Cognitive Science Workshop CUNY

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Constraints on Property Reference: An Argument for Ontology being Part of Universal Grammar?

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Plan of the talk

1. Clarify the project of natural language ontology

2. Introduce and motivate a core-periphery for natural language ontology

3. Present next generalizations about property reference and draw conclusions for natural language ontology, in support of a view on which the ontology implicit in natural language is part of universal grammar in the Chomskyan sense

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1. Natural Language Ontology

The subject matter of natural language ontology

The ontology *implicit* in natural language, not any ontology that can be described *by using* natural language

Two-related notions of natural language ontology – two facets of the same displine that is a branch of both linguistics and philosophy

[1] An emerging discipline that is part of both linguistics and philosophy:

the study of categories of entities and their formal relations as part of compositional semantics.

[2] A practice throughout the history of philosophy:

 philosophers' appeal to natural language data in order to clarify metaphysical intuitions

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2. The Core-Periphery Distinction for Natural Language Ontology

<u>Fact about natural language ontology (as a subject of study of philosophers and linguists and as a practice pursued by philosophers)</u>
Technical expressions and philosophical uses of expressions do not count for natural language ontology: they are part of the (ontological) periphery of language.

<u>Examples</u>
- Frege did not appeal to expressions like *the number eight* to motivate numbers as objects (but to sentences like *the number of planets is eight*).
- Frege did not motivate truth values being objects by appealing to terms like *truth value true* in natural language.
- Godehard Link did not motivate sums as part of the ontology of natural language from the presence of terms like *the sum of John and Mary* in natural language, but plurals and conjunctions like *John and Mary*.
- Philosophers arguing for properties being objects generally do not appeal to constructions like *the property of being wise*, but to *wisdom* or *being wise* (e.g. Hale 1987)

<u>Important remark</u>
'Being part of the periphery' does not mean 'being marginal', 'being rarely used' or alike. It means, as a matter of fact, not being considered as reflecting the ontology of natural language.

<u>Uses of language in the periphery</u>
1. 'Philosophical' nouns like *entity, set, number, property, existence* by themselves can be used in various ways, having different philosophical concepts in mind
2. Philosophers can introduce new technical terms, e.g. *the nothing* (Heidegger)

<u>Generalization about nouns</u>
All nouns, by themselves, can be used by particular philosophers (and others), having specific notions in mind (non-ordinary use of language).

<u>'Ordinary Language Philosophy' (Austin, Moore, Wittgenstein, …):</u>

Discard philosophical uses, focus on ordinary uses of philosophically relevant expressions (and philosophical problems may disappear).

But non-ordinary uses are linguistically legitimate, within limits (and also require a semantic analysis).

Observation

Not all expressions or parts of language can be used in a non-ordinary way.

Examples

Noun vs. verb

Existence vs. *exist*

(1) a. the existence of anything there is, people, material objects, events

     b. ??? The event / party / catastrophe did exist.

     c. The event / party / catastrophe did take place.

     d. ??? The rain still exists.

     e. ??? The rain is still going on

Meaning vs. *mean*

(2) a. The meaning of rouge is a property / concept / set / …

     b. 'Rouge' means 'red'.

      c. ??? 'Rouge' means the property of being red / a set / an entity.

Plural vs singular count

(3) a. The children are large.

     b. The sum / group of the children is large.

Cannot mean 'the group of children is large'

Apparent generalization

1. Nouns permit a non-ordinary use, but not verbs.

2. The functional part of grammar (e.g. syntactic features) does not permit for a non-ordinary use.

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3. Reifying terms (Moltmann 2013)

3.1. Type 1 reifying terms

Close appositions

(4) a. the number eight

    b. the concept horse

    c. the truth value true

    d. the color blue

Reifying terms seem to clearly belong to the periphery of language.

<u>Suggested semantics</u>

Reification of an entity on the basis of what is conveyed by the linguistic material following the sortal, e.g. introduction of an entity by abstraction or by a something-from-nothing operation.

Reifying terms seem to involve philosophical reflection as part of their semantics, the hallmark of the periphery?

Type 2 reifying terms

(5) a. the proposition that it is raining.

    b. the fact that it is raining

    c. the property of being wise

Same semantics? Part of the periphery?

