Attitudinal and modal objects: a view from the syntax-semantics interface

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1 Introduction

Semanticists and philosophers have discovered a great deal about the ontology of natural language—how we refer to and quantify over entities like ordinary individuals, eventualities, degrees, and their related kinds and pluralities. This has informed theorizing at the syntax-semantic interface—about quantificational structures, degree constructions, argument structure, and much else. Theories for 'propositional' pieces of language, however, have not had the same impact on practitioners working at the syntax-semantics interface. This is particularly true when it comes to theorizing about the argument structure of predicates that select propositional arguments. In this area, there has been an intuition, repeated in various ways for decades, that propositional arguments can describe entities, like individual-type arguments. For instance, Chierchia (1984) suggested that argument clauses denote the individual correlates of propositions. There's a long-tradition, too, of postulating syntactically nominal properties for clausal arguments. For instance, early syntactic analyses added a nominal shell above argument clauses (Rosenbaum 1967) and to this day there are proposals that complementizers are like determiners in 'turning' a sentence into an argument (Davidson 1968, Szabolcsi 1987, Abney 1987, Kiparsky 1995, Roberts and Roussou 2003, Manzini and Savoia 2003, 2011).

The target paper by Moltmann, and the larger research program it represents, offers a fresh and exciting way to think about propositions in terms of entities. It does so by adding to the ontology attitudinal and modal objects, things like claims, hopes, and beliefs and promises, obligations and needs. These entities are front and centre in the semantics of attitude ascriptions and modal sentences in this theory. Moltmann spells out a semantics for the language that describes these objects using a truthmaker semantics as developed by Fine, one that is designed to overcome shortcomings of possible worlds accounts of modals and propositional attitudes. One of Moltmann's sub-proposals is that clausal arguments (like

English finite clauses introduced by *that*) are merely properties of attitudinal (and modal) objects. In this respect, complementizers are *not* like determiners: rather than turning sentential elements into saturating arguments, it makes them predicates. The *predicate view of that-clauses* is appealing, since it potentially offers a way to understand certain properties of complex noun phrases (which I have documented in Moulton 2009, 2015, but see, e.g., Hankamer and Mikkelsen 2020 for a rebuttal). In this brief commentary, I will start by outlining some lingering worries about the predicate view of *that*-clauses; perhaps object based truthmaker semantics can offer some fresh light on these issues. I will also touch on Moltmann's treatment of response stance predicates and finally end with some open-ended questions as to whether modeling the difference between necessity and possibility in the semantics of modal objects might be able to handle phenomena like free choice items.

2 The dual life of attitudinal objects

Moltmann documents how attitudinal objects have both concrete properties and more abstract, content-based ones. The primary content-related property is that they can be true or false: the attitudinal objects described by the nouns *claim* and *judgment* can be said to be true or false (1a), but their associated states and actions cannot, as suggested by the intuitions about the English sentences in (1b) (TSNL, p.18, (20)).

(1) a. The claim / belief / judgment is true.
b. ??The speech act / belief state / act of judging is true.

Like concrete entities, on the other hand, attitudinal objects participate in causal relations, albeit content-based ones, For instance, in (2a) it is the content of Mary's claim that causes excitement. This is not the case for speech acts themselves: (2b) cannot describe content-based causation where it is *what* Mary says that causes excitement (TSNL, p.16).

(2) a. Mary's claim caused excitement.
b. ?Mary's speech act caused excitement.

Attitudinal objects can be the objects of perception, too: remarks and claims can be heard. It seems reasonable to add to these concrete properties those in (3): speech-related objects such as claims might have properties related to their volume (3a); other attitudinal objects might have properties describing their provenance or character (3b,c); and there is a host of other properties that are true of attitudinal objects but not of their content (3d).

(3) a. That claim was loud.
b. That myth is Celtic in origin.
c. That idea is so very Chomskyan.
d. That remark was mean-spirited/being spread/out-of-touch/inappropriate...

