A Discourse Processing Account of Gapping and Causal Implicature

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1 Gapping and Causal Implicature

(1) Ehrlichman duped Haldeman, and Nixon, Ehrlichman. (Hankamer and Sag, 1976)

Past work: (Ross, 1970; Hankamer, 1971; Jackendoff, 1971; Stillings, 1975; Kuno, 1976; Sag, 1976; Hankamer and Sag, 1976; Neijt, 1979; Neijt, 1981; Levin and Prince, 1982; Cremers, 1983; Siegel, 1984; Sag and Hankamer, 1984; Prince, 1986; Chao, 1987; Oehrle, 1987; Steedman, 1990; Gardent, 1993, inter alia)

Levin and Prince (1982):

(2) a. Sue became upset and Nan became downright angry.

b. Al cleaned up the bathroom and Joe cleaned up the mess.

c. One of the students was accepted at Bryn Mawr and the high school was praised on TV.

(3) a. Sue became upset and Nan ∅ downright angry.

b. Al cleaned up the bathroom and Joe ∅ the mess.

c. One of the students was accepted at Bryn Mawr and the high school ∅ praised on TV.

(4) Sue and Nan had worked long and hard for Carter. When Reagan was declared the winner, Sue became upset and Nan became/∅ downright angry.

(5) Susan's histrionics in public have always gotten on Nan's nerves, but it's getting worse. Yesterday, when she couldn't have her daily Egg McMuffin because they were all out, Sue became upset and Nan became/#∅ downright angry.

2 VP Ellipsis

(6) Ross likes his mother, and Bill does too.

Kehler (1993b):

- Parallel Constructions:
  - e.g., example (6) { symmetric }
  - Syntactic representation reconstructed at the target site.
- Non-Parallel Constructions:
  - e.g., clauses conjoined with "but", "because", "even though"... { asymmetric }
  - Semantic representation reconstructed at the target site.

2.1 Passive/Active Voice Mismatches

Non-Parallel:

(7) In March, four fireworks manufacturers asked that the decision be reversed, and on Monday the ICC did. [reverse the decision]
(from text of Rosenthal (1988), cited in Dalrymple (1991))

(8) This problem was to have been looked into, but obviously nobody did. [look into the problem] (Vincent Della Pietra, in conversation)

(9) Actually I have implemented it[1] with a manager, but it doesn't have to be. [implemented with a manager]
(Steven Ketchpel, in conversation)

(10) In addition to inducing lethality during the first instar, it[2] retards embryonic development, but not to the extent that the growth cones were. [retarded]
(from text of (Jarecki, 1992))

Parallel:

(11) # This problem was looked into by John, and Bob did too.

(12) # This agent retards embryonic development, and the growth cones were too.

2.2 Non-VP Antecedents

Non-Parallel:

(13) This letter deserves a response, but before you do, ... [respond]
(Gregory Ward, p.c.)

(14) Meanwhile, they sense a drop in visitors to the city. Those who do, they say, are not taking cabs. [visit the city]
(Chicago Tribune, courtesy Gregory Ward)

(15) First person pronouns aren't very shiftable, although the plural ones can be. [shifted]
(Barbara Partee, in conversation)

[1] Here, *it* refers to a previously mentioned computer system.
[2] Here, *it* refers to a previously mentioned chemical agent.

Parallel:

(16) # This letter provoked a response from Bush, and Clinton did too. [responded]

(17) # There is a rise in American visitors to the city, and Canadians do too. [visit the city]

(18) # First person pronouns aren't very shiftable, and the plural ones also don't. [shift]

2.3 Binding Theory Constraints

2.3.1 Condition A Violations

Parallel:

(19) ?? John$_i$ defended himself$_i$, and Bob$_j$ did too. [defended John$_i$]

(20) ?? Fred$_i$ voted for himself$_i$, and Gary$_j$ did too. [voted for Fred$_i$]

Non-Parallel:

(21) Bill$_i$ defended himself$_i$ against the accusations better than his lawyer$_j$ did. [defended Bill$_i$]

(22) John$_i$ voted for himself$_i$ even though no one else$_j$ did. [voted for John$_i$]

2.3.2 Condition B Violations

Parallel:

(23) # John's$_j$ mother introduced him$_j$ to everyone, and he$_j$ did too. [introduced himself$_j$]

(24) # John$_i$'s lawyer defended him$_i$, and he$_i$ did too. [defended himself$_i$]

Non-Parallel:

(25) John's$_j$ mother introduced him$_j$ to everyone before he$_j$ had a chance to. [introduce himself$_j$]

(26) John$_i$'s lawyer defended him$_i$ better than he$_i$ did. [defended himself$_i$]

2.3.3 Condition C Violations

Parallel:

(27) # I hit Bill_i, and he_i did too.

