

Lexical Decomposition of Verbs and the Notion of an Abstract State

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Plan of the talk

1. Review the distinction between events, tropes, attitudinal objects, concrete states, and abstract states and facts
 2. Discuss semantic challenges for the notion of an abstract states
 3. Present new generalizations about explicit property reference in natural language
 4. Propose analysis of the data based on decomposition of verbs
 5. Draw conclusions for natural language ontology and the question of reference to abstract objects in natural language
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1. Concrete and abstract states, events, attitudinal objects and tropes

1.1. Standard criteria for concreteness

- Having a spatio-temporal location
- Being able to enter causal relations, being potential objects of perception
- Being fully specific (or involving a particular manifestation)

Necessary existence? No

1.2. Events and facts

- Events but not facts have a spatio-temporal location.
- Events but not facts enter causal relations, can be object of perception
- Events but not facts are fully specific

Both events and facts can be objects of mental attitudes

1.3. Abstract and concrete states (Kimean and Davidsonian states)

The Stative Adverb Gap (Katz 2003)

Most stative verbs (*own, owe, believe, know, resemble, have, be, reside in*) do not accept adverbials (e.g., location and manner adverbials) except for temporal adverbials and adverbials of mental attitude.

Yet anaphoric reference to states is possible.

Certain state verbs (*lie, stand, sit, wait, kneel, sleep*) allow for adverbials of various sorts.

Maienborn’s (2007) proposal

Stative verbs not permitting the greater class of adverbials describe *Kimian states*

Stative verbs describing bodily positions take *Davidsonian states* as implicit arguments.

‘Kimian states’ fall under Kim’s conception of events;

‘Davidsonian states’ are on a par with Davidsonian events.

(1) Kimian notion of an abstract state (as an open-ended state)

For properties P and P' and objects o and o' ,

- a. The state $s(P, o) =$ the state $s'(P, o)$ iff $P = P'$ and $o = o'$.
- b. The state $s(P, o)$ exists at a time t iff o has P at t .

Ontological explanation of the Stative Adverb Gap

Kimian states lack a spatial location and a particular manifestation, and cannot be objects of direct perception.

Davidsonian states come with a spatio-temporal location, concrete manifestation, enter causal relations, can be objects of perception.

Moltmann (2013b)

Abstract states = Kimian states

Concrete states = Davidsonian states

The problem with the Kimian definition of an abstract state

Overgenerates: P could be the content of an eventive predicate.

The question is: why can’t eventive predicates describe abstract states and thus resist the relevant types of adverbials?

The semantic challenge for the Kimian account of abstract states

Integration into Davidsonian event semantics

The Kimian account requires two meanings of abstract state verbs:

Underived meaning: no Davidsonian argument

Derived meaning: state argument introduced on the basis of the property / relation expressed by the underived verb.

(2) a. *own*(John, the house)

b. *own*('s('own', John, the house), John, the house) iff *own*(John, the house).

Neo-Davidsonian event semantics with abstract states on a Kimian account:

Unavailable:

For an event *e*, if *own*(*e*), then *e* would have to be defined in terms of the two-place relation expressed by *own*.

1.4. Tropes

Evidence for adjectives taking tropes as arguments (Moltmann 2013a):

Range of adjective modifiers constitutes typical properties of tropes (not (just) of degrees):
intensely, deeply, strikingly, obviously

Davidsonian semantics for adjectives:

(3) a. John is happy

b. $\exists t(\text{happy}(t, \text{John}))$

Neo-Davidsonian semantics for adjectives?

(3) c. $\exists t(\text{bearer}(\text{John}, t) \ \& \ \text{happy}(t))$

Bearer-relation as the thematic relation connecting an entity to a trope of which it is the bearer.

1.5. Attitudinal and modal objects

Attitudinal objects

beliefs, claims, assumptions, impressions, ideas, proposals, requests

Modal objects

needs, offers, invitations, permissions, obligations, ...