We can combine these modifiers with content clauses (complement *that*-clauses) as shown in the examples in (4)–(6). The (a) examples add the concrete-property modifier as an adjectival adjunct to the noun and the content modifier as a clausal dependent; the (b) examples have both as clausal dependents—the concrete-property given by a relative clause. All are successful modifications, and I do not have the intuition that we are stretching the head nouns to be used in two different ways.

(4) a. Pop's loud claim that bike lanes hurt business
b. Pop's claim, which was loud, that bike lanes hurt business

(5) a. the American myth that hard work gets you ahead in life
b. the myth, which is very American, that hard work gets you ahead in life

(6) a. the Chomsykan idea that language did not arise for the purposes of communication
b. the idea that is very Chomskyan that language did not arise for the purposes of communication

Following Moltmann (p.24, (27b)) we can assign to (4a) the following logical form, where the predicate *that*-clause restricts the attitudinal object *d*, a claim by Pop, as does *loud*.

(7) ιd[claim(d,Pop) & [that bike lanes hurt business](d) & [loud](d)]

Attitudinal objects have something of a double life, in that we can describe their concrete properties alongside their content-based properties, as co-modifiers of one and the same noun. I take this to be a good result for Moltmann's characterization of attitudinal objects. A question arises, though, for *that*-clauses used without a noun. (I should add that the following considerations also hold for the possible-worlds version of the predicate analysis of *that*-clauses in Kratzer (2006) and Moulton (2009, 2015).) Since attitudinal objects can be attributively modified by both concrete and content-based adjectives, and since *that*-clauses can be subjects predicated of content-based adjectives as in (8b), then we might expect that *that*-clauses could also be subjects predicated of *loud* as in (8a). This is not the case,

however. Instead, a head noun is required as shown by the control sentences in (8c,d).

(8) a. #That bike lanes hurt business was loud.
b. That bike lanes hurt business was incorrect.
c. The (incorrect) claim that bike lanes hurt business was loud.
d. The (loud) claim that bike lanes hurt business was incorrect.

Moltmann gives to subject clauses the logical form in (9) (p.31, (47)), for a relevant contextually given attitudinal object *d*.

(9) incorrect(d) & [that bike lanes hurt business](d)

Since adjectives like *loud* can be predicated of attitudinal objects too (and in predicate position (8c)), the logical form in (10a) seems legitimate for (8a) just as (10b) is how we would translate the grammatical (8c).

(10) a. loud(d) & [that bike lanes hurt business](d)
b. loud(d) & [that bike lanes hurt business](d) & claim(d)

The intuition here is that the bare clausal subject lacks the property description that *claim* provides for the attitudinal object—that this is an attitudinal object that has volume-related properties. I am not sure if that is the real problem, though. A deictic propositional proform like *that* can be predicated of concrete properties as well as content-related properties. Imagine the context below. I can lean over to you and say (11). The proform *that* can point to something that is both loud and incorrect.

(11) [context: *Pop loudly utters: "Bike lanes hurt business"*]
That was loud and totally incorrect.

Now let's give a clausal subject the same contextual support as in (12), that is a salient referent in the context that is loud. (The clausal subject, for me, here requires more than one attitudinal object in the context—like, why repeat the content if it's already a unique claim—hence the slightly more complex context.)

(12) [context: *Pop loudly utters: "Bike lanes hurt business" and then quietly "There will be fewer cars!"*]

a. That bike lanes hurt business was incorrect. That there will be fewer cars, though, was true.[1]
b. #That bike lanes hurt business was loud. That there will be fewer cars, though, was quiet.

One possibility for the above pattern is that the proform *that* is being used in two ways—in one referring to the illocutionary act (which is loud) and in the other to the product of that act (see Moltmann's discussion surrounding Twardowski (1911)). In Moulton (2020) I tried to argue, using data from Spanish primarily, that *that*-clauses do **not** all by themselves describe attitudinal objects, but rather there must be a content noun to introduce this (which is quite the opposite of the predicate view of *that*-clauses). In some languages this noun can be null or delivered by a nominalizing morpheme with a more flexible semantics (see Bogal-Allbritten and Moulton 2017 on Korean and Navajo).