(28) # Mary introduced John_j to everyone, and he_j did too.

Non-Parallel:

(29) I expected Bill_i to win even when he_i didn't.

(30) The lawyer defended Bill_j against the accusations better than he_j could have.

2.4 Subjacency Violations

Antecedent Contained Deletion:

(31) John read everything which Bill believes he did.

Parallel:

(32) # John read everything which Bill believes the claim that he did. (Haïk, 1987)

(33) # John read everything which Bill wonders why he did. (Haïk, 1987)

Non-Parallel:

(34) Which problem did you think John would solve because of the fact that Susan did? (Rooth, 1981)

Unelided form with gap:

(35) * Which problem did you think John would solve because of the fact that Susan solved?

3 A Discourse Processing Architecture

3.1 Sag and Hankamer's Architecture

2 types of representation:

- (Syntactic) Propositional Representations
- (Semantic) Discourse Model Representations

2 types of anaphoric processing:

- Ellipsis: obtains referents from propositional representations.
- Model Interpretive Anaphora (MIA): obtains referents from the discourse model.

VP-ellipsis data problematic for this dichotomy – behaves like *ellipsis* in parallel constructions, and like *MIA* in non-parallel constructions.

3.2 A Revised Architecture

Utterances parsed into propositional representations, which are subsequently integrated into the discourse model.

- Non-parallel constructions: Integration of propositional representations into discourse model due to coherence cue signaled by conjunction.
- Parallel constructions: Common topic inferred among propositional representations which are subsequently integrated into discourse model as a unit. Therefore: parallel conjunction does not invoke integration of the propositional representation of the first clause into the discourse model.

4 A Return to Gapping

4.1 Gapping in the Discourse Processing Architecture

- By postulating that gapping requires a suitable propositional representation as its source, facts concerning causal implicature are predicted.
- Predicts gapping is infelicitous in those cases where referents of VP-ellipsis are semantic.

Asymmetric *and* in gapping (Levin and Prince, 1982):

(36) a. Sue became upset and Nan became downright angry.

b. # Sue became upset and (as a result) Nan $\emptyset$ downright angry.

Asymmetric *and* in VP-ellipsis (Kehler, 1993b):

(37) In March, four fireworks manufacturers asked that the decision be reversed, and on Monday the ICC did.

(38) This material can be presented in a fairly informal fashion, and often I do. (from text of (Chomsky, 1982), cited in (Dalrymple *et al.*, 1991))

(39) a. # John voted for Clinton but Tom $\emptyset$ Bush.

b. # Fred voted for Clinton because Tom $\emptyset$ Bush.

c. # Fred voted for Clinton even though Tom $\emptyset$ Bush.

d. # Fred voted for Clinton more confidently than Tom $\emptyset$ Bush.

e. # Fred voted for Clinton although Tom $\emptyset$ Bush.

(40) John will go to New York, or Bill will go to Boston.

(41) (John's boss speaking): A meeting should not be scheduled on Thursday, since one of our people will be heading out of town. Either John will go to New York, or Bill (will go)/$\emptyset$ to Boston.

(42) (John's boss speaking): Listen, John, you might not want to be transferred to New York, and I can't force you to go. But I can transfer Bill, and you can imagine what life would be like around here for you if Bill's not here. Now either you will go to New York, or Bill will go/#$\emptyset$ to Boston!

4.2 Interaction of Gapping and VP-Ellipsis

(Sag, 1976, pg. 291, judgements his):

(43) ?? Alan likes Sandy, and Betsy $\emptyset$ Peter and Lois does too.

(44) Alan likes Sandy, and Betsy $\emptyset$ Peter, although she doesn't know why she does.

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