**A Truthmaker Semantics for Modals and Attitude Verbs**

Contemporary philosophy of language is dominated by the relational view of attitude reports, according to which attitude reports of the sort *John thinks that S* describe two-place relations between an agent and a proposition, where the proposition is the semantic value of S and is generally taken to reflect the structure of the attitudinal content. This talk outlines a view of attitude reports that rejects the notion of a proposition serving both as the semantic value of the clausal complement and as the (structured) ‘object’ or content of an attitude. Instead (embedded) sentences are treated as predicates of a variety of attitudinal objects, specifying their truthmaking or satisfaction conditions, while allowing them to have or not have a structure. Attitudinal objects include mental states (belief, intention, desire, hope) and cognitive and illocutionary ‘products’ (in the sense of Moltmann 2013, 2014, to appear), such as decisions, thoughts, judgments, claims, and requests. On this view, sharing of content amounts to there being a close similarity among the relevant attitudinal objects, which may amount to their sharing their satisfaction conditions.

This account of attitude reports extends to modal sentences, treating the embedded sentence or prejacent as a predicate of the relevant modal object, specifying its satisfaction conditions. Modal objects include obligations, permissions, needs, options, and abilities. Modal objects are not states or events. The most important characteristic distinguishing them from the latter (and which they share with cognitive or illocutionary products) is that they have satisfaction (or manifestation) conditions. John’s obligation to leave may be satisfied or fulfilled (by John’s leaving), John may show his ability to type by typing etc., but not so for John’s being obliged or John’s being able to type.

Attitudinal objects may come with a structure; but still the function of the embedded sentence will be the same, just specifying their truthmaking or satisfaction conditions.

In general, sentences will serve to characterize attitudinal and modal objects in terms of their truthmaking or falsemaking (or satisfaction and violation) conditions. Formally, the view will make use of a development of Fine’s (2012, 2014, to appear) recent truthmaker semantics with its central notion of exact truthmaking ╟ and its notion (exact) false-making ╢, allowing exact truthmaking (satisfaction) and false-making (violation) to also hold between an action or situation and an attitudinal or modal object.

Modal objects will be considered implicit arguments of modal predicates and the embedded sentence or prejacent a predicate predicated of them. Crucially, the semantics will assign the same logical form to sentences with a modal of necessity and sentences with a modal of possibility, as below:

(1) a. John must help.

b. ∃e(must(e) & [*John help*](e))

(2) a. John may leave the house.

b. ∃e(may(e) & [*John leave the house*](e))

The logical relations between modal sentences will be accounted for entirely in terms of the satisfaction conditions of modal objects and contextual restrictions on modal objects.

On Fine’s (2012, 2014, to appear) truthmaker semantics, a sentence S has as its meaning a pair consisting of a set of (exact) truthmakers (situations or actions wholly relevant for the truth of S) and a set of exact falsemakers (or violators). Thus, imperatives will denote a pair consisting of a set of actions complying with the imperative and a set of actions contravening the imperative (Fine, to appear). Besides the standard truthmaking conditions, Fine posits the condition below on the truthmaking of negative sentences:

(3) s ╟ *not* S iff s ╢ S.

That is, a situation is an exact truthmaker of *not S* just in case it is an exact falsemaker of S.

On the present approach, the relations of exact satisfaction and violation will primarily be relations between situations or actions and modal or attitudinal objects. A central idea of the semantics will be that modals of necessity and modals of possibility will not lead to different logical forms, as on the standard view of modals. Rather modal objects of necessity and modal objects of possibility differ in whether they have violators. Modal objects of necessity have both satisfiers and violators, but modal objects of possibility have only satisfiers and lack violators. This is particularly intuitive for deontic modal products. An obligation can be satisfied by actions and it can be violated by actions. By contrast, a permission, an invitation, or an offer only sets up options: actions of satisfying or ‘taking up’ the permission, invitation, or offer. An ability is a modal object of possibility and has only satisfiers, namely activities manifesting the ability. The denotation of a sentence can then be given as a property of (modal) objects as below, where pos(S) is the set of verifiers of S and neg(S) the set of falsifiers of S:

(4) [S] = λd[∀s(s ╟ d 🡪 s ∈ pos(S)) & ∀s(s ╢ d 🡪 s ∈ neg(S))]

(4) is suited to characterize both modal objects of necessity (the second conjuncts applying non-vacuously) and modal objects of possibility (the second conjunct applying vacuously).

The duality of modals of necessity and of possibility is accounted for once the existential quantifiers in (1b, 2b) are allowed to quantify over a contextually highly restricted domain. Suppose the domain contains just one relevant modal object, the obligation for John to help. Then *John is obliged to help* implies *John is not permitted not to help* because the modal object of obligation just is not a modal object that has only satisfiers, namely actions of John’s not helping.

The account can be extended suitably to other modals; for example a modal object for epistemic *must* maybe ‘generated’ by a piece of evidence by assigning it situations supported by the evidence as satisfiers and situations excluded by the evidence as falsifiers.

The very same semantics applies to attitude and illocutionary act reports. Thus the logical forms of (5a) and (6a) will be as in (5b) and (6b):

(5) a. John asked Mary to leave.

b. ∃e(ask(e, John) & [*May to leave*](product(e))

(6) a. John allowed Mary to leave

b. ∃e(ask(e, John) & [*May to leave*](product(e))

Here product(e) is either the cognitive or illocutionary product of the act e or, if e is a state, identical to e. In (5b) *Mary to leave*, with the same meaning given in (4) specifies the satisfaction of the reported request and in (6b) of the reported permission. The request will have both satisfiers and violators; the permission only satisfiers.

This semantics of attitude and modal sentences is able to account for semantic connections between attitude verbs and modals without forcing attitude verbs into modal operators, namely by recognizing that the attitudinal objects described by attitude verbs (e.g. beliefs, decisions, requests, promises) may share satisfiers and violators with modal objects.

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