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4. Property Reference

4.1.Explicit property-referring terms vs adjectival nominalizations

[1] NPs referring to qualities (*quality terms*)

wisdom, happiness, redness, *beauty* (not derived from an adjective)

NPs with the sortals *quality* and *virtue* : *the quality of gentleness, the virtue of humility*

[2] NPs standing for property objects (*property terms*)

the property of being wise

<u>Explicit (complex) property-referring terms</u>

(6) *The property of* XP

<u>XP in English</u>: gerund

(7) the property of being red

<u>In French, German, Italian</u>: infinitival clause

(8) b. La propriété d'être rouge

    c. die Eigenschaft, rot zu sein

    d. la proprietà di essere rosso

4.2. Constraints on complex property-referring terms

<u>Semantic constraints on verbs in the clausal modifier</u>

1. No eventive verbs – in any thematic role

(9) a. ??? the property of walking

    b. ??? the property of meeting Joe

    c. ??? the property of being hit by Joe

2. No concrete state verbs (verbs describing bodily positions or states)

(10) a. ??? the property of sleeping / standing / sitting / kneeling

    b. ??? the property of living

    c. the property of living in Munich

3.   Abstract state verbs always permitted

(11) a. the property of owning an apartment

    b. the property of owing someone money

    c. the property of resembling one's parents

    d. the property of knowing a foreign language

Dispositional (readings of) verbs:

(12) a. the property of speaking French

    b. ??? the property of speaking right now

(13) a. the property of eating meat

    b. ??? the property of eating that piece of meat

Abstract states (Moltmann 2013b) = Kimean states (Maienborn 2007)

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

Nouns vs. verbs

(14) a. the property of being the cause of a commotion

b. ??? the property of causing a commotion

(15) a. the property of being the initiator of an investigation

b. ??? the property of initiating an investigation

(16) a. the property of being the object of perception

.   b. ? the property of being perceived

Adjectives vs. verbs

(17) a. the property of being asleep

b. * the property of sleeping

(18) a. the property of being alive

b. ? the property of living

French:

(19) a. la propriété d'être debout

b. * the property of standing

German

(20) a. die Eigenschaft, krank zu sein

b. ??? die Eigenschaft zu kraenkeln

'the property of being sick'

5.   Stative vs. eventive copula verbs

(21) a. the property of *being* sick / cancer free

b. ? the property of *remaining* sick / cancer free

c. ??? the property of *becoming* sick / cancer free

6.   Existence predicates

(22) a. the property to exist

b. ??? the property of taking place / happening / occurring

Evaluation of the data

[1] The distinction between abstract states and concrete states matters.

Characteristics of abstract states (Maienborn 2007, Moltmann 2013b)

- No spatial location, no concrete manifestation, not perceivable

- May be quantificational

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(23) Kimean notion of a 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.

Abstract states form Davidsonian argument of:

-   stative verbs that do not convey bodily positions

-   verbs on a dispositional / generic reading

-   the copula verbs *be* and *have*

Side remark about the semantics of gerunds

The empty subject of gerunds or infinitival clauses: PRO

Arbitrary PRO correlates with generic *one*, is restricted to conscious beings:

(24) a. PRO To love one's parents is a good thing.

    b. PRO resembling one's parents is normal.

(25) a. the property of loving one's parents

    b. the property of resembling one's parents

But properties of inanimate objects?

(26) the property of being identical with ?? oneself / * itself / ok of being self-identical

Complex property-referring terms do not stand for <u>properties that match the content of predicate</u>, but for <u>abstract states as predicable entities.</u>

This means that properties as abstract, predicable states contrast with:

Lewis' (1986) notions of <u>sparse properties and abundant properties</u>

Armstrong's (1978) notions of <u>natural properties and non-natural properties</u>

(27) <u>The Abstract-State Constraint</u>

    The clausal modifier of *property* must describe abstract states.

Why? Because the noun *property* in that construction only applies to abstract states.

Sketch of a semantics of complex property-referring terms

k: a kind-forming operator

(28) [PRO V-*ing*] = **k** e[∃x(V(e, x))]

Reifying a kind of abstract state as a property:

(29) [*the property of* PRO V-*ing*] = ιd[property(d) & d = reif([PRO V-ing])]

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5. General points and conclusion

Complex property-referring terms are not part of the periphery (only ordinary use possible).
Semantic constraints on complex property-referring terms
- cannot have been 'imported' from philosophy.
- can hardly have been learned from exposure to data
→ an ontological poverty of the stimulus argument?

Tentative conclusion

The notion of a property as an abstract predicable state is part of an ontology that goes along with universal grammar in Chomksy's sense, that is, that is just as innate as grammar is.

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