meaning of equivalent sentences from possibly different languages), and the bearers of truth and falsity. In order to fulfill these roles, propositions, it appeared, must be abstract and, in particular, mind- and language-independent (Frege 1918–1919). A common move then is to identify propositions with formal objects such as sets of circumstances or structured propositions (say, as sequences consisting of a relation and its arguments). Propositions in this sense have recently come under attack by a number of philosophers (Jubien 2001, Moltmann 2003b, 2013a, chap. 4; Soames 2010; Hanks 2007, 2011, 2015, this volume). One of the problems is how propositions as abstract objects can be grasped and figure as contents of mental states. An equally important one is the problem of the truth-directedness of the proposition and, related to that, the problem of the unity of the proposition. That is, briefly, why should a proposition that is identified with a set or a sequence be true or false, and furthermore why should an abstract structured proposition have the particular truth conditions it is meant to have? There is nothing inherent in an abstract structured object that makes it have (particular) truth conditions; rather, such conditions need to be externally imposed.

These problems for abstract propositions have motivated an alternative, act-based approach to propositional content. Central to the act-based view is the notion of predication as a cognitive act, an act of an agent predicating a property or relation of its arguments (Jubien 2001; Moltmann 2003b, 2013a, chap. 4; Hanks 2007, 2015; Soames 2010, 2015). The act of predication is meant to ensure the truth-directedness and particular truth conditions of propositions, which, on the act-based view, are identified with types of acts. The act-based approach is presented with different options when distinguishing types of acts of predication, which go along with different views as regards the logical form of attitude reports:

- [1] There are as many different types of cognitive acts of predication as there are different attitudes: predication in the belief way, predication in the thinking way, predication in the claiming way, etc. (Jubien 2001; Moltmann 2003b, 2004, 2013a, chap. 4). (Formally, the view matches the (neo-)Russellian Multiple Relations Analysis discussed in Appendix 2.)
- [2] There is a single type of cognitive act of predication, which corresponds to the most general attitude of “entertaining” or “understanding” (Soames 2010, 2015). This view maintains a separation of propositional content and force, and it goes along with a version of the relational Analysis according to which propositional attitudes are relations between agents and types of acts of predication in the entertaining way.
- [3] There are different types of acts of predication of more general sorts, which match declarative, imperative, and interrogative sentences (Hanks 2007, 2011). This view considers propositional content to be inseparable from force and goes along with a version of the Relational Analysis according to which propositional attitudes are relations between agents and types of acts of predication of one of the three sorts.

My critique of the act-based approach will focus on [2] and [3], though it may also apply to a version of [1] (but see Appendix 2).

2. The Distinction between Actions and Products

2.1. CHARACTERISTICS DISTINGUISHING ACTIONS AND PRODUCTS

There is a serious problem for the act-based approach in general, 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 is not something that is intuitively true or false, and it lacks a range of further properties that entities should have to be able to play the role of propositions (as will be elaborated shortly). There is a different sort of cognitive entity, though, suited to play that role, namely entities of the sort of “judgments,” “thoughts,” “beliefs,” and “claims.” These are cognitive and illocutionary products. Cognitive and illocutionary products fall under the more general category of “attitudinal objects,” which also include mental states such as intentions, beliefs, and expectations (see Section 2.3) (Moltmann 2003a, 2003b, 2004, 2013a, 2014). 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 abstract propositions, though; rather, they are cognitive particulars, but in the sense of products of cognitive acts, not the acts themselves.

The distinction between cognitive or illocutionary acts and the corresponding cognitive and illocutionary products or attitudinal objects goes back to Twardowski (1909, 1912).³ Twardowski drew a very general distinction between actions and products, which includes not only the familiar distinction between an action and its enduring physical product, such as an act of writing and the writing (the written work), an act of drawing and the drawing, and an act of folding and the fold.⁴ Twardowski's distinction also comprises a less familiar distinction between a mental act and its non-enduring mental product, such as an act of judging and a judgment, an act of thinking and a thought, and an act of deciding and a decision.⁵ 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, an 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.⁶ However, judgments, thoughts, desires, claims, and requests can be "reproduced" by performing actions with similar products. The relation of similarity among products is central to the notion of a product and its proposition-like role, though Twardowski himself did not further elaborate it (and no in-depth attempt will be made in this paper either). The idea, roughly, is if two products are similar, then they are the same in content. That is, similarity among products is prior to a notion of content. The similarity relation among products allows for the "stabilization" of what appears to be an enduring propositional content, which emerges from the production of actions with similar products.⁷ For Twardowski, it is thus products, not actions, that approximate the notion of a propositional content. The notion of a product permitted him to overcome the objections in psychologism to an act-based conception of propositional content at the time (Twardowski, 1909). Thus, it is products, not actions, that were to play the role of

³The distinction had been recognized already by Bolzano, actually (see the introduction to this volume). It also plays a central role also in the work of Ingarden (1931), a student of Twardowski's. For a presentation of Twardowski's view in its historical context, see Bobryk (2009), Betti (2016), Dubucs and Miskiewicz (2009), Miskiewicz (this volume), and van der Schaar (2006).

⁴See Twardowski (1912, §34) for a more detailed discussion.

⁵Twardowski's (1912) examples actually include also states and their "products," such as a believing and a belief, an expecting and an expectation, and a hoping and a hope. But see Section 2.3. for a discussion as to whether there should be a distinction between states and products.

⁶Twardowski's view that non-enduring products last just as long as the corresponding action does not seem quite correct. For an action that is an accomplishment, say an act of asserting, the product (the assertion) is more likely to come into existence only at the end of the action.

⁷Also, the understanding of a product consists in the production of a similar product. In addition, the product that is to be understood needs to cause the product of the act of understanding (Twardowski 1912, §§33–34).

meanings of sentences permitting logical inferences (so at least in Twardowski 1909).⁸

Like cognitive acts, cognitive products are mind-dependent 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 to their cognitive products—however such a tie is ultimately to be understood.

Products differ from actions in the sorts of properties they can have.⁹ Two distinguishing characteristics of actions and products, the ability to bear truth or satisfaction conditions and the way of entering similarity relations, are mentioned by Twardowski himself and 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. Similarly, illocutionary acts such as speech acts of claiming can hardly be said to be true or false; rather, it is the claim, the product of the speech act, that is a bearer of truth or falsity.

Aune (1967) notes that the adverbial *truly* appears to predicate truth of the described action, which would contradict the generalization just stated:

- (2) a. John truly believes that he won the lottery.
- b. John truly asserted that Mary is French.

However, English *truly* is exceptional in conveying truth when applied to events, as a quick look at other languages indicates. German, French, and Italian, for example, do not have adverbial counterparts of *wahr*, *vrai*, or *vero* that act in the way English *truly* acts. The adverbial counterparts *wahrlich*, *vraiment*, and *veramente* mean “really” rather than “truly”, in the German, French, and Italian translations of (2b) below:

- (3) a. *Hans hat wahrlich behauptet, dass Maria Französin ist.*
- b. *Jean a vraiment dit que Marie est Française.*
- c. *Gianni a veramente detto que Maria é francese.*

⁸Twardowski (1912, §44) actually envisages the meaning of sentences in logical inferences to be “artifacts” in a different sense than I use the notion in this paper. See Betti (2006).

⁹Twardowski (1912) mentions a range of predicates that distinguish between actions and products, but he does not give a systematic characterization of the distinction in terms of the types of properties that actions and products have. Twardowski (1912, §22) mentions *define* as a predicate applying to concepts but not the activity of conceiving, *unintelligible* as applying to questions but not the act of posing of a question, *unsolvable* as applying to problems but not to the act of posing a problem, *overlook* as applying to errors but not acts of erring, *unfulfilled* as applying to expectations but not the action of expecting, *implement* as applying to resolutions but not acts of resolving to do something, and *inspiring* as applying to thoughts but to the activity of thinking.

True is infelicitous also as a noun modifier applying to actions. *John's true act of claiming* is just as unacceptable as *John's act of claiming is true*, in English as in other languages. This means that *truly* as an adverbial has a derivative meaning, sharing its meaning with *accurately*. *Accurate* is the adjective that specifically conveys adequacy of the representational content associated with an action (as well as a product). While the data about English, German, French, and Italian call for a more thorough linguistic study of adverbial formation and its semantics, they clearly show that no philosophical conclusion should be drawn from the particular way *truly* works in English.