A boring explanation for the pattern is that *loud* simply does not syntactically select (Grimshaw 1979) for the morphosyntactic category associated with *that*-clauses (complementizer phrases, CPs) and must only combine with nouns. (It is easily verified that propositional proforms as in (11) are indeed nominal, not clausal, proforms (see Moulton 2015, Elliott 2017 for discussion)). But it is not clear that even that would explain things, since in the predicate approach to *that*-clauses there still might be an attitudinal object argument slot, although Moltmann is not explicit about this. For sentences where a noun or special quantifier serves as object, e.g. *I believed that claim/something*, it seems to me the verb does call for a semantic and syntactic attitudinal object argument. Or can *that*-clauses combine merely with properties of eventualities? Various options have been tried (see Kratzer 2006, Moulton 2015, Elliott 2017). Moltmann stresses that attitudinal objects should not be identified with their associated eventualities, as we already saw in (1). There is, however, a trend in the literature for using the eventuality argument of attitude verbs as the content-bearing argument. The clausal complement, instead of being a predicate of attitudinal objects, is a predicate of content-bearing eventualities on these accounts. This has been pursued by a number of authors for a range of phenomena, including embedded modals (Hacquard 2005), verbs of manner of speaking (Kratzer 2016), ECM complements (Moulton 2009, Chapter 4), complementizers derived from verbs of saying (Özyıldız 2019, Bondarenko 2019, Demirok, Özyıldız, and Öztürk 2019). Elliott (2017), building on Pietroski (2000), argues that in one reading of *explain*-reports the clausal complement specifies the content

[1]There is an interesting factor of tense here: these would be better in present tense, presumably because while the illocutionary act is past, its product, the attitudinal object, is not. I used past here though to make it comparable to the case in (b), where past is used because the concrete property is only true in the past: (11) can't be replaced with *#That is loud and totally incorrect.*

of the explain eventuality. This kind of analysis might also be suited to verbs like *complain*, which do not select for nominal complements, even Moltmann's special quantifiers (13a), but do combine with *that*-clauses (13b).

(13) a. *Pop complained something.
b. Pop complained that the bike lanes hurt his business.

It is not clear to me whether Moltmann's observations put these analyses in jeopardy. One possibility is that the conjunct [att-object(e)] that Moltmann gives in the logical forms of attitude reports could in fact be provided by these complementizers. This would make complementizers proposed by the above authors more like theta-role predicates (e.g. the little *v*s that introduce agents and applicative arguments). Would this predict that an attitudinal object, distinct from the attitude eventuality, is introduced in sentences like (13) and those cases where an event-based analysis has been proposed? Certainly the complement in (13) can support propositional anaphora. This calls for more detailed study of the languages and constructions in the works cited above through the lens of attitudinal objects.

3 Response stance verbs

Moltmann argues that the introduction of attitudinal objects offers an analysis of response stance verbs (Cattell 1978, Hegarty 1992). Response stance predicates, like *agree* and *reject*, require that their propositional complement be familiar, or given.

(14) a. John confirmed that it was raining.
b. John agreed to surrender.

Moltmann suggests that response stance predicates have two attitudinal object arguments—one the given attitudinal object d and the other the attitudinal object of e. The clausal complement does double duty in modifying both attitudinal objects with the same *that*-clause in Moltmann's logical form (p.28, (36a,37)):

(15) a. John agreed that S.
b. $\exists$e(agree(e, John, d) & [that S](att-obj(e)) & [that S](d))

It is not obvious that attitudinal objects are necessary to capture the familiarity property of response stance verbs. Could they not just as well carry a presupposition that

their prejacent proposition is given (relative to some context)? Additionally, it would be desirable if the proposal captured the cross-linguistic trend that complements of response stance verbs are typically nominal in nature. For instance, Kastner (2015) documents Hebrew response-stance complements headed by a determiner. In Korean, response-stance complements require nominalized complements over bare clausal complements (Bogal-Allbritten and Moulton 2017). Nominalized clauses headed by *kes* (note the case marking) complement verbs that translate to *accept* and *reject*, but clauses headed by *ko* (perhaps a complementizer) are ungrammatical (Chung-hye Han, p.c.). *ko*-clauses are perfectly happy as the propositional arguments of other attitudes as in (17), albeit with complex interactions with factivity (Shim and Ihsane 2015, Lee 2020) (Example in (17) from Shim and Ihsane 2015, p.131 (4a)).

