Course: The Ontology of Predication
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Handout 4

Quantification into Predicate Position

1. Predicates and their meaning in a sentence

1.1. view of the meaning of predicates

Frege:
Predicates refer to concepts, concept – object distinction as an ontological distinction
other views: predicates stand in a different relation to a 'concept' than reference
Carnap: predicates have an intension (concept-like) and an extension (set of entities of which predicate is true)
Related view: predicate expresses concept, does not refer to it
Reference: speaker reference

Quine:
Predicates do not refer, do not denote, do not express a meaning
Predicates *are true of* objects, predicates only have application conditions

Second-order logic:
Uses set theory to construe 'what predicates are true of',
set / function denoted by a predicate to be understood different from the set / function denoted by a set-referring / function-referring term
terms: denotation is element of the domain D
predicates: set of elements of D, function from elements of D to truth values

replication of concept horse paradox:
The set denoted by *wise* is not a 'set' --- in the relevant sense.

1.2. Analysis of the copula-predicate complement relationship

- copula expresses attribution (Wright (?))
- copula 'triggers' unsaturatedness (Wiggins) → how ??
- copulas contributing more: *become, remain*

Copula as expressing a relation between individuals and properties as objects:

(1) a. John is happy.

b. is(John, the property of happiness)

happy refers to the property of being happy or expresses the property of being happy

the problem:

substitution of predicative complement by expression contributing the same argument impossible:

(2) ?? John is the property of happiness.

Is the substitution problem avoided on a type-theoretic account?

type theory (e.g. Montague):

domain of entities D, domain of truth values T (and, if intensional, domain of indices I (worlds, times))

syntactic type assigned to syntactic categories, syntactic type associated with semantic types

e: type of objects

t: type f truth values

<e, t>: type of function from objects to truth values

Types incorporate semantic composition:

combination of expression of type <e, t> with expression of type e yields expression of type t (function application)

is: takes arguments of type e (individuals in the domain D) and arguments and type <e, t>

referential NPs: of type e

predicative complements: of type <e, t>

Is: of type < <e, t>, <e, t>>

Does the substitution problem arise?

(3) John is the function that ….

Again:
Distinguish function as denoted by expression of functional type from function as denoted by expression of type e.
That is, type-theoretic denotation of type <e, t> does not (just) specify type of object denoted, but rather 'captures' the semantic contribution of the expressions of a particular syntactic category to the composition of the denotation of the sentence
'Types' are not types of objects, but ways of capturing the semantic contribution of an expression to the overall meaning of the sentence

Type theory does not construe predicate denotations ontologically.
Rather it takes their semantic contribution to be being true of some individuals, false of others, and construes that semantic contribution as a function from individuals to truth values
Furthermore, it construes the copula *is* as expressing a relation between individuals and functions so construed

More transparently: predicative complement retains its attribution function within the meaning of the complex predicate:
Copula as a syncategorematic expression:
(3) [*remain a lawyer*]^{t} (d) = 1 iff for all (relevant) times t' < t, [*a lawyer*]$^{t'}$(d) = 1 and
[*a lawyer*]^{t}(d) = 1.

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2. More on propredicative quantifiers

- independence of syntactic position
- beyond distinction between types

Revisiting data showing independence of syntactic selection and type distinctions:
More data:
(4) a. * John became something Mary did not say.
b. * John is something Mary was thinking.

(5) a. * John is something Mary complained.

b. John is something Mary complained about.

Terms for suitable entities

(6) a. John is something Mary never imagined, namely wise.

b. Mary never imagined *John's wisdom.*

(7) a. John has become something Mary never thought possible, namely very athletic.

b. Mary never thought *John's athleticism* possible.

(8) a. John is everything Mary despises, dishonest, unhelpful, and immodest.

b. Mary despises *dishonesty, unhelpfulness, and immodesty*.

(9) a. John has become everything Bill aspires to, wise, diligent, and excellent.

b. Bill aspires to *wisdom, diligence, and excellence*.