Other products may not have truth conditions, but rather satisfaction conditions, of various sorts, reflected in the applicability of a different predicates of satisfaction and violation (that is, failure to satisfy). For example, a decision may be implemented, but not an act of deciding. There is a great range of illocutionary acts and products that differ in that way, an observation made independently of Twardowski by Ulrich (1976) (who, though, does not use the notion of a product). 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 (or violation) of illocutionary products make it particularly clear that products can be neither acts nor propositions (Ulrich 1976). Propositions are not things that could (in the relevant sense) be fulfilled, implemented, complied with, broken, followed, ignored, or executed. Illocutionary products must be entities of a third kind, distinct from both propositions and events. This also holds for cognitive products. Decisions can be implemented, but hardly so for acts of deciding.

Truth-directed cognitive and illocutionary products differ from acts (and propositions) also in that they are associated with a particular correctness condition (Moltmann 2015a). 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.¹⁰

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

¹⁰ The adverbial *correctly* behaves like *truly* in English, conveying truth rather than the correctness of acts:

- (i) John correctly said/believed that S.

Again this is not so for the corresponding adverbials in other languages. Thus, the corresponding adverbial in German (*korrekt*) does not convey truth but correctness of acts.

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.¹¹ 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, this condition is not generally 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 is not.¹²

The applicability of the *is* of identity also shows the involvement of force in cognitive and illocutionary products: exact similarity requires the same force. Thus, John's claim that Mary should leave cannot be "the same as" his request that Mary should leave, 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 type of satisfaction or correctness conditions they are associated with.

Actions and products differ also 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. Furthermore, actions and products 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,

¹¹ A "shared content" will of course mean a common feature of attitudinal objects, not an entity that attitudinal objects stand in a relation to. Propositional content is to be considered a feature of products, not an object products relate to.

¹² Relations of exact similarity are reflected in the applicability of *is the same as* in English, which expresses qualitative, not numerical identity:

- (i) a. John's thought is the same as Mary's thought.
- b. John's thinking is the same as Mary's thinking.

(ia) is true just in case John has a thought with the same content as Mary, but not so for (ib). By contrast, the *is* of identity, which *does* express numerical identity, seems false of distinct attitudinal objects, at least under normal circumstances (let's say in which John's and Mary's thoughts were not coordinated):

- (ii) ?? John's thought is Mary's thought.

Note that the predicate *is identical to* is better in that context, which indicates that it expresses qualitative, not numerical, identity:

- (iii) John's thought is identical to Mary's thought.

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.¹³ 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 (a difference not recognized by Twardowski). The part structures 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, the parts of products are distinct from the parts of the corresponding 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.

2.2. COGNITIVE PRODUCTS AND ABSTRACT ARTIFACTS

The relation between a cognitive act and its cognitive product may seem hard to grasp, given that cognitive acts and their products may be spatiotemporally coincident, and that the distinction appears so closely tied to nominalizations in particular languages. Twardowski's (1912) article itself is focused on the linguistic properties of two sorts of nominalizations in Polish (in the first version of the paper), German (in the second version), and French (in an incomplete third version).¹⁴ Clearly, though, Twardowski took the distinction to be a fundamental

¹³Note that propositional content alone (what would be an abstract proposition) cannot be causally efficacious, but only in connection with an attitudinal or illocutionary force and an agent—that is, as part of a cognitive product.

¹⁴The German version, "Funktionen und Gebilde," and the French version, "Actions et Produits," are available online at <http://www.elv-akt.net/>. In German, the contrast is between *Denken* 'thinking'

philosophical one, not just one reflecting the semantics of particular types of nouns found in Polish, German, and French.¹⁵

In fact, the same sort of distinction is very compelling in many cases not directly tied to types of terms in a particular language. The distinction between cognitive or illocutionary acts and their products can be considered part of the more general relation between an act and the abstract or physically realized artifact that it creates—a view, though, that Twardowski himself did not articulate.¹⁶ Artifacts may be “abstract” artifacts in the sense of Thomasson (1999), that is, artifacts that lack a material realization. Yet as artifacts they are created at a particular time and may go out of existence.

What is particular about artifacts in general is that they need not be tied to a particular physical realization. Artifacts may lack a physical realization entirely, such as electronic files and unwritten rules, as well as cognitive products such as thoughts, judgments, beliefs, and desires. Other artifacts, such as poems and musical compositions, may or may not come with a physical realization (as products of writing, reciting, or performing).¹⁷ 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, such as 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 (Ingarden 1931; Thomasson 2004, 2005).

and *Gedanke* ‘thought’, *Urteilen* ‘judging’ and *Urteil* ‘judgment’, *Entscheiden* ‘deciding’ and *Entscheidung* ‘decision’; in French the corresponding contrast is between *penser* and *pensée*, *juger* and *jugement*, *décider* and *décision*. The English translation reflects the distinction equally well.

¹⁵ Twardowski’s intuitive description of the distinction actually focuses on different aspects of entities. Thus, Twardowski characterizes nouns describing products as nouns “that do not bring to force the aspect of action, but bring to force a different aspect, the ‘phenomenal’ or ‘static’ aspect” (Twardowski 1912, §2). Similarly, in the particular case of a shout, as opposed to a shouting, he says “in speaking of the shout, we do in fact abstract from the activity of shouting, treating the shout as an acoustic phenomenon” (Twardowski 1912, §3). Twardowski (1912, §§4 and 9) appears to recognize a gradual transition from a distinction that differentiates between aspects of one and the same entity (as with certain physical action—product pairs) to a full-fledged ontological distinction both between mental actions and their products and, most obviously, certain psychophysical actions and their products (drawing and the drawing, etc). See also Brandl (1998) for a non-ontological view of the distinction.

¹⁶ Twardowski actually uses the notion “artifact” in a very different way, meaning a subset of products, such as the products of “presenting a judgment,” which, according to Twardowski (1912, §44) may serve as the meanings of sentences in logical inferences. See Betti (2006) and footnote 8.

¹⁷ The difference between, on the one hand, thoughts, judgments, and desires, which cannot have a physical realization, and, on the other hand, poems and musical compositions is reflected in the applicability of predicates like *write* to the latter, but not to the former:

- (i) a. John wrote a poem/a song.
- b. ??? John wrote a thought/a judgment/a desire.

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 (product nominalizations), such as 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 that 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 novel*. 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 the book* may stand either for a part of the information object (partial content) or for a physical part of the material object.¹⁸

Cognitive and illocutionary products also share with works of art their dependency on an agent. Works of art, whether abstract or physically realized, depend on their creator for their identity—at least on a common view.¹⁹ 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.

Recognizing that cognitive and illocutionary products fall under the more general category of (abstract or physically realized) artifacts, which are an indisputable part of common sense ontology, makes cognitive and illocutionary products much easier to accept. At the same time, it must be added that the category of artifacts is far from uncontroversial, and that there is not much of a fully developed ontological theory of artifacts. Still, artifacts themselves are well characterized by common characteristics not shared by any other category of objects.

¹⁸ For some reason, illocutionary products, with an auditory physical realization, 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.

¹⁹ The view had been defended by Fine (1982) and Thomasson (1999) for fictional characters. But see, for example, Deutsch (1991) for a different view.

2.3. PRODUCTS AND MENTAL STATES

Entities such as intentions, beliefs, and desires share the general characteristics of cognitive products. First, they have truth or satisfaction conditions: an intention can be realized, a belief can be true, a desire can be fulfilled. Moreover, they appear to enter similarity relations on the basis of being the same in content. John's intention is the same as Mary's, John's belief is the same as Mary's, John's desire is the same as Mary's just in case they share their content, that is, their satisfaction conditions. Furthermore, entities such as intentions, beliefs, and desires have a part structure based on partial content. Part of John's intention, part of John's belief, and part of John's desire can only be a partial content, not a temporal part of a state. Finally, intentions, beliefs, and desires appear to be able to enter causal relations, based on content. Mary's belief, intention, or desire may cause her to act a certain way or to form other beliefs, intentions, or desires.