(16) a. Na-nun [Lee-ka wa-ss-ta-nun **kes**-ul] incengha/pwuinha-n-ta.
I-TOP L.-NOM come-PST-DECL-ADN *kes*-ACC accept/reject-PRES-DECL
'I agree/reject that Lee came.'

b. *Na-nun [Lee-ka wa-ss-ta-**ko**] incengha/pwuinha-n-ta.
I-TOP L.-NOM come-PST-DECL-COMP accept/reject-PRES-DECL
'I accept/reject that Lee came.'

(17) Kibo-nun [Dana-ka i chayk-ul ilk-ess-ta-ko]
Kibo-TOP Dana-NOM this book-ACC read-PAST-DECL-COMP
yukamsulewehay/mit-(s)ss-ta
regret/believe-PAST-DECL
'Kibo regretted/believed that Dana read this book.'

Kim (2009) proposes that *kes*-clauses are like definites. If the proposition is given, and the language allows definite-encoding morphosyntax on clauses, then perhaps something like *Maximize Presupposition* (Heim 1991) forces the use of nominalized clauses under response stance verbs. In that case, though, these nominalized complements would saturate the d argument of (15b) (something Moltmann argues is possible with English DPs and PPs). In that case do we also need the attitudinal object of e represented in the logical form? Why can Korean not use a CP to target the attitudinal object of e? As with the above discussion about event-based content complementation, we need to learn more about the denotation of the verbs alone and the composition that gives rise to the formula in (15b).

4 Force

I would like to end with a brief comment about the proposal for capturing modal force, the difference between possibility and necessity. In this account, there are no sets of possible worlds to quantify over with a universal or existential, so modal force cannot come by way of quantification. Instead, Moltmann proposes that the difference between the two—say between *permission* and *obligation*—is in the modal objects these words describe. In truthmaker semantics, both violation and satisfaction conditions can be placed on sentences and in Moltmann's object-based truthmaker semantics the same range of conditions can be placed on modal objects. An obligation has both satisfaction and violation conditions whereas permission only has satisfaction conditions. Moltmann says that "On this account, sentences conveying necessity and sentences conveying possibility will have exactly the same logical form; but they involve different sorts of modal or attitudinal objects with different satisfaction and violation conditions" (p.25).

There are grammatical phenomena that are sensitive to the force of the modal in whose prejacent they appear. For instance, free choice items are possible under possibility modals but not necessity modals (see Dayal 1998, Aloni 2007, Menéndez-Benito 2010 for nuances with necessity modals).

(18) a. You can/are permitted to take any card in this deck.
b. #You must/are obligated to take any card in this deck.

I can get my head around quantifiers in the prejacent of a modal interacting with the modal itself on a quantificational view of modal force, but—perhaps due to a lack of imagination—it is not immediately obvious to me how these kinds of dependencies are handled if the difference between, say, obligation and permission is entirely in nature of the modal objects being described. The challenge would be to show that these kinds of dependencies are in principle possible, and that would require elaborating how universal quantification is modeled in a truthmaker semantics (see Moltmann's footnote 7), and what the violation and satisfaction conditions are for universally quantified sentences. The problem gets worse, though, in the case of free choice items since it is not just a difference between possibility and necessity: possibility modal adverbials do not license free choice either (19a) (Menéndez-Benito 2010: 62(110)):

(19) a. #Maybe/perhaps John took any of the cards from this deck.

b. John might have taken any of the cards from this deck.

The modal objects described by *maybe* and *perhaps* (do these introduce modal objects?) would need to be subtly different from possibility modal verbs.

That object-based truthmaker semantics does not offer an immediate answer to free choice items is not a flaw. No proposal, especially one as far-reaching, has ready-made analyses for the range of phenomena that a well-exercised framework like the possible-worlds approach has. Not without the benefit of decades of research by a small army of semanticists. But this is what makes new ideas likes these so interesting.

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