NYU talks *Acts, Objects, and Attitudes*

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Handout 5

Attitudinal and Modal Objects and the Semantics of Attitude Reports and Modal Sentences

1. Summary of the view so far

1.1. Sentences act as predicates of attitudinal and modal objects

The ontology of atttudinal and modal objects is reflected in the semantics of natural language, in:

- Nominalizations
- Alternation of simple attitude / modal verbs with complex predicates light verb – product nominal (or modal object / mental state nominal) *(think – have a thought, believe – have a belief, need - have the need* etc)
- The semantics of special quantifiers and pronouns: constraints of the understanding of quantifier restrictions and on the reports of sharing of contents among different attitudes

The ontology of attitudinal and modal objects is moreover reflected in language-independent intuitions about

- Artifacts, in the case of cognitive and illocutionary products
- attitudinal objects, mental states and modal objects as such, e.g. their satisfaction conditions

The semantics of 'special' quantifiers and pronouns

(1) a. John said something nice.

  b. ∃e'∃e (say(e, John) & nice(e') & e' = product(e))

'∃e' ' introduced by *something*, '∃e' introduced by Davidsonian event semantic treatment of the verb

(2) a. John thought what Mary thought.

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

Davidsonian event semantics

Cognitive and illocutionary products are products of Davidsonian event arguments.

Mental states are themselves Davidsonian event arguments (and their own 'products').

Function of *that*-clauses

predicates of the products of Davidsonian event arguments

The general logical form of attitude reports

(3) a. John thought that S

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

c. John has the thought that S.

d. $\exists d(\text{have}(\text{John}, d) \,\&\, \text{thought}(d) \,\&\, [\textit{that}\ S](d))$

The question of priority of acts or products

It may be only the product an act aims at that makes it the act it is (as with acts of artistic creation).

How can sentences act as predicates of attitudinal and modal objects?

(4) Sentences as predicates of attitudinal and modal objects based on their satisfaction conditions (first version)

$[S] = \lambda d[\forall i(i \Vdash d \rightarrow i \vDash S)]$

$\Vdash$: exact truthmaking, $\vDash$: inexact truthmaking

Advantages

- Semantics of sentences is applicable to all sorts of attitudinal objects: no commitment to the internal structure of products – except for those of utterances of independent sentences
- Captures possible underspecification of attitudinal or modal objects by the content of the clausal complement
- Allows additional conditions on satisfiers to be imposed by the attitudinal or modal objects, e.g. action 'by way of fulfilling the intention / request' (Searle).

1.2. Motivating the semantic role of locutionary acts and their products

Locutionary acts: acts of referring to objects and saying something about them, concept-conveying acts

Constraints on sharing:

(5) a. ??? John said the thing that Mary claimed, that Bill won the race.

   b. ??? John said the thing that Mary demanded, that Sue should leave.

Say and *write* take *that*-clauses and direct quotes, but not infinitival clauses (acting as embedded imperatives) or interrogative clauses:

(6) a. John said / wrote 'leave!'

   b. * John said / wrote for Bill to leave.

(7) a. John said 'what should I do?'.

   b. * John said what he should do. (in the sense of asking question).

Manner of speaking verbs: same pattern

(8) a. ??? John whispered the same thing that Mary asserted / demanded / asked.

   b. ??? John whispered the same thing that Mary asserted / demanded / asked.

Perhaps also *think*:

(9) a. John thought 'what should I do now?'.

   b. * John thought what he should do know.

(10) a. John thought 'go away!'.

   b. * John thought for Bill to go away.

(11) a. ??? John thought what Bill decided.

   b. Bill decided that they should leave the house.

   c. John thought that they should leave the house.

Proposal

Say, write, perhaps *think*, and manner of speaking verbs have their clausal complement apply to a locutionary or phatic product, not an illocutionary product.

The meaning of a *that*-clause as a predicate of locutionary products

Characterizes the product in terms of smaller semantic products, say concept-conveying products and referential products

The semantics of independent sentences:

Independent sentences act as predicates of illocutionary products, specifying their illocutionary, locutionary, and phatic components (subproducts)

Specification of illocutionary part:

(12) a. Leave!

    b. λd[[addressee *leave*](d)]

(13) a. I ask you to leave

    b. λd[∃e(ask(e, speaker) & [addressee *leave*](prod(e))]

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2. Modals as predicates of modal objects

2.1. Modal and attitudinal objects

Satisfaction conditions for attitudinal objects

Intentions: actions by way of satisfying the intention

Beliefs: situations making the belief true

Decisions 1: actions by way of implementing the decision

Decisions 2 (*I decided that the house is fine*): beliefs by way of following the decision

Connections between attitudinal objects and modal objects

John's promise to help Joe: illocutionary product

John's obligation to help Joe: modal product

John's promise to help has the same satisfiers as John's obligation to help, but different endurance conditions:

 (14) a. John promised yesterday to help Joe today.

    b. John's promise yesterday was / ??? is to help Joe today.

    c. John's obligation is to help Joe.