However, beliefs, intentions, and desires are not obviously products of acts, and certainly the terms used to refer to them are not derived from verbs describing cognitive acts; rather, they are derived from stative verbs (believe, intend, desire). Still, one might try to assimilate the objects in question to artifacts, though not derived from the state described by the corresponding verbs. There are various conceptions of belief that have been offered by philosophers of mind that could make beliefs, say, come out as artifacts.²⁰ On one conception of belief, beliefs are mental representations with representational character, such as sentences in a language of thought. On that conception, beliefs are enduring products, presumably set up by an act of judging and placed in a "belief box," as enduring mental artifacts. 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, such as 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 that, 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. Certain works of art are recognitional artifacts, 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.

²⁰ Here I will follow E. Schwitzgebel; see his entry "Belief," in *The Stanford Encyclopedia of Philosophy* (<https://plato.stanford.edu/entries/belief/>).

Note that on these views, intentions, beliefs, and desires do not come out as products of an event described by the verbs *intend*, *believe*, and *desire* and thus the views would not specifically support a unified view of the semantics of attitude reports.

Not on everyone's conception can beliefs, intentions, and desires be viewed as products in any of the ways described above. Thus, on Searle's (1983) view, intentions are states that are prior to intentional acts, with the intentionality of states not being derivative upon the intentionality of acts. Certainly, the semantics of attitude reports should not be committed to a particular view in the philosophy of mind about mental states, and they should at least be compatible with influential views about them.

In the semantics of attitude reports with mental state verbs, therefore, the product function *prod* applies to mental states mapping them onto themselves.²¹

2.4. PRODUCTS, TRUTHMAKING, AND SATISFACTION

I will adopt the view that cognitive and illocutionary products such as judgments, beliefs, and claims have not only truth conditions, but also truthmakers, entities (actual or possible situations) in virtue of which truth-bearers are true. Truthmaking here is to be understood in the sense of Fine (2012, 2014, forthcoming). Fine has pursued a truthmaker-based semantics in the interest of conceiving of a notion of content as an alternative to that based on possible worlds. Truthmaking, for Fine, is the relation of exact truthmaking, a relation which holds between an actual or possible situation (or state) and a truth-bearer (a proposition or sentence) just in case the truthmaker is wholly relevant for the truth of the truth-bearer. For the present purposes, truthmaking will also obtain between a truthmaker and a cognitive or illocutionary product, or more generally an attitudinal object.

The truthmaking relation naturally extends to the relation of satisfaction. Products such as decisions, plans demands, promises, and offers do not have situations as truthmakers; rather, they have actions or situations as satisfiers, which play an analogous role to that of truthmakers.²² A satisfier thus is an entity (an actual or possible action or situation) in virtue of which an attitudinal object is satisfied, or that is wholly relevant for the satisfaction of an attitudinal object. While there may not be an immediate reflection in natural language of the truthmaking

²¹ It should be mentioned that stative attitude verbs display two sorts of nominalizations seemingly displaying the action-product distinction. A 'desire' may be satisfied or not, but hardly a 'desiring' (or a state of desiring). An 'expectation' or 'hope' may be fulfilled, but hardly a 'state' of expecting or hoping. The gerund arguably refers to a different notion of a state than the "product" nominalization (perhaps a state of a property holding of an object, an abstraction from a property and an object. See Moltmann 2013b for such a notion of an abstract state).

²² This is also Fine's (forthcoming) view, though Fine takes satisfaction to be a relation between actions and imperative sentences.

relation involving attitudinal objects, the satisfaction relation is reflected in the *by*-locution:

- (4) John fulfilled Mary's request by coming to the party.

Not only may situations and actions 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 cognitive products. Questions themselves are either illocutionary products, the products of asking, 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 may be satisfied by cognitive products that are pieces of knowledge.

Satisfaction relations and kinds of satisfiers can thus play an important role in characterizing different types of cognitive or illocutionary products, as well as mental states.

2.5. 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. A law, for example, 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 (modal) 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 product of the act of promising because it comes into existence by the act of promising and it has satisfaction conditions, which only products can have. In fact, the commitment has the same satisfaction conditions as the promise that it goes along with, and it shares the same satisfiers with the latter. Also, an act of permitting may set up an enduring modal product, namely the permission that the addressee may have for a longer period of time. Similarly, an act of offering creates an enduring product: the offer that may obtain for a period of time beyond the duration of the act. Finally, an act of commanding may produce a lasting obligation on the part of the addressee.

Modal products share relevant properties with cognitive and illocutionary products, such as satisfaction conditions, similarity based on shared satisfaction conditions, and properties of concreteness (coming into existence and going out of existence at a particular time, entering causal relations).

Normative products such as laws, commitments, obligations, permissions, and offers are products that may endure for a period time 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 establishing them.

Enduring normative products are clearly part of our social ontology in general, and they are well reflected in natural language, namely in the semantic behavior of nominalizations of the sort *commitment*, *obligation*, *permission*, and *offer* and the existence predicates that go along with them, such as *obtain* and *have*. An obligation that results from a demand may “obtain” at a time way past the time of the action, 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 as a law may “hold” or “be valid” past the act of establishing it.

The endurance of modal products is linguistically reflected in the choice of tense in specificational sentences. If John demanded yesterday that Bill leave the country next week, then past tense rather than present tense is required in (5a), but not in (5b):

- (5) a. John’s demand was / ??? is that Bill leave the country next week.
 b. Bill’s obligation is to leave the country next week.

Illocutionary products require the tense of the copula to reflect the time of the act, whereas with modal products the copula needs to reflect the time of the validity of the norm constitutive of the modal product.

2.6. THE PRIORITY OF ACTIONS OVER PRODUCTS?

The distinction between actions and products raises the question of what takes priority, the action or the product? Clearly, the product depends for its existence on the act, and not vice versa. However, there is also a dependence of the act on the product. While the intentional act may be performed by performing physical acts, the identity of the intentional act may also depend on what is intended, the product. Moreover, the act may inherit certain properties from the product. This is reflected in part linguistically, in the application of adverbial modifiers. *John painted beautifully* means that John produces beautiful paintings, not that the activity of painting as such is beautiful. *John writes well* may mean that the product, John’s written work, is good, not that the act of writing as such is. The act may depend for its identity on the product; the product certainly depends for its existence on the act.

There is also a linguistic side to the question of the priority of actions as opposed to products. Attitudinal objects are generally (but not always) referred to by nominalizations of verbs, whereas actions are described by verbs and act as their implicit arguments, given Davidsonian event semantics. This suggests an equally derivative ontological status of products over actions. It is not obvious, however, that the linguistic facts support such a generalization. Both products and action nominalizations are found across languages (Gerner, this volume). Moreover, many languages, instead of using a simple attitude verb, use complex predicates consisting of a light verb (such as *have*, *make*, *give*) and a product NP, of the sort *have a need*, *make a promise*, or *give an advice* (see Section 3.3.).

3. The Role of Attitudinal Objects in the Semantics of Sentences

3.1. PRODUCTS AND THE UNDERSPECIFICATION OF ATTITUDE REPORTS

Twardowski himself said nothing about how the semantics of attitude reports is to be understood on the basis of the action-product distinction.²³ I will outline an account of that role of attitudinal objects in the semantics of attitude reports that is based on considerations that are independent of Twardowski's own views and have motivations beyond the action-product distinction as such.

Cognitive products are not the objects of propositional attitudes (or their contents), but rather, just as the term says, their products. If cognitive products are to replace propositions (for attitudes such as judgment or thought), it will no longer make sense to view such propositional attitudes as relations between agents and proposition-like truth-bearers, which will be reflected in a different semantics of attitude reports. I will take sentences to act not as terms standing for types of attitudinal objects, but rather as predicates of attitudinal and modal objects. One important reason for this is that complement clauses may underspecify the attitudinal object, with respect to its satisfaction conditions as well as in other respects. One case of such underspecification has recently been discussed by Graff Fara (2013), namely desire reports in which the clausal complement underspecifies the satisfaction conditions of the reported desire. Her examples are given below:

- (6) a. Fiona wants to catch a fish.
 b. Charlotte wants to have some champagne.

