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Dynamic Semantics: Where do we stand?

I. Prologue : three competitors for the primary hunting grounds.

(1) Origins

a. Kamp (1982), Heim (1983), building on Karttunen, Lewis, Stalnaker.

b. Kamp’s Discourse Representation Theory (Cf. Heim 1983, Ch. 2).

Operations on Logical Forms that set up representations where indefinites are

equated to variables, with a simple standard semantics.

c. Heim (1983)

The units of semantic compositions are Context Change Potentials (functions

from contexts into contexts).

d. ‘Logical’ developments by the Amsterdam group in the late 80’s.

Dynamics has a ‘logic’ (e.g. a proof theory).

(2) Presupposition projection

a. It is Mary that you should ask for advice

b. If you go to school, it’s Mary that you should ask for advice

c. If you need to ask for advice, it’s Mary you should ask

(3) Discourse Sequencing and Coordination

a. \*J introduced [every new faculty]i to the chair, and B introduced himi to the dean.

b. \*J introduced [every new faculty]i to the chair. B introduced himi to the dean.

c. J introduced [a new faculty]i to the chair, and B introduced himi to the dean.

d. John introduced [a new faculty]i to the chair. Bill introduced himi to the dean.

e. In the good old days, John would introduce [a new faculty]i to the chair, and Bill

would introduce himi to the dean.

(4) Relative clauses

a. \* Every professor that was assigned [no advisee]i had an interview with himi.

b. Every professor that was assigned [an advisee]i had an interview with himi

Even though *an advisee* occurs in a scope island, it happily co-varies with the

pronoun.

(5) If/when clauses

a. If John owns [a donkey]i, he beats iti with a stick.

b. \*If John owns [no donkey]i, he want iti.

c. Yesterday, John was in a bad mood. Whenever a student dropped in to chat, he

would send him away/rarely welcome him.

Non generic when-clauses?

(6) The axioms of classical DRT (Kamp 1982, Heim 1983, Ch. 2)

a. Indefinites have no quantificational force of their own. They are like variables.

b. The quantificational force of indefinites is determined by the first structurally

accessible binder. Binders are "unselective".

c. A binder Q sets up a tripartite structure of the form Q[A][B]

d. A rule of existential closure assigns existential force to indefinites that are not

otherwise quantified. [i. at the text level ; ii. in the scope of an operator]

e. Novelty condition: variables associated with indefinites must be “novel.”

(7) How the axioms of classical DRT work.

a. Discourse sequencing: A man walked in. He turned on the light.

1. man(x) ∧ walked in (x)

ii. man(x) ∧ walked in (x) ∧ turned on the light (x)

iii. ∃x [man(x) ∧ walked in (x) ∧ turned on the light (x)]

b. Conditionals/generics:

i. If an Italian is tall, he is always blond

ii. ALWAYS x [italian(x) ∧ tall(x)][blond(x)] [rarely, usually, etc.]

iii. An Italian is tall

iv. x,w [Italianw(x)][tallw(x)]

v. ∀x,w [Cw0(w) ∧ Italianw (x) ∧ Δw(x)][tallw(x)]

C = accessibility relation; Δ = presuppositions of main predicate [More later]

c. Implementation.: LF construal rules.

i. a man owns a donkey. He beats it with a stick.

ii. 🡺 A man1 a donkey2 [t1 owns t2]. A stick3 [ he1 beats it2 with t3]

iii. 🡺 ∃1,2,3 **[A man1 a donkey2 [t1 owns t2]. A stick3 [ he1 beats it2 with t3]]**

iv. The semantics is standard:

g satisfies (iii) iff there is an assignement g’ ≈ [1,2,3] g such that g’

satisfies the subformula in bold.