Intensional objects

searches, purchases, debts, resemblances, offers

Characteristic properties

1. Content-related properties:

Satisfaction conditions, part structure based on partial content, similarity based on shared content only

2. Properties of concreteness:

Being able to enter causal relations (*a shocking claim*)

Being perceivable (*the remark that was overheard*)

Being fully specific (*a strong claim / belief*)

Attitudinal objects vs. facts and abstract states

(4) a. John's belief that the world is round is strong.

b. ??? John's believing / having the belief that the world is round is strong.

c. John strongly believes that the world is round.

Attitudinal and modal objects as implicit arguments of verbs?

Criteria:

1. Application of adverbials

2. Application of *that*-clauses, intensional complements

Decompositional analysis of attitude verbs and modal verbs (Arsijenevic 2009, Harves/Kayne 2012, Moltmann 2021, 2024): (*that*-)clauses as special relative clauses

(5) a. John believes that *p* - John has the belief that *p*

b. John needs to work - John has need to work.

(6) a. John knows that *p* - John has knowledge that *p*.

b. John owns a house - John has ownership of a house

c. John owes money - John has debt of money.

Decomposition of verbs involving tropes (on a standard understanding):

(7) a. John resembles Joe.

b. John has resemblance to Joe.

(8) a. John's close / strong resemblance to Mary

b. John closely / strongly resembles Mary.

(9) a. John's resemblance of Mary is strong / close.

b. ??? John's resembling of Mary is close / strong.

2. Explicit property-referring terms

2.1. The construction of explicit property-referring terms

The property of XP

XP in English: gerund

- (10) a. the property of being wise
b. the property of having wisdom

XP in French, German, Italian: infinitival clause

- (10) c. La propriété d'être rouge
d. die Eigenschaft, rot zu sein
e. la proprietà di essere rosso

A common view about explicit property-referring terms (e.g., Chierchia/Turner 1988)

Explicit property referring terms refer to the property denoted by the predicate following *of*.

'*The property of walking* refers to the property denoted by *walk*' (Chierchia / Turner 1988).

Thus, explicit property-referring terms involve the notion of a property as an abundant property (Lewis 1986) or nonnatural property (Armstrong 1978).

2.2. Constraints on explicit property-referring terms

1. Explicit property-referring terms do not allow for eventive predicates:

- (11) a. ??? the property of walking / laughing / jumping / speaking / thinking
b. ??? The property of meeting / kissing / watching someone

2. Explicit property-referring terms do not permit concrete-state verbs

- (12) ??? the property of standing / sitting / kneeling / sleeping / waiting

Explicit property-referring terms permit the full range of abstract-state verbs:

- (13) a. the property of believing that the world is round
b. the property of resembling Napoleon
(14) the property of owning a house / of owing someone money / of needing money / of residing in Munich / of expecting the worst / of weighing 10 kilo / measuring 2 meters

The copula verb *be* classifies with abstract-state verbs, regardless of the predicate it takes (Maienborn 2007).

The same holds for *have*: *have* is acceptable with property-referring terms, regardless of the content of its complement:

- (15) a. the property of being wise / angry / nervous / sleepy / upright / asleep / alive / the cause of a commotion / an agent
b. the property of having a sister / a house / a vacation / pride / wisdom
c. the property of having a migraine / backpain / a nervous feeling / fear

Stative copula verbs contrast with dynamic ones:

- (16) a. the property of *being* sick / cancer free
b. ? the property of *remaining* sick / cancer free
c. ??? the property of *becoming* sick / cancer free

Existence predicates:

- (17) a. the property of existing / being
b. ??? the property of taking place / happening / occurring

Always possible: *the property of being* NP, *the property of being* AP

Some striking minimal pairs with concrete state verbs:

- (18) a. ??? the property of sleeping.
b. the property of being asleep
(19) a. ??? the property of suffering
b. the property of being in pain
(20) a. the property of being alive
b. ?? the property of living (as opposed to being dead)

Crosslinguistic examples:

- (21) a. ??? the property of sitting
b. la propriété d'être assis (French)
'The property of being sitting'
(22) a. ??? the property of standing
b. la propriété d'être debout

German:

- (23) a. die Eigenschaft, krank zu sein
 b. ??? die Eigenschaft, zu kraenkeln
 'the property of being sick'

'Light' verbs and thematic relations:

- (24) a. ??? the property of causing a commotion
 b. the property of being the cause of a commotion
 (25) a. ??? the property of acting
 b. the property of being active / having an activity
 c. the property of being an agent
 (26) a. the property of being the initiator of an investigation
 b. ??? the property of initiating an investigation

Passive?