The desire described by (6a) is not just satisfied in case Fiona catches a fish. It is satisfied only when she catches a fish suitable for eating, let's say. Similarly, the desire in (6b) won't be satisfied if Charlotte drinks an amount of champagne that makes her dizzy, or if she drinks bad champagne that gives her a headache. If a desire report reports the conditions under which the desire is satisfied, then the complement clause in such a report may underspecify those conditions, giving only a partial characterization of them.

Treating clausal complements as predicates of cognitive products gives a straightforward account of the underspecification problem of desire reports. The clausal complement of the desire verb may give only necessary, not sufficient, conditions on the satisfaction of the reported desire. This is captured by the meaning of a sentence S as the property of attitudinal objects below, where \Vdash is the relation of exact truthmaking and $\Vdash\!\!\!\dashv$ is the relation of inexact truthmaking:

$$(7) [S] = \lambda d[\forall s(s \Vdash\!\!\!\dashv d \rightarrow s \Vdash S)]$$

²³ Twardowski (1912, §44) does say something about the role of products in independent sentences, though. He takes products (judgments) to be the meanings of declarative sentences, but also recognizes that not all sentences, in particular those that have not been uttered, can stand for products. Instead, sentences may represent products that fail to exist, just as representations in general may represent entities that fail to exist. Logical semantics would thus be concerned with both existent and nonexistent products.

The relation \Vdash comprises different satisfaction relations reflected in the use of different satisfaction predicates in natural language that are applicable to attitudinal objects. They include the truthmaking, fulfillment, acceptance, and compliance relation. In particular, the relation \Vdash covers both world-to-word/mind directions of fit as well as word/mind-to-world direction of fit. For independent sentences, these correspond to two different sentence types of declaratives and imperatives. (In addition, there is the interrogative sentence type, which corresponds to illocutionary products whose satisfiers are answers; that is, assertions of a sort.)

(7) also accounts for the possibility of attitudinal objects imposing particular conditions on the kinds of satisfiers they may have. Thus, Searle (1983) argued that intentions and requests take not just actions as satisfiers, but also actions “by way of fulfilling” the intention or request. Assuming that an “action by way of fulfilling an intention” is ontologically distinct from the action itself, it would only be actions by way of fulfilling an intention d that stand in the relation \Vdash to d , not actions as such.

Of course, a clausal complement of an attitude verb may give a partial characterization of the attitudinal objects not only in terms of its satisfaction conditions, but also, for example, in terms of its composition, its physical realization, or its emotive components, and depending on the attitude in question as well as the context.²⁴

3.2. ATTITUDINAL OBJECTS AND THE SEMANTICS OF ATTITUDE REPORTS

Let us now turn to the details of the formal semantics of attitude reports on which clausal complements act as predicates of attitudinal objects rather than standing for propositions.

Unlike propositions, attitudinal objects do not play the role of the objects of attitudes; that is, propositional attitudes are not attitudes toward attitudinal objects. An attitudinal object matches the content of an attitude report as a whole and not just that of the clausal complement of the attitude verb. The clausal complements serve to merely characterize the attitudinal object. This role of attitudinal objects can best be accounted for within Davidsonian event semantics.

Given Davidsonian event semantics, verbs have an additional argument position for events. The implicit event arguments are meant to be the entities that adverbial modifiers apply to. Applying Davidsonian event semantics to attitude verbs, this means that attitude verbs take implicit arguments that are mental acts or states or illocutionary acts. The implicit arguments of attitude verbs should be products rather than actions, since they should be the very same entities that

²⁴In this paper, I will restrict myself to giving a formulation of the meaning of sentences in terms of satisfaction conditions. But the complement clause may also specify the structure or internal composition of an illocutionary or cognitive product, such as a product of saying or thinking, as consisting, say, of referential products, predicational products, or concept-conveying products. There may be a contextual flexibility as to how the complement clause characterizes the illocutionary or cognitive product, along the lines of Cresswell (1985) (who, though, pursued a Relational Analysis.)

gerunds stand for, and in fact adverbial modifiers generally are understood as predicates of actions rather than products.²⁵ For example, *slow* is a predicate that applies well to actions, but not so well to products (*John's slow thinking,??? John's slow thought*), and it is unproblematic as an adverbial applying to verbs describing mental acts (*John thought slowly*).

For verbs describing a mental or illocutionary act e , there will then be a product associated with e of which the clausal complement will be predicated.²⁶ The report of an occurrent thought, as possibly in (8a), will then have the logical form in (8b):

- (8) a. John thinks that Mary is happy.
 b. $\exists e(\text{think}(\text{John}, e) \ \& \ [\textit{that Mary is happy}] (\text{prod}(e)))$

Mental states such as beliefs, intentions, and expectations are not acts, and thus have no products. Here the clausal complement is instead predicated of the mental states themselves. Formally, the report of a mental state, as in (9a), will have the very same logical form:

- (9) a. John believes that Mary is happy.
 b. $\exists e(\text{believe}(e, \text{John}) \ \& \ [\textit{that Mary is happy}] (\text{prod}(e)))$

However, the product function now maps the mental state onto itself; that is, in this case, $\text{prod}(e) = e$.

More generally, the compositional semantics of the construction attitude verb-clausal complement will be as follows:

- (10) For an attitude verb V and clausal complement S , $[V \ S] = \lambda x[\exists e(V(e, x) \ \& \ [S](\text{prod}(e)))]$.

Note that predication of the clausal complement of the product of the Davidsonian event argument differs from the way adverbial modifiers are predicated, namely as predicates of the Davidsonian event argument. Clausal complements are not adverbial modifiers, and moreover they are not referential arguments. Rather, they enter a special syntactic relation of clausal complementation to the verb, a relation whose interpretation consists in predicating the clausal complement of the product of the Davidsonian argument of the verb.

This semantics of clausal complements applies well when sentences are embedded under attitude verbs. It is less obvious how it applies to sentences embedded under non-attitudinal predicates. This is not the place for an

²⁵ But see the exceptional behavior of English *truly* and *correctly*, mentioned earlier.

²⁶ Whether an act has a unique product is a serious issue. In the present context, simplifying, I will assume so. Otherwise, the semantics of attitude reports will have to have to involve a function from acts and "contexts" to products.

exhaustive treatment of the various cases, though. It should suffice to just mention two ways in which the semantics of attitude verbs with clausal complements carries over to non-attitudinal predicates. First, a sentence embedded under a non-attitudinal predicate may act as a predicate of a contextually given illocutionary product, such as a claim made in the discourse context, as I have argued in regard to truth predicates such as *true* and *correct* (Moltmann 2015b). Second, non-attitudinal predicates may be associated with modal objects rather than attitudinal objects, and their clausal complements will then be predicated of those. In particular, deontic modals, as we will see, are associated with modal products (Section 5.1).

3.3. LINGUISTIC SUPPORT FOR CLAUSAL COMPLEMENTS AS PREDICATES OF ATTITUDINAL AND MODAL OBJECTS

In addition to the general philosophical considerations in support of clausal complements as predicates of the relevant attitudinal object, there is specific linguistic support for it, namely [1] the Substitution problem, [2] a systematic alternation across between simple attitude verbs and complex attitudinal predicates, and [3] the semantic behavior of special quantifiers and pronouns, of the sort *something* and *that*.

3.3.1. The Substitution Problem

Philosophers, for the most part, take it for granted that the Relational Analysis is a direct match of the syntactic structure of attitude reports of the sort *John thought that S*. There is a well-known problem, though, with taking clausal complements of attitude verbs to act as referential terms standing for propositions. This is the Problem of Substitution; that is, the invalidity of an inference such as from (11a) to (11b):²⁷

- (11) a. John thought that Mary was happy.
 b. ??? John thought the proposition that Mary was happy.

The present semantics of attitude reports avoids the Substitution Problem, since it does not treat clausal complements as referential terms, but rather as predicates of the attitudinal object associated with the implicit event argument of the verb. The clausal complement on that analysis does not serve to provide an argument of the relation expressed by the embedding verb, but serves to be predicated of an entity related to an implicit argument of the verb. In (11b), *the proposition that Mary was happy* could not enter the syntactic relation of clausal complementhood to the verb, but as a referential argument could only serve to provide an argument of the think-relation—but that is

²⁷ See, for example, Prior (1971), Bach (1997), and Moltmann (2003b, 2013a, chap. 4).

impossible because *think* does not take objects with respect to its complement position.

