Chris Barker Dynamic Semantics? Mon 28 Apr 2008

> A semantics is dynamic if and only if its notion of conjunction is dynamic, and hence non-commutative. (Groenendijk and Stokhof 1989)

Groenendijk, J. and M. Stokhof 1989: Context and information in dynamic semantics. In: H. Bouma and B.A.G. Elsendoorn (eds.), *Working Models of Human Perception*. Academic Press, London: 457–486.

Wrong in both directions:

1. Schlenker has commutative conjunction but dynamic system.

1′. Temporal *and* is non-commutative without forcing a dynamic semantics:

John went to the store and bought a coat.

Decomposing dynamicism:

0.1. Does order of evaluation affect the net result (whether or not order effects are built into lexical items or stated independently of lexical items)?

0.2. Do expressions denote context update functions?

The New Dynamicism:

- Is meaning dynamic? Yes! The order in which expressions are evaluated makes a detectable difference independent of the contribution to truth conditions.

- Do meanings update contexts? That would be nuts: meanings don't have the authority to change contexts. Words don't change contexts, people do.

Pryor's question: is there any way of saying what it means to be dynamic without making assumptions about the nature of the context (sets of worlds, assignment functions, etc.)?

Empirical arenas:

- Anaphora: Heim 1982, 1983, DPL, DMG, PLA, Barker and Shan, pro; Heim 1990, Elbourne 2005, contra

- Presupposition: Heim 1983, Potts pro; Schlenker, contra.

- Other areas: vagueness, clarity, expressives, epistemics, questions

Truisms to bear in mind when preparing to state the question:

1. (Disambiguated) sentences have truth conditions.

2. Context affects truth conditions in all sorts of ways, including:

- Resolving indexicals
- Resolving pronoun reference and pronominal anaphora
- Resolving vague standards

3. Utterances of sentences are causally involved in how the context evolves.

Simplistic version of the meaning-is-static view:

4. Sentences are uttered in a specific discourse situation.

5. The sentence and the discourse situation jointly determine truth conditions.

6. In recognition of the intentions of the speaker, the utterance of a sentence will normally lead to certain predictable changes in the state of the discourse. For instance, asserting a declarative sentence will typically result in the information corresponding to the truth conditions being added to the common ground.

7. These changes will affect the interpretation of subsequent utterances.

Simplistic version of the meaning-is-dynamic view:

8. Certain aspets of the context changes resulting from utterances are far too systematic to be left to general pragmatic considerations.

9. Contexts keep track of far more than just information about the world (referential intentions, vague standards, binding possibilities, etc.).

10. Sentences (and other expression types) can impose conditions on the situations in which they are uttered (think, for example, of presuppositions, deictic uses of pns, etc.).

11. When an expression imposes conditions on the context, use of that expression causes the context to conform to its conditions.

12. It makes sense, therefore, to conceive of sentence meaning (expression meaning) as a function on contexts.

Major questions:

13. What information does a discourse context track? What's on the scoreboard? (Technically: what objects are suitable for modeling context? Sets of worlds? Sets of assignment functions? Sets of pairs?)

14. How do you tell whether an update effect is systematic enough to justify making it part of the meaning of an expression?

The case for anaphora:

15. The use of an indefinite guarantees the presence of a discourse referent that can affect the interpretation of subsequent expressions (notably, pronouns).

16. A man walked in. He sat down.

17. He walked in. A man sat down.

18. So among the kinds of information maintained in a context are discourse referents.

19. The rule in (15) is obligatory and exceptionless?

20. Order matters (as shown in (16) and (17)).

21. It's complicated:

22. If he's smart, a man will always wear a napkin when eating spaghetti.

23. If a man owns a donkey, he beats it.

24. If every man owns a donkey, he beats it.

25. Consensus: the behavior of bound anaphora, though intricate, is systematic enough to require characterizing rules.

26. Non-consensus: should those rules be expressed in terms of conditions on the context? Alternatives: syntactic, E-type.

27. Syntactic alternative: indefinites can bind all and only those pronouns that the indefinite c-commands without being clausemates. Too simple: donkey anaphora is a counter-example.