- (27) a. the property of being a receiver of torture
 b. ? the property of being tortured
 (28) a. the property of being the object of perception
 b. ?? the property of being perceived

Dispositional (readings of) verbs:

- (29) a. the property of speaking French
 b. ??? the property of speaking right now
 (30) a. the property of eating meat
 b. ??? the property of eating that piece of meat

2.3. Evaluation and analysis of the data

- What matters is not the situations described, but the compositional semantics of the complement/modifier of *property*.
- The notion of a property as an abstract predicable state is distinction from the notions of properties discussed in contemporary metaphysics (Lewis' (1986) sparse properties vs abundant properties; Armstrong's (1978) natural properties vs. non-natural properties).

- The distinction between abstract states and concrete states seems to matter.

Hypothesis 1

Property applies only to abstract states:

(31) The Abstract-State Constraint

The modifier / complement of *property* must describe abstract states (but as predicable entities).

The problems:

1. Abstract states could be obtained from eventive relations.
2. *The property of wisdom* is not that bad.

Hypothesis 2

Property applies to bearer relations to trope-like entities and reifies them.

Tropes:

Have wisdom: being bearer of a wisdom trope

Be wise: being bearer of a wisdom trope

The property of resembling Paul: the property of having resemblance to Paul

Attitudinal objects:

The property of believing p: the property of having a belief that p

The property of knowing p: the property of having knowledge that p.

Modal and intensional objects:

The property of needing help: the property of having need of help

The property of owning a house: the property of ownership of a house

The property of owing money: the property of having debt of money

Generalization

A good part of abstract state verbs are intensional verbs, thus, arguably requiring their intensional complement to act as a predicate of an attitudinal, modal, or intensional object: Motivation for lexical decomposition *have* – NP – modifier, for NP standing for a trope-like thing

Other abstract state verbs:

Generics as describing kinds of particulars: *smoke cigarettes*

Generalization is not yet correct

- (32) a. the property of having a sister
b. the property of having a nightmare

Explicit property-referring terms involve a more general relation, the HAVE-relation
The HAVE-relation includes bearerhood, possession, experiencer relations.

Sketch of a semantics of explicit property-referring terms

Properties: reifications of the bearerhood or possession relation with respect to some entity

- (33) a. For an entity p, PROPERTY(p) if $p = \text{reif}(\lambda x[\text{HAVE}(x, t)])$, for an entity t.
b. $[the\ property\ of\ XP] = \text{ip}[property(p) \ \& \ p = \text{reif}([XP])]$

Why reification?

Differences between explicit property reference and gerunds:

- (34) a. ??? Being nice is evaluative / complex.
b. The property of being nice is evaluative / complex.

3. Further remarks

3.1. A learnability issue

Semantic constraints on complex property-referring terms

- cannot have been ‘imported’ from philosophy.
 - can hardly have been learned from exposure to data
- a poverty-of-the-stimulus argument in natural language ontology?

Is part of ontology part of universal grammar? (Moltmann 2020a)

3.2. Constraints on reference to abstract objects in natural language

The Abstract-Objects Hypothesis (Moltmann 2013a, 2020a)

Natural language does not permit reference to abstract objects in its core.

Explicit property-referring terms refer to reifications of the HAVE-relation involving a concrete entity (e.g., trope, attitudinal, modal, or intensional object) or some already given entity.

3.3. The core-periphery distinction for nouns

Nouns vs. nouns-in-construction

Why can the noun *property* as such be used in a non-ordinary way by a particular philosopher, e.g., having the notion of an abundant property in mind or the notion of a sparse property?

Distinguish nouns from ‘nouns-in-construction’

Noun-in-construction: noun with clausal modifier, noun as complement of a light verb

Property in explicit property-referring terms is a noun-in-construction.

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