This semantics also permits a straightforward account of clausal modifiers of nouns such as in *John's thought that Mary is happy*. Here the *that*-clause will act as a predicate of the attitudinal object that is the (external) argument of *thought*, as in $\text{id}[\text{thought}(d, \text{John}) \ \& \ [\text{that Mary is happy}](d)]$. The standard view has to attribute to the *that*-clause either the status of an argument or an apposition, both of which have been shown to be syntactically implausible.²⁸

3.3.2. The Alternation Attitude Verb—Complex Attitudinal Predicate

There is also syntactic support for the semantic analysis of clausal complements of attitude verbs as predicates of attitudinal objects. Many languages display instead of simple attitude verbs complex-predicate constructions involving explicit reference to attitudinal objects. Complex-predicate constructions of this sort consist in a light verb (a verb almost devoid of lexical content), such as *have*, *give*, or *make*, and a nominal describing an attitudinal object. Thus, English displays the alternation *think that S—have the thought that S*, *believe that S—have the belief that S*, *desire that S—have the desire that S*, *claim that S—make the claim that S*, *decide that S—make the decision that S*, as well as *order—give the order*. In general, in the complex-predicate construction, the nominal is a nominal for a cognitive product rather than a cognitive act. By involving explicit reference to the attitudinal object as part of its compositional semantics, the complex-predicate construction displays the present semantics of attitude reports, in a way, overtly, as in the logical form in (12b) for (12a):

- (12) a. John has the thought [that Mary is happy].
 b. $\exists d(\text{have}(\text{John}, d) \ \& \ \text{thought}(d) \ \& \ [\text{that Mary is happy}](d))$

Here *the thought that Mary is happy* stands for a kind of attitudinal object, an entity that shares truth conditions and other relevant properties with the particular thoughts that are its instances (as will be discussed in Section 4).

Sometimes a language has only the complex-predicate construction and lacks a simple attitude verb. Thus, English has *have the impression*, with no simple corresponding verb, and German has *Angst haben* ‘have fear’, again lacking a corresponding simple verb.

There is also an alternation of modal verbs with complex predicates. In English, the verb *need* alternates with the complex predicate *have a need*, and a number of European languages have only the complex-predicate version, such as Italian (*avere bisogno*) and French (*avoir besoin*). Harves and Kayne (2012) argue that the English verb *need* is in fact the result of incorporating the copula *have* and the noun *need*. Kayne (2010) more generally pursues the view that all clausal

²⁸ See Moulton (2009) for discussion and an analysis that goes in a similar direction.

complement-taking verbs are derived from the complex-predicate construction, with the clausal complement being in fact a relative clause modifying the nominal.²⁹

The alternation of simple attitude or modal verbs with complex predicates gives plausibility to the semantic analysis of attitude reports proposed in this paper, since that sort of analysis would be needed anyway for the semantics of the complex-predicate construction.

4. Sharing of Contents and Kind of Attitudinal Objects

The main Fregean argument for propositions being mind-independent objects was the possibility of propositional contents being shared by different agents. If attitudinal objects take the place of propositions as the truth-bearing objects associated with propositional attitudes and propositional contents are mere features of attitudinal objects, the question will be how propositional contents can be shared. The notion of an attitudinal object allows for two answers, both of which are reflected in constructions of natural language.

First, the sharing of a propositional content may consist in two attitudinal objects being exactly similar (though not numerically identical), which is reported by the sentence below:

(13) a. John's belief is the same as Mary's.

(13) means that the content of John's belief is just the same as that of Mary's. Here *the same as* conveys, as usual, exact similarity among attitudinal objects, and as we have seen, attitudinal objects (of the same type) are exactly similar just in case they share the same content.

Second, the sharing of propositional contents may consist in *kinds* of attitudinal objects being shared, as reported in this sentence:

(13) b. John and Mary share the belief that S.

Kinds of attitudinal objects naturally form the referents of terms like *the thought that S*, *the claim that S*, or *the belief that S*, allowing for typical kind predicate such as *widespread* or *rare*.³⁰ Kinds of attitudinal objects are independent of a particular agent. But unlike propositions, they generally involve a particular force and a particular realization (illocutionary versus cognitive product, etc).

²⁹ Kayne (2010) does not explicitly say that complement clauses modify an underlying product noun; they may modify a silent noun such as *fact* instead. Kayne, though, would pursue that view that attitude verbs in general are derived from complex predicates consisting of a light verb and a product nominal (with the complement clause modifying the nominal).

³⁰ Terms for kinds of attitudinal objects are semantically on a par with bare mass nouns and plurals such *gold* or *tigers* when acting as kind terms (Moltmann 2003a, 2003b, 2013a, chaps. 1, 4).

Thus, the intention to leave the country is distinct from the hope to leave the country, and the claim that Mary is happy is distinct from the belief that Mary is happy.

Kinds of attitudinal objects share representational properties with their instances, again reflected in the applicability of truth- or satisfaction-related predicates:

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

Kinds of attitudinal objects may seem as problematic as abstract propositions with respect to their graspability and representational properties. However, the notion of a kind that is at stake is one that is strictly dependent on the particular attitudinal object that makes up its instances, in several respects. First, kinds of attitudinal objects are formed on the basis of similarity relations among particular products. Thus, “the belief that *S*” has as its instances a maximal class of exactly similar belief products. Moreover, the properties of kinds of cognitive products are generally inherited from their instances (except for properties measuring the distribution of instances such as “being widespread”). “The belief that *S*” is true in virtue of all attitudinal objects of the form “*d*’s belief that *S*” being true, for some individual *d*. Kinds, of course, inherit not only representational properties from their instances, but also graspability.³¹

I will not go into a discussion of how kinds are to be conceived, whether as entities of their own or as mere pluralities of (possible) instances.³² What is important in the present context is only that the instances of a kind of cognitive product are similar, based on a shared content and force, and that kinds of cognitive products have content-related properties (including truth or satisfaction conditions) in virtue of their instances having those properties.

5. Attitudinal Objects and the Semantics of Special Quantifiers and Pronouns

Attitudinal objects and kinds of them play an important role in the semantics of quantifiers that standardly have been taken to stand for propositions, such as *something*, *everything*, the pronoun *that*, and relative clauses with *what* in contexts

³¹ There is an issue as to whether the notion of a kind should permit non-instantiated kinds. There is an intuition that it should not, namely the understanding of “exist” with kinds. The hope that it would rain soon no longer exists at a time *t* just in case for no individual *d*, *d*’s hope that it would soon rain exists at *t*. However, for the purpose of reports about propositional contents that have not been entertained, kinds with merely possible instances may have to be admitted.

³² For the (nonstandard) view that kinds in that sense are not single entities, but pluralities (as many), see Moltmann (2013a, chap. 1).

in which they take the place of *that*-clauses³³ Quantifiers or pronouns of this class appear in the place of clausal complements in the valid inferences below:

- (15) a. John thinks that Mary is happy.
John thinks something.
- b. John thinks what Mary thinks.
Mary thinks that it is raining.
John thinks that it is raining.

In previous work (Moltmann 2003a, 2003b, 2013a, chap. 4), I have argued that such quantifiers and pronouns are not ordinary quantifiers and pronouns but rather are *nominalizing quantifiers*, entities that nominalizations of the relevant verb would describe, namely attitudinal objects or kinds of them. In (15a, b), this will be the product nominalization of *think*, namely *thought*, as in *John's thought that S* or in *the thought that S*. Given the present semantics of attitude reports, this means that (16a) has either the logical form in (16b) or the one in (16c):³⁴

- (16) a. John thinks something.
b. $\exists e' \exists e (\text{think}(e, \text{John}) \ \& \ \text{nice}(e') \ \& \ e' = \text{prod}(e))$
c. $\exists e' \exists e (\text{think}(e, \text{John}) \ \& \ \text{nice}(e') \ \& \ e' = \text{prod-kind}(e))$

In (16c), the function *prod-kind* maps an event *e* onto the kind of products exactly similar to the product of *e*. Reports of shared contents, such as the premise in (16b) can only involve product kinds, as below:

- (17) $\exists e \exists e' \exists e'' (\text{think}(e, \text{John}) \ \& \ e' = \text{prod-kind}(e) \ \& \ \text{think}(e'', \text{Mary}) \ \& \ e' = \text{prod-kind}(e''))$

The special pronoun *that*, when taking the place of clausal complements of attitude verbs, will also stand for an attitudinal object or a kind of attitudinal object—the latter, for example, in the context below:

- (18) John thought that it was raining. Mary thought *that* too.