28. E-type proposal: at least some pronouns are covert definite descriptions.

29. Truth conditions are computed based on sets of situations (parts of worlds).

The case for presuppositions as context update functions (accommodation: new):

30. At least some presuppositions are lexically specified (*too*, *also*, *the*, etc.)

31. If an expression has a presupposition, that presupposition is in effect a condition on the contexts in which that expression can be uttered. For instance, "John knows that p" can only be uttered in a context that entails p.

32. Thus immediately after uttering a sentence that presupposes p, the context must obligatorily entail p.

33. Accommodation: even if the context didn't entail p before:

34. Sorry I'm late, my cat was sick.

35. King: what do you do if your evaluation context still has non-cat worlds in it? Throw them out!

36. Unlike at-issue content, presuppositions amount to non-negotiable instructions on how to update the context.

37. Parallel situation (Potts): appositives:

38. John, who is married to Ann, needs money.

39. No he doesn't! (need money)

40. ?#No he isn't! (married to Ann)

41. One of the most persuasive arguments that sentences do not denote context update functions is that updating with the information in a sentence is not inevitable: it can be declined. Appositives and presuppositions, however, are much better candidates for context update functions.

The case for dynamic interpretation from presupposition projection:

42. If sentences (clauses) denote context update functions, that explains presupposition projection.

43. France has a king, and the king is bald.

44. The king is bald, and France has a king.

45. If France has a king, then the king is bald.

46. If the king is bald, then France has a king.

47. c + "A and B" = (c + A) + B

48. c + "France has a king" entails the presupposition of "the king is bald".

49. Schlenker: (47) is a terrible lexical meaning for "and", since it predicts that "and" could have meant (c + B) + A. We need to make update behavior independent of truth conditions.

(5) The local context of a propositional or predicative expression *d* that occurs in a syntactic environment *a* _ *b* in a context C is the strongest proposition or property x which guarantees that for any expression *d'* of the same type as *d*, for all strings *b'* that guarantee that *a d'b'* is a well-formed sentence,

$C \models^{c' \to x}$ a (c' and d') b' $\Leftrightarrow$ a d' b'

(If no strongest proposition or property x with the desired characteristics exists, the local context of *d* does not exist).

With this notion in place, we can repeat the standard dynamic definition of presupposition satisfaction:

(6) A presuppositional expression *E* is acceptable in a sentence *S* uttered in a context C just in case the presupposition of *E* is entailed by the local context of *E* (if it exists).

Processing question: do we compute local contexts when we evaluate sentences?

Seems necessary: *John left and Mary left too* versus *Mary left too and John left*.

50. Notes on Schlenker:

- Seems dynamic: computing the local context depends (only) on what has come before (in Schlenker's current formulation, "before" = "to the left")
- Not specific to any lexical item: generalizes over all connectives at once
- Bivalent: sentences denote truth values, either true or false (no need for gaps). They do not need to denote sets of worlds, or sets of assignment fns, etc.
- In addition to truth conditions, must keep track of semantic context (= continuations): when computing the local context of "the king is bald" in (43), must have access to the continuation "France has a king and _".

51. Stone's view of presupposition: sure, computing presupposition projection is dynamic. But there is no need to compute presupposition projection. Just assme that all preconditions are met, and start updating with new information. If you get into a situation in which the entailments of a sentence are not compatible with information in the context, you won't have any problem detecting that situation (and furthermore, you'll know what to do: object, renegotiate). Production is more difficult: must form a plan in which necessary preconditions are all met. But that's a general planning problem, and not a grammatical problem. There is no need to compute the most general proposition that will satisfy the presuppositions (the projection problem); rather, need only compute a plan that will work.

52. What does the following sentence presuppose?

53. [looking at a rack of CDs]

If John doesn't like classical music, his wife sure does.

54. If John doesn't like classical music, he has a wife.

55. No one needs to compute that.

56. What is the class of situations in which it is possible to place block B on top of block A? No one needs to compute that. Rather, only necessary to find a plan which will make it possible to place block B on top of block A.

