



Ellipsis and Discourse Integration

Daniel Hardt