The noun *offer* is ambiguous between noun for modal products and noun for illocutionary products:

(15) a. John's offered Joe yesterday to use the house today.

    b. John's offer was / is for Joe to use the house.

2.2. The standard, quantificational account of modals and the predicativist account

Modal logic

Modals represent quantifiers ranging over (accessible) possible worlds

Kratzer (1977): contextually given modal base (set of worlds) and ordering source (set of ideal worlds inducing ordering among worlds)

(16) a. John may leave.

   b. $\exists w\ (w \in f(w_o)\ \&\ [\textit{John leave}]^w = \text{true})$

(17) a. John must leave.

   b. $\forall w (w \in f(w_o) \rightarrow [\textit{John leave}]^w = \text{true})$

2.3. The present approach

Kinds of modal predicates

(18) a. might, may, must, should   (modal auxiliaries)

   b. ought to, need to, have to   (modal verbs)

   c. is possible that, is necessary that, is able to, is capable of (modal adjectives)

Nominalizations of modal predicates

(19) *Need, possibility, obligation, permission, offer, invitation*

Modals are predicates of 'modal objects', the Davidsonian arguments of modal predicates.

(20) a. John needs to leave.

   b. John has a need to leave.

   c. $\exists d(\text{need}(d)\ \&\ [\textit{John to leave}](d))$

(21) a. John is permitted to leave.

   b. John has a permission to leave.

   c. $\exists d(\text{is permitted}(d, \text{John})\ \&\ [\textit{John to leave}](d))$

Harves / Kayne (2012): (20a) is derived from (20b).

How can clauses act predicates of modal objects?

They specify the satisfiers and violators of the modal object (in roughly the sense of Fine's (2012, to appear) truthmaker semantics).

Satisfiers: situations or actions fulfilling or complying with the modal object

Violators: situations or actions incompatible with or contravening the modal object

Difference between modals of necessity and of possibility

Modal objects of necessity: have satisfiers and violators

Modal objects of possibility: have only satisfiers

No difference in terms of quantification!

2.4. Fine's (2012, 2014, to appear) truthmaker semantics

(Exact) truthmaking

A situation is an exact truthmaker of a sentence S iff s is wholly relevant for the truth of S.

The meaning of a declarative sentence S

 the set of its verifiers (pos(S)) and the set of its falsifiers (neg(S))

(Exact) satisfaction for the semantics of imperatives

Exact satisfaction as relation between an action and an imperative sentence

The meaning of an imperative

The pair consisting of the set of its satisfiers (actions complying with the imperative) and the set of its violators (actions contravening the imperative)

Standard truthmaking conditions

(23) a. s $\Vdash$ P *and* Q iff for some s' and s'', s = sum(s', s'') and s' $\Vdash$ P and s'' $\Vdash$ Q.

b. s $\Vdash$ P *or* Q iff s $\Vdash$ P or s $\Vdash$ Q

c. s $\Vdash$ $\exists$x S iff s $\Vdash$ S [x/t] for some term t

(Exact) falsemaking for the truthmaking condition on negative sentences:

s $\dashV$ S: S is false in virtue of s

(23) d. s $\Vdash$ *not* S iff s $\dashV$ S.

2.5. Modal objects and their satisfaction and violation conditions

Modal objects as entities with satisfaction conditions and satisfiers and violators:

John's obligation to help

satisfiers: actions fulfilling the obligation,

violators: actions incompatible with the fulfillment of the obligation

John's offer to help

has only satisfiers: actions of John's helping

John's permission to leave

has only satisfiers: actions of John's leaving

(24) a. John must help.

b. $\exists$e(must(e) & [*John help*](e))

(25) a. John may leave.

    b. ∃e(may(e) & [*John leave*](e))

Difference between deontic modals of obligation and permission

Obligations have satisfiers and violators, permissions have only satisfiers

(26) Satisfaction-based sentence meaning (second version)

    [S] = λd[∀s(s ⊩ d → s ⊫ S) & ∀s(s ⫴ d → s makes S false)]

Accounting for the duality of modals of possibility and modals of necessity

(27) must ¬ S ↔ ¬ may S

Make use of highly restricted quantification domain, consisting of just one modal object:

A modal product whose satisfiers make S false and whose violators make S true is not a

modal product that has only satisfiers that make S true, and vice versa.

Iteration of modals

(28) a. John might have to lift the piano.

    b. John must be able to lift the piano.