52. Bottom line: if presupposition projection were a problem that needed to be solved, the solution would require a dynamic treatment.

Vagueness: POS versus mini-contexts.

Monotonicity commitment. Condition on contexts...

Sentences necessarily with only side effects.

Conditional: temporary context... global update...

Ways of thinking you're dynamic when you're really not?

53. Groenendijk and Stokhof (van Benthem): if an update is both eliminative and distributive, it is equivalent to a static set of truth conditions. For instance, in Heim 1983:

54. Dynamic: c + "A and B" = (c + A) + B

55. Static: c + "A and B" = c $\cap \{w | w \in A \& w \in B\}$

56. Just because a dynamic system is equivalent to a static one doesn't mean that it isn't the right way to conceive of meaning. For instance, the dynamic view in Heim 1983 allows computing presupposition projection; the equivalent static view does not.

57. Veltman's update semantics is eliminative but fails to be distributive (since whether a world survives update depends on the presence of other worlds in the context set, e.g., for *It might be raining*); and Groenendijk and Stokhof's DPL and DMG are distributive but fail to be eliminative (since using an indefinite can enlarge the set of evaluation points).

Ways of thinking you're static when you're really not?

58. E-type semantics is a way of sneaking lists of discourse referents into the context representation:

w: f1 f2 f3 d1 d2 d3 d4

s1: f1 d1 s2: f1 d2 d3: f2 d1 d4: f2 d4 ...

"...he beats it"

What do you need to compute?

What information do you need to keep track of while you compute it?

Who knew what, and when did they know it?

Dynamic update is incremental update.

Is update with the information in the left conjunct optional?

59. John left, and Mary left too.

60. Mary left too, and John left.

61. Argument that update is rule-governed: update with the right conjunct first is not possible.

62. John left or Mary left too. =? John left or (John left and Mary left too).

63. John left by himself, or Mary left too = John left by himself or (John left and Mary left)

64. John stayed or Mary left too. = John stayed or (not(John stayed) and Mary left)

65. Did John leave? Well, let's see if Mary is still here: Either Mary left too, or John stayed.

The petite French nanny had been Maddy's bargaining tool for the move. Either she came too or Maddy wasn't budging.

Heuristic: when "A or B" is interpreted as "If not(B) then A", optionally evaluate A in a local context that entails not(B).

Guerts, *Presuppositions and pronouns*, 4th page of Chapter 4:

> I don't wish to deny that on the face of it the dynamic account of and has a certain appeal, but whatever initial appeal the theory may have derives from the fact that language is processed incrementally. As far as I can see, the only coherent construal of dynamic semantics is that it is an attempt at hardwiring this processing strategy into the lexicon. But to grant that this is a coherent construal is not to condone the project. Indeed, if one's objective is to account for the observation that a sentence of the form 'S1 and S2', like any complex expression, is processed from left to right, then the lexical entry of *and* surely is one of the most unlikely starting points. Not only that, but since the processing strategy is a perfectly general one, any such account is bound to miss an obvious generalization by a long shot.

66. So far, assumption that sentences are evaluated at worlds. If we assume that sentences are evaluated at worlds and assignment functions, we can consider anaphora.

67. Truth conditions are static. Scorekeeping (especially anaphora) is dynamic.

68. Presuppositions and appositives trigger obligatory update; at-issue entailments are proferred content, and may or may not induce update.

69. Rendering the meaning of a sentence as a context update function does not guarantee that the function will be deployed. Sentences have a context update *potential*, not a context update effect.

70. Interpretation and update is incremental, but not governed by individual lexical items.

71. Everyone recognizes that meanings must map contexts onto several (partially) independent objects: at-issue truth conditions, presuppositions, anaphoric commitments, etc. Let the obligatory updates be formulated as context update functions (presuppositions, appositive content, perhaps anaphoric commitments). Let the at-issue entailments be proferred as a static set of truth conditions, with which the listener can do whatever she chooses.

72. (Most) implicatures aren't even computed by the grammatical system.