Tropes:

Socrates' wisdom; John's happiness, the apples' redness

Kind of tropes:

Wisdom, happiness, redness

Tropes: particularized properties, concrete manifestations of properties

- Are entities in the world: have causal and perceptual properties.
- Generally more specific than the content of the description used to refer to them.

Perceptual predicates:

(10) I had never noticed John's diligence before.

Causal predicates

(11) John's angriness made Mary upset.

Inter structure, extent:

(12) a. John described Mary's beauty.

b. John described (the state of) Mary's being beautiful.

(13) a. Mary's beauty exceeds Sue's beauty.

b. (The state of) Mary's being beautiful exceeds (the state of) Sue's being beautidul.

Kinds of tropes

Instance-distribution predicates:

(14) a. Wisdom is rare.

b. Forgetfulness is widespread.

Predicates applying to instances in general:

(15) a. Wisdom is admirable.

b. Originality is interesting.

Predicates applying to at least one instance

(16) a. John encountered true wisdom.

b. John found happiness.

Predicates with propredicative quantifiers

(17) a. John is something I had never noticed before, namely very diligent.

b. John is everything that can make Mary upset.

(18) a. John became something admirable, namely wise.

b. The property of being wise is admirable.

(19) a. John has become something surprising, namely fluent in Chinese.

b. The property of being fluent in Chinese is surprising.

(20) a. Generosity is nice.

b. The property of being generous is nice.

Problem: Predicates of description

(21) a. * Mary become something that is difficult to describe, namely a very beautiful.

b. * What Mary is is hard to describe.

c. * What John became exceeds what Joe became (John became more athletic than Joe).

d. * John became something that is greater than what Mary became.

In fact quantification over states rather than tropes?

But, second-order tropes allow for predicates of description:

(22) How John is / behaves is difficult to describe.

But not of predicates of extent:

(23) * How John is is greater than how Sue behaves.

Moreover, hyperintensionality of predicates of description and of extent

(24) a. John's quality is hard to describe.

b. John's wisdom is hard to describe.

(25) a. John's quality is greater than Bill's.

b. John's wisdom is greater than Bill's

(26) a. The book John bought is difficult to describe.

b. The object John bought is difficult to describe.

(27) a. The book John bought is more interesting than the book Bill bought.

b. The object John bought is more interesting than the object Bill bought.

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3. Formal analysis of propredicative quantifiers:

(adjectival) predicates:

express relation between individuals and tropes:

(28) a. John is happy.

b. $\exists t$ happy(John, t)

Special quantifiers as nominalizing quantifiers:

Take scope as well as nominalization domain:

(29) a. John became something admirable.

b. [something admirable]$_i$ John [$_{ik}$ became t_k]]]

(30) a. [$_{ki}$ became t_i] = { <x, t> | $\exists$C (become(x, C) & <t, x> $\in$ f_1(C))}

b. f_1(C) = C

c. $\exists$t(t $\in$ [admirable] & <John, t> $\in$ [$_{ki}$ became t_i]

(31) a. [$_{ki}$ became t_i] = { <x, t> | $\exists$C (become(x, C) & <t, x> $\in$ f_2(C))}

b. f_2 (C) = { <x, k> | k = f_k(C)}

two nominalization domains:

(32) John became something Mary is too.

(33) a. something$_j$ Oi Mary [$_{ik}$ is t_k] too John [$_{jk}$ became t_k]

b. $\exists$t(t $\in$ [$_{ik}$ Mari is t_k too] & <John, t> $\in$ [$_{ki}$ became t_i])

(34) John walks somehow.

(35) a. Somehow$_i$ John [$_{ik}$ walks t_k]

b. $\exists$t (SEC-ORD(t) & $\exists$R $\exists$e $\exists$t'(walk(e, j) & R(e, t') & <John, t> $\in$ f(R))

c. [$_{ik}$ walks t_k] = { <x, t> | $\exists$R $\exists$e $\exists$t'(walk(e, j) & R(e, t') & <e, t> $\in$ f_1(R)

d. f1(R) = R