There are two sorts of semantics evidence that special quantifiers and pronouns stand for attitudinal objects (Moltmann 2003a, 2003b). First, restrictions of special

³³ See, for example, Schiffer (1987, 2003).

³⁴ In previous work (Moltmann 2003a, 2003b, 2013a), the Nominalization Theory of special quantifiers in the complement position of attitude verbs was linked to the neo-Russellian Multiple Relations Theory (see Appendix 2). But clearly the Nominalization Theory can be maintained independently of the latter, as (16) and (17) show.

quantifiers can generally be understood as predicates of attitudinal objects, not propositions. These are examples:

- (19) a. John said something nice, namely that he wants to help.
 b. John thought something daring.

What is said to be nice in (19a) is not the proposition that John wants to help, but rather the claim or remark that John wants to help—that is, the attitudinal object. Similarly, in (19b), what is said to be daring is not a proposition, but a thought.

Second, there are restrictions on the reporting of the sharing of the contents of different attitudes that indicate that it is kinds of attitudinal objects rather than pure propositions that are said to be shared. For example, (20a) and (21a) are hardly acceptable under ordinary circumstances as reports of the situations in (20b) and (21b):

- (20) a. ??? John thought what Bill claimed, that Mary was ill.
 b. John thought that Mary was ill and Bill claimed that Mary was ill.
- (21) a. ??? John demanded what Bill claimed, that Mary should leave.
 b. John demanded that Mary should leave, and Bill claimed that Mary should leave.

The reason is that a thought is not a claim and a demand is not an assertion. On the nominalization theory of special quantifiers, (20a) and (21a) will report the sharing of an attitudinal object, but there are no attitudinal objects that could be shared among the two attitudes that are described.

6. Deontic Modals

The semantics of clausal complements of attitude verbs as predicates of attitudinal objects carries over to modal sentences. In this paper I will focus on deontic modals because it is particularly intuitive that deontic modals involve the notion of an enduring modal product, the enduring product that may result from an illocutionary or cognitive act.

Deontic modals bear an intimate connection to illocutionary and attitudinal verbs describing directive products. For example, deontic modals may anaphorically relate to the illocutionary or cognitive product introduced by an illocutionary or attitudinal verb, as in the inferences from the a-sentences to the b-sentences below, which are valid (in (22a), provided John is in a suitable position of authority):

- (22) a. John asked Bill to leave the room.
 b. Bill must leave the room.

- (23) a. John promised to come.
 b. John must come.

(22a) and (23a) involve illocutionary directive products, and (22b) and (23b) the associated enduring modal products, the obligations.

Deontic modals may also involve permissions as modal products, relating to a permissive illocutionary product, as below:

- (24) a. John allowed Bill to leave.
 b. Bill may leave.

In these examples, deontic modals involve modal products associated with the illocutionary product produced by a directive or permissive illocutionary act.³⁵ The modal products share the world-to-word/mind direction of fit as well as their satisfiers with the illocutionary products. The modal products are not identical to the illocutionary products, though. For one thing, modal products may endure beyond the act that established them, unlike illocutionary products. The difference manifests itself in that in (22)–(24) the modal verbs are in the present tense, whereas the antecedent illocutionary or attitudinal verbs are in the past tense. Modal products share their satisfaction conditions with the illocutionary products with which they are associated, but they do not share the life span and the action-related aspects of the latter.

Closely related to the quasi-anaphoric use of modal verbs, as in (22)–(24), is a performative use of modal verbs. On the performative use, modals appear to serve the same purpose as the performative use of an illocutionary verb, given the right circumstances (and as such they pose a considerable challenge for the standard semantics of modals as quantifiers ranging over worlds). Thus the modals in (25b) and (26b) can have a performative use, just like the illocutionary verbs in (25a) and (26a), provided the speaker is in the right position of authority to establish an obligation or a permission:

- (25) a. I hereby ask you to leave.
 b. You must leave.
- (26) a. I allow you to leave.
 b. You may leave.

Whereas the performative uses of the sentences in (25a) and (26a) establish the products of the illocutionary acts that are explicitly being performed, the

³⁵The modal verbs *must* and *may* do not come with a nominalization describing products, which may cast some doubt on the presence of modal products. This does not generally hold, though. *Need*, which is also a modal verb, does have a nominalization *need*. Moreover, the modal adjectives *possible* and *necessary* come with the nominalizations *necessity* and *possibility*.

performative uses of the modal sentences establish modal products, which would be associated with the relevant illocutionary products.

Deontic modals may also involve modal products of the sort of laws, rules, or conditions of various sorts that need not be associated with the directive products associated with illocutionary verbs.

In all cases, the modal itself underspecifies the nature of the product. *Must* and *may*, on the deontic reading, just specify that the modal product involves a world-to-world direction of fit with actions acting as satisfiers. The purpose of the complement or prejacent of the modal then is to characterize the satisfiers.

Turning now to the semantics of modal sentences, I will take the Davidsonian implicit arguments of deontic modals to be the modal products themselves, rather than events. In order to ensure a parallel with the semantics of attitude verbs, the product function *prod* will apply to the Davidsonian implicit argument of modals as well, simply mapping a modal product onto itself. The logical form of (27a), with the clausal-complement-taking modal verb *need*, will then be as in (27b):

- (27) a. Bill needs to leave.
 b. $\exists d(\text{need}(d, \text{Bill}) \ \& \ [\text{Bill to leave}](\text{prod}(d)))$

(28a), with a deontic modal of permission, will be assigned the very same logical form as (27a), as in (28b):

- (28) a. Bill is allowed to leave.
 b. $\exists d(\text{is allowed to}(d, \text{Bill}) \ \& \ [\text{Bill to leave}](\text{prod}(d)))$

Earlier, the semantic value of a sentence *S* was given as the property of objects to have as exact satisfiers truthmakers of *S*, as repeated below:

- (7) $[S] = \lambda d[\forall s(s \Vdash d \rightarrow s \Vdash S)]$

This cannot be adequate, though, since then modals of necessity and modals of possibility would not be distinguished semantically. Given (7), (27a) would involve a modal object with the very same satisfaction conditions as (28a). But the permission for Bill to leave is not an obligation for Bill to leave. What distinguishes the permission from the obligation? Permissions allow certain actions, those they permit. Obligations allow for certain actions, those that comply with them, but they also exclude certain actions, those violating them. The permission for Bill to leave allows for actions of Bill leaving, but does not exclude any other actions. By contrast, the obligation for Bill to leave allows for actions of Bill's leaving and excludes actions of Bill's staying. That is, permissions have only satisfiers, whereas obligations have both satisfiers and violators. Also, illocutionary products can be distinguished in terms of having violators or not. An offer or an invitation has only satisfiers, but no violators; a request or an order has both satisfiers and violators.

The notion of violation as a relation between actions and modal or attitudinal objects matches Fine's (2012, 2014, forthcoming) notion of exact falsmaking, as a

relation between a situation or action and a sentence. Fine uses the notion of exact falsemaking for the truthmaking conditions of negative sentences, as below:

$$(29) s \Vdash \textit{not} S \text{ iff } s \nVdash S.$$

That is, a situation s is an exact truthmaker of a sentence *not* S just in case s is entirely relevant for the falsehood of S . The relation \nVdash corresponds to the notion of violation as a relation between sentences and modal or attitudinal objects. With this notion, the meaning of sentences can now be reformulated as below, where \nVdash is the relation of (inexact) falsemaking:

$$(30) [S] = \lambda d[\forall s(s \Vdash d \rightarrow s \Vdash S) \ \& \ \forall s(s \nVdash d \rightarrow s \nVdash S)]$$

That is, a sentence S expresses the property that holds of a modal or attitudinal object d just in case every exact satisfier of d is a (possibly inexact) truthmaker of S and every exact violator of d is a (possibly inexact) falsifier of S . In the case of permissions, of course, the second condition is vacuously fulfilled.