Truthmaking conditions for modals

(29) s ⊩ *Must* S iff must(s) & S(s)

2.6. Application to illocutionary products of obligation and permission

(30) a. John asked Mary to come.

    b. John invited Mary to come.

(31) a. ∃e(ask(e, John, Mary) & [*Mary come*](product(e)))

    b. ∃e(invite(e, John, Mary) & [*Mary come*](product(e)))

    c. [*Mary come*$_{emb}$] = λd[∀s(s ⊩ d → s ∈ pos(*Mary come*)) & ∀s(s ⫴ d →

      s ∈ neg(*Mary come*))]

2.7. Other modalities

Ability modals

(32) John is able to walk.

Satisfiers of an ability: its physical manifestations

Abilities have only satisfiers, not violators

Epistemic modals

Evidence, accepted facts, 'common ground' 'generate' two sorts of modal objects:

- modal objects of possibility, objects whose satisfiers are situations supported by the evidence, facts, common ground)

- modal objects of necessity, objects whose satisfiers are situations supported and whose violators are excluded by the evidence, facts, common ground

Epistemic modal verbs – approximatively:

(33) a. John must be at home.

    b. $\lambda e[\exists d(d\ R\ e\ \&\ must(d)\ \&\ [$*John be at home*$](d))]$

e: speech event, R: 'close connection'

epistemic modals as 'quasi-performatives'

2.8. Connections between modals and propositional attitudes

Inferences with modal auxiliaries

(34) a. John asked Mary to leave.

      Mary must leave.

    b. John offered Mary to take an apple.

      Mary may take an apple.

Explaining the valid inferences

The illocutionary act produces both a (non-enduring) illocutionary product and an (enduring) modal object.

The illocutionary product and the modal object share exactly the same satisfiers (and possibly violators).

Two interpretations of (34a):

Involving the non-enduring illocutionary product:

(34) c. $\exists e(permit(e, John, Mary)\ \&\ [$*Mary to leave*$]\ (product(e)))$

Involving the enduring modal product:

(34) d. $\exists e(permit(e, John, Mary)\ \&\ [$*Mary to leave*$]\ (modal\text{-}product(e)))$

2.9. Modal Concord

(35) a. John could possibly have missed the train.

    b. John must obligatorily fill out the form.

    c. John may optionally fill out the back of the form.

Analysis

Modal adverbs predicated of the same modal object as the verb:

(35) ∃d(must(d) & obligatorily(d) & [*John fill out the form*](d))

<u>Constraint</u>

Modal has to be of the same sort (problem for Anand /Brosveanu 2010):

(36) a. ??? John must possibly have missed the plane.

    b. ??? John may obligatorily fill out the form.

2.10. Performative uses of modals

(37) a. I hereby ask that you leave.

    b. You must leave.

    c. Leave!

(38) a. I hereby offer you to take an apple.

    b. You may take an apple.

    c. Take an apple!

Independent sentences as predicates of illocutionary products or modal products produced by illocutionary acts

<u>Semantics of performative uses of independent sentences</u>

(39) a. λe[ask(e, speaker) & [(addressee) *leave*](product(e))]

    b. λd[must(d) & [(addressee) *leave*](d)]

    c. λd[[*leave!*](d)]

(40) a. λe[offer(e, s) & [(addressee) *take an apple*](product(e))]

    b. λd[may(d) & [(addressee) *take an apple*](d)]

    c. λd[[*leave!*](d)]

<u>Performative uses of modals in embedded contexts</u>

(also considered cases of 'modal concord' or 'harmonic modal'):

(41) a. John requested that Mary *should* leave.

    b. John offered Mary that she *could* use the house.

Occurrence of modal is a performative use of a modal in an embedded context:

(42) a. [*that Mary should leave*] = λd[should(d) & [*Mary leave*](d)]

    b. ∃e(request(e, John) & [*that Mary should leave*](product(e)))

<u>The more standard account (Kratzer, recent talks):</u>

'Harmonic' modal in the embedded clause spells out universal quantification over possible worlds characterizing the content of an object of the sort of a belief, a claim, an offer.

(43) a. the offer [for John to visit]

b. f_{norm}(offer) = the set of worlds w s.t. the offer is accepted in w

c. $\lambda x[\forall w(w \in f_{norm}(x) \rightarrow$ [*John to visit*]^w = true)]

d. the offer that John may / * should / * must visit

e. $\lambda x[\exists w(w \in f_{norm}(x)$ & [*John to visit*]^w = true)]

(43e) does not make sense.

Problems:

- Difficulty accounting for 'harmonic' modals of possibility
- Overgenerates: predicts epistemic modals of necessity to be possible with all truth-directed attitude verbs

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