(8) The axioms of classical situation theory (Heim 1990, Elbourne 1995)

a. Situations are partially ordered by a part of relation ‘≤’.

b. Each situation is part of exactly one world

c. Propositions are sets of situations (that sustain the truth of the proposition)

d. DPs inherently bring to salience minimal situations

e. Pronouns are elliptical descriptions, anaphoric to situations

f. Q-adverbs bind minimal situations made available by DPs

(9) How the axioms of situation theory work.

a. i. No man that owns a donkey beats it

ii. No minimal situation s with a man and a donkey he owns is such that *the man*

*in s* beats *the donkey in s*.

b. i. If a man owns a donkey he beats it

ii. Every minimal situation s with a man and donkey he owns is such that the

man in s beats the donkey in s.

(10) The axioms of classical DS

a. Propositions denote functions from contexts into contexts.

b. There is an operation of Discourse Referent activation. DRs are *not* just variables.

c. Active DRs are ‘pushed forward’ across ‘accessible’ domains.

d. Accessibility is determined by the lexical semantics of propositional operators

e. Pronouns are anaphoric to DRs.

(11) How the axioms of classical DS work.

a. A man walked in. He was tall.

b. i. The first clause has an active DR associated with *a man*.

ii. Coordination/discourse sequencing is function composition:

f ∧ g = g • f = λc. g(f(c))

iii. The DR activated in the first conjunct f is passed on to the second in virtue of

the semantics in (ii) and thus becomes accessible to the pronoun.

(12) If-clauses in DS: one (of several) possible take.

Q-adverbs, in fact, turn out not to be ‘unselective’; they can target specific

elements in their restriction.

a. i. If an Italian dates an American, he usually speaks English Subject-asymm.

ii. Most Italians that date Americans speak English

b. i. If a painter paints a landscape, it usually contains rivers. Object-asymm.

ii. Most landscapes painted by painters contains rivers.

c. If a woman has a child with someone, she usually keeps in touch with him

Here you count <woman, partner> pairs (not children)

In DS, active DRs can be ‘disclosed’ and bound over again (Dekker (1993)’s

Existential Disclosure).

d. How to get the SUBJ-asymmetric reading:

i. Antecedent of (a.i): [an Italian1 dates an American3]1,3

The superscripts indicate the active DRs (the indices are arbitrarily chosen,

but subject to novelty).

ii. D1/u([an Italian1 dates an American3]1,3) =

⇒[an Italian1 dates an American3]1,3 ∧ 1 = u

⇒ λu. [an Italian1 dates an American3]1,3 ∧ 1 = u

Here u is an ordinary variable, 1 is the targeted DR, ‘∧’ is dynamic.

iii. LF of (a.i):

D1/u([an Italian1 dates an American3]1,3) **R**

= λu. u. us is an Italian who dates an American

MOST

D1/u([an Italian1 dates an American3]1,3 ∧ [he1 speaks English]) **S**

= λu. us is an Italian who dates an American and speaks English

(13) The allegation of ‘stipulativeness’ (Schlenker 2007)

a. What prevents one from defining dynamic and in reverse: f ∧ g = f • g.

In that case we would make the opposite predictions.

b. Answer: in DS, standard Boolean ‘∧’, which is symmetric, is replaced by an

asymmetric operation ‘•’. This raises an issue of mapping: what are the

*componens* and the *componendum* respectively mapped onto.

c. i. Syntax of coordination: [ it rains [and [ it is cold]]]

Anaphora facts tells us that the structurally higher conjunct in (i) must be the

*componens*:

ii. I met a philosopher and liked her

iii. \* I met her and liked a philosopher

d. Compare with any standard theory of reflexivization:

i. Syntax of the clause: [John [likes Mary]]

Reflexivization is an asymmetric operation on argument structure. Anaphora facts

tell us that it must apply in such a way that the subject can antecede the object and

not viceversa.

ii. John likes himself

iii. \*Himself likes John

By changing the semantics of REFL or the constituency of the clause it would be

easy to get (iii).

e. Conclusion: the treatment of coordination in DS is as (non) stipulative as the

standard theory of reflexivazion.