On this account, modals of necessity and modals of possibility lead to exactly the same logical form, but they involve different sorts of modal objects, with different satisfaction and violation conditions. This presents a very different approach to the semantics of modal sentences from the standard one based on quantification over possible worlds, and it sets out the challenge to account for the various logical relations among modal sentences that standard modal logic has dealt with, a challenge this paper will not aim to address, but that must await another occasion.

The semantics of sentences with a performative use of a modal will be parallel to the semantics of sentences with a performative use of an illocutionary verb. This first requires some remarks, though, about the semantics of independent sentences. Independent sentences can be assigned the very same property of attitudinal and modal objects specifying their satisfaction conditions in (30). With the literal use of a sentence S , the property S expresses is meant to characterize the illocutionary product the speaker intends to produce with his utterance (and thereby the performance of the relevant illocutionary act). The property given in (30) covers both declarative and imperative sentences, though the satisfaction relation relating satisfiers to assertions is different from that relating satisfiers to the illocutionary product associated with an imperative. Assertions involve a word-world direction of fit, whereas the illocutionary products associated with imperatives, requests, or permissions involve a world-word direction of fit.

Sentences with a performative use of an illocutionary verb, such as (25a) and (26a), will then express properties of illocutionary products, as indicated below:

$$(31) \text{ a. } \lambda d[\exists e(\text{ask}(e, \text{speaker}) \ \& \ d = \text{prod}(e) \ \& \ [(\text{addressee}) \textit{leave}](d))] \\ \text{ b. } \lambda d[\exists e(\text{allow}(e, \text{speaker}) \ \& \ d = \text{prod}(e) \ \& \\ [(\text{addressee}) \textit{leave}](d))]$$

That is, a performative use of an illocutionary verb leads to the sentence expressing a property of illocutionary products meant to characterize the product produced by uttering the sentence (and thereby performing an illocutionary act).

Similarly, sentences with a performative use of a modal, such as (25b) and (26b), will express properties of modal products, as below:

- (32) a. $\lambda d[\text{must}(d) \ \& \ [(\text{addressee}) \ \textit{leave}](\text{prod}(d))]$
 b. $\lambda d[\text{may}(d) \ \& \ [(\text{addressee}) \ \textit{leave}](\text{prod}(d))]$

That is, a performative use of modals leads to the sentence expressing a property of modal products meant to characterize the modal product produced by uttering the sentence (and thereby performing an illocutionary act).

If deontic modals are associated with modal objects, it is expected that other modals are as well. Thus, ability modals should be associated with modal objects that are abilities (and have manifestations of the ability as satisfiers), epistemic modals should have epistemic products of some sort as associated modal objects, etc. To develop the account for other modals in detail has to await a different occasion, though.³⁶ The main purpose of this section was to show that treating sentences as predicates opens up a new perspective not only for the semantics of attitude reports, but also for modal sentences. In both cases, the complement clause (or the prejacent of a modal auxiliary) specifies the satisfiers and possibly violators of the associated modal or attitudinal object.

7. Conclusion

In this paper, I have outlined an account according to which sentences act semantically as predicates of attitudinal and modal objects. Attitudinal objects include the important category of cognitive products (besides) mental states. Cognitive products, I have argued, are to be understood in terms of the more general distinction between certain actions and the artifacts they may produce, on a par with laws and works of art and the acts that establish or create them. This means that accepting cognitive products as entities of their own, distinct from actions and abstract propositions, should go along with a more general recognition of (physically realized or abstract) artifacts as an ontological category of their own, consisting of mind-dependent entities distinct from mental events and abstract objects. Cognitive products are as concrete as the corresponding mental events or speech acts. The latter, however, are unsuitable for the roles that propositions were supposed to play, namely as truth-bearers and the bearers of the contents of attitudes. Being cognitive entities with essential truth or satisfaction conditions, cognitive products, and more generally attitudinal objects, are able to play roles similar to that of propositions, but without

³⁶For more on the semantics of modals as predicates of modal, objects see Moltmann (2015a).

leading to the conceptual problems that arise when propositions are identified with formal abstract objects.

Cognitive products play the role of products rather than objects of mental acts such as thinking and judging. This is reflected in a different semantic analysis of attitude reports than the standard Relational Analysis, namely an analysis on which clausal complements of attitude verbs do not provide arguments of a relation expressed by the attitude verb, but rather act as predicates of either the product of the event argument of the verb or of its mental state argument. An important feature of this account is its neutrality as to how cognitive or illocutionary products or mental states are to be conceived. Clausal complements of attitude verbs only give the satisfaction conditions of the relevant attitudinal objects; they do not have semantic values that, as such, act as the objects or contents of attitudes.

Appendix 1: A Distinction between Physical Actions and Physical Products?

If the distinction between the cognitive and illocutionary products and actions that set them up falls under the more general distinction between artifacts and the actions that create them, then the distinction should not extend to a distinction between physical actions and physical products. Twardowski's (1912) own view, however, was that the action-product distinction includes the distinction between physical actions and their products, such as that between an action of walking and a walk, an act of jumping and a jump, and the act of screaming and the scream. Certainly, a walk cannot be considered an artifact produced by an act of walking. Similarly, a jump can hardly be considered an artifact resulting from a jumping. (An exception may be a jump performed at a competitive sports event, in which case the jump is meant to fulfill or set certain standards or be the object of certain standards of evaluation. This is not so for a jump as the byproduct of an act of escaping. The same holds for an explicitly intended scream as opposed to a scream that is the byproduct of an event of shock or agitation.) Linguistically, though, the same sorts of nominalizations are used for physical products as for cognitive and illocutionary products: *jump*, *scream*, and *walk* are morphologically on a par with *belief*, *claim*, and *hope*. This is what may have led Twardowski to embracing a physical action-product distinction.

Nominalizations like *walk*, *jump*, *scream*, *belief*, *claim*, and *hope* differ from gerunds in one common respect, and that is that they are count nouns rather than mass nouns. Count nouns typically apply to entities viewed as integrated wholes, whereas mass nouns apply to entities not viewed as integrated wholes (Moltmann 1997). The count character of *walk*, *jump*, and *scream* manifests itself in that such nouns describe events that may have "gestalt" properties and are viewed as wholes, which is not the case for gerunds. This difference is reflected in the way evaluative properties apply. If Mary's dance was unusual, it may be so just because of the very beginning and the very end. But if Mary's dancing was unusual, then unusualness pertains to Mary's dancing throughout the time it evolves. Similarly, *amazing*, when applying to "John's scream,"

naturally evaluates John's scream as a whole, whereas when applying to "John's screaming," it evaluates an activity throughout the time it goes on. Cognitive and illocutionary products are generally described by means of count nouns (which means they are generally viewed as integrated wholes; for example, in view of the unity of their representational content), whereas the corresponding actions or states are described by means of mass nouns when using gerunds (though not when using action and state sortals, as in *speech act* or *mental state*). But the mass-count distinction is a more general distinction and may have given rise to the appearance of a distinction between physical actions and physical products.

Appendix 2: The Neo-Russellian Analysis of Attitude Reports and the Trope-Theoretic Analysis of Cognitive Products

In previous work (Moltmann 2013a, chap. 4), I had pursued a trope-based account of attitudinal objects within the neo-Russellian Multiple Relations Analysis of attitude reports (Russell 1912, 1913, 1918). This account had treated cognitive and illocutionary product and mental states exactly alike ontologically, and it involved a very different semantics of attitude reports than the one on which clausal complements are treated as predicates of the product of the event argument of the verb. This appendix will present some difficulties both for the neo-Russellian analysis and the trope-based account of attitudinal objects.

According to the neo-Russellian analysis, (1a) has the logical form in (1b):

- (1) a. John thinks that Mary is happy.
 b. THINK(John; [*happy*], Mary)

Here THINK is a multigrade predicate in its second position, taking the relevant propositional constituents as arguments in that position—that is, the property of being happy and Mary.³⁷

Within the multigrade argument place, there will be different positions for different semantic roles, in particular one distinguished position for a property (or relation), meant to be predicated of the other arguments, as well as further argument positions matching the argument positions of the property (or relation). A given place in the multigrade position of an attitude verb may itself be multigrade. The structure of the multigrade position matches a structured proposition, on a standard conception of a structured proposition, though now viewed as an ordered plurality of propositional constituents (in the sense of a plurality as "many," not as "one," cf. Taylor and Hazen 1992).

³⁷ For the notion of a multigrade predicate, see Oliver and Smiley (2004). Russell actually took attitude verbs to specify different relations in different syntactic contexts. Making use of multigrade predicates was not an option available to Russell; see Griffin (1985).

The Multiple Relations Analysis of attitude reports (though not as such intended by Russell himself) can be considered a formal match for the view that attitude verbs describe acts of cognitive predication, relating an agent to the propositional constituents so as to ensure a unified and truth-directed propositional content (Jubien 2001; Moltmann 2003b, 2013a, chap. 4; Soames 2010). On the analysis in (1b), the attitude verb describes an attitude-specific act of predication, such as predication in the thinking way, in the judging way, the claiming way, and so on. As on act-based views in general that take acts of predication to be constitutive of propositional content, the predicational act should apply only to the meaning of the highest predicate or operator in the embedded sentence. And as on act-based views in general that take acts of predication to be constitutive of propositional content, this means that embedded sentences that are not of the simple subject-predicate sort pose a significant challenge. Thus, the belief-predicational act described by *believes* targets negation only in *John believes that Mary did not win the race*, and disjunction only in *John believes that Mary won the race or Bill did*, since neither sentence implies that John believes that Mary won the race. This raises the question, What are those operators or connectives predicated of? An obvious answer would be that they are predicated of attitudinal objects of the most general sort, such as “thoughts” or mere “entertainings.” However, this is not easy to reconcile with the apparent syntactic structure of the relevant sentences, and it leads to difficulties for attitudes attributed to animals and small children (Soames 2015).

Another problematic feature for the neo-Russellian analysis is a commitment to predicates standing for properties. Properties expressed by predicates, given the neo-Russellian analysis, will have to be given the status of objects, since they act as arguments of the multigrade attitudinal relation. Clearly, there are reasons to avoid such a commitment, which is in fact incompatible with the overall trope-nominalist ontology pursued in Moltmann (2013a).

The neo-Russellian analysis lends itself to a particular way of conceiving of the distinction between actions and their cognitive products, based on the notion of a *trope*, or the notion of a particularized property.³⁸ On the trope-theoretic account in Moltmann (2013a, chap. 4), both actions and products are conceived of as tropes, but as complex tropes of different sorts. This account differs fundamentally from the one pursued in this paper, in that it considers the relation between actions and products not a causal relation between an action and the (abstract) artifact it produces, but rather one of “alternative constitution”. That is, on the trope-theoretic account, actions and products are based on the same goings-on in the world, but individuated differently so as to bear different sorts of properties.³⁹

³⁸ Williams (1953) is the classic modern reference on tropes.

³⁹ The trope-theoretic account would also apply to the distinction between states as described by gerunds (believing, intending, desiring) and states as described by nominalizations of the sort *belief*, *intention*, and *desire*. This may be an advantage if one takes that distinction to be an ontologically substantial one.

One important characteristic of tropes is that they depend for their existence and identity on their bearer. Two tropes that have different bearers cannot be identical, but they can be similar if they instantiate the same property. Tropes that are instances of the same natural property are exactly similar (“the same”). The redness of the tomato is “the same as” the redness of the apple if the very same shade of redness is instantiated in the tomato and in the apple. Besides monadic tropes, there are relational tropes, which are the particular manifestations of an n -place relation in n objects. A trope like “Socrates’ wisdom” is a first-level trope: it has as its bearer an individual. A second-level trope is, for example, “the greatness of Socrates’ wisdom,” which has as its bearer a (first-level) trope.

On the trope-theoretic account of the action-product distinction, both products such as “John’s thought that S ” and actions such as “John’s thinking that S ” are viewed as tropes, though as different kinds of complex tropes. Events (including actions) are, on that account, instantiations of temporal transition relations among tropes, or relational tropes consisting in the instantiation in times of temporal precedence relations among lower-level tropes. A very simple example is an event that consists in the transition from $P(a)$ to $Q(a)$ for some individual a and contrary properties P and Q . This event would be the instantiation in times t and t' of the relation $\lambda t t'[P(a) \ \& \ t < t' \ \& \ Q'(a)]$; that is, the relation that holds of times t and t' if P holds of a at t and Q holds of a at t' and t (immediately) precedes t' . Temporal transitions conceived as tropes in this way seem to have just the sorts of properties that events have. For example, for two transitions to be exactly similar, the properties and individuals involved need to be the same, but the times (the bearers of the tropes) do not. Moreover, since a trope ontologically depends on its bearer, the time of occurrence will be essential to an event conceived as a transition.

Attitudinal objects on the trope-theoretic account are instances of attitudinal or illocutionary multigrade relations, but in the sense of *quasi-relational tropes*. Quasi-relational tropes are monadic tropes instantiating object-dependent properties based on relations. Whereas “the relation between John and Bill” is a relational trope, “John’s relatedness to Bill” is a quasi-relational trope. As quasi-relational tropes, attitudinal objects were considered instantiations in an agent of complex properties of the sort $\lambda x[\text{think}(x; [\text{happy}], \text{Mary})]$. The attitudinal object John’s thought that Mary is happy will then take the form $f(\text{John}, \lambda x[\text{claim}(x; C_1, \dots, C_n)])$, where f is the function mapping an agent and a property to the instantiation of the property in the agent at the relevant time. Conceiving of attitudinal objects as quasi-relational tropes appears to explain their distinctive characteristics. Being quasi-relational tropes, two attitudinal objects are exactly similar or “the same” just in case they involve the same attitudinal mode and the same propositional constituents. They may differ in the agents involved (the bearers of the quasi-relational tropes). As instances of cognitive predication relations, attitudinal objects will be truth- (or satisfaction-)directed (since this is what predication aims for). Finally, the time of occurrence may be only accidental to an attitudinal object. An attitudinal object as the instantiation of an attitudinal property need not involve the time of that instantiation as an essential component. In the case of

events, by contrast, times are the bearers of the transition tropes themselves and thus essential.⁴⁰

The trope-theoretic account, even though it appears to explain the properties that distinguish actions and their cognitive products, faces a range of difficulties.

First, by considering events to be features of times and attitudinal objects to be features of agents, the account carries a rather counterintuitive element, particularly with respect to the spatial location of events and attitudinal objects. Events are generally spatially located, but it is not clear how that can be so if events are features of times. The spatial location of thoughts and beliefs is less obvious, but clearly screams can hardly be viewed as features of agents, sharing their location. Also, the notion of a quasi-relational trope is not easy to make sense of; in fact, even the notion of a relational trope is a controversial one.⁴¹

A second issue for the trope-theoretic account is its lack of generality if cognitive and illocutionary products are considered ontologically on a par with artifacts in general. Materially realized artifacts certainly cannot be viewed as features of agents. Cognitive products, recall, may themselves have a material realization (such as the physical products of illocutionary acts of writing). This also holds for auditory psychophysical products such as a shout, a claim, or a whisper. The trope-theoretic account of attitudinal objects appears inapplicable to physically realized cognitive products.

Another serious problem for the trope-theoretic account is that it takes all attitudinal objects to be directly constituted by acts of predication. This raises difficulties for sentences that are not of the subject-predicate sort, and for implicit attitudes and mental states. There is no flexibility in the trope-theoretic account to accommodate these.

The account pursued in this paper contrasts with the trope-theoretic account, in that it is designed toward the generality of the action-product distinction. It does not require all products to be constituted by acts of predication and propositional constituents. In particular, the semantics is neutral as to how particular types of cognitive, illocutionary, and modal products are to be conceived ontologically. Sentences just serve to characterize them in terms of their truthmakers or satisfiers. It leaves the nature of cognitive products a matter for the philosophy of mind rather than making it a concern for semantic theory.

That said, the semantics ultimately will have to be complemented by a formal ontological theory of abstract and physically realized artifacts that will account for their distinctive characteristics.

⁴⁰ This account also appears to shed light on why products, but not actions, are treated as wholes (see Appendix 1). There is no problem for an agent (of a product) to instantiate a time-related property involving an interval as a whole, but properties involving the interval as a whole can hardly play a role in instances of temporal transition properties in subsequent times.

⁴¹ See Campbell (1990).

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