II. More facts and argument for DS.

(14) Left adjoined if-clauses with cataphora

a. If it is happy, a dog doesn’t bite

b. If he considers it too difficult, a teacher won’t adopt a textbook

How do we get the indefinites to covary with the pronouns?

Why don’t we get crossover effects?

(15) Right adjoined if clauses

a. A dog doesn’t bite, if it is happy

b. A teacher won’t adopt a textbook, if she considers it too difficult

Usually, the if-clause is in the restriction of a Q-adv/Gn, and the main clause/VP

are in the scope. But here material in the main clause/VP acts as antecedent to

pronouns in the if-clause. How do we get that?

(16) Different attachment sites for left adjoined and right adjoined if-clauses

a. CP

CP TP

If Fido/a dog doesn’t bite it is happy

b. Right adjoined if-clauses display strong ‘Principle C’ effects

\* It is happy, if Fido/a dog barks

This is taken as evidence that a right adjoined if-clause is attached below the

subject.

c. TP

DP T’

iti

T’ [if Fido is barks]

[ti is happy]

(17) Basic clause structure

XP X = ASP, T, etc.

X *v*P [‘Small’ *v*P]

DP *v*’

John Basic subject position

*v* VP

V DP Basic object position

likes Fido

(18) Getting anaphora into Right-adjoined if-clauses

a. I enjoy a good cup of coffee if it is hot.

b. AspP

DPi

DPj AspP

AspP [if itj is hot]

Gn *v*P

[DPiI] [like [DPj a good cup of coffee]]

c. [ DPSUB DPOBJ if-CLAUSE [Gn *v*P] ]

Restriction Scope

Here Gn takes *four* arguments; the first is the *v*P (the scope); the remaining three

are the if-clause and the (moved) subject and object of the main clause that are

incorporated together into the restriction.

(19) Getting cataphora in Left-adjoined if-clauses

a. If he considers it too difficult, a teacher won’t adopt a textbook

b. A teacher won’t adopt a text book, if he considers it too difficult

c. [ if he considers it too difficult [ a teacher won’t adopt a textbook [~~if he considers~~

~~it too difficult~~]]]

If this analysis is correct, sentences like (28a) are not a case of crossover.

(20) A prediction about ‘mixed’ cases

a. If a student seeks him out for help, an advisor must be ready for him

b. If it spots a mouse, a cat will try to catch it

c. ?\* If she is too oppressive with a son, he may well reject a mother

d. ? If a motherj is too oppressive with himi, shej might seriously damage a soni

Why? If cataphora here stems from Right-adjoined if-clauses, this must happen

from a site where if-clauses are C-commanded by the subject. Hence Principle C

should kick in and pronouns in subject position of the main clause should be

out.

Intuitions are controversial. **Quantitative data needed.**

(21) If/then clauses.

a. Island effects (Iatridou 1994)

i. If a friend is in need, then you need tobe there for him

ii. If it is hungry, then a dog barks

iii. How did everyone say that if a friend is willing to help, the car will be

fixed t?

iv. \* How did everyone say that if a friend is willing to help, then the car will

be fixed t?

b. If then-clauses are islands, it is not possible to generate an if-clause in a right

adjoined (low) position and pull it out.

then [ a dog usually barks [if it is hungry]]

c. This suggests a ‘base generation’ analysis

i. [if it is hungry [ a dog usually then barks]]

Here *then* is a pro-form ranging over clause-meanings.

The pronoun *it* is outside the scope of its binder, but must be interpreted

within it, with a kind of ‘improper’ conversion.

ii. λp [usuallyi (a dogi ∧ p , iti barks)] (iti is hungry)

This requires substantial extensions of non dynamic frameworks.

In DS ‘connectedness effects’ like this come for free

(22) Outlook.

a. Anaphora/presuppositions reveal clear fragments of logicality.

b. There are at least three (reasonably well chartered) competitors.

c. i. Are these three competitors distinguishable?

ii. Does natural language hopelessly underdetermine the issue?

iii. Or is there a fact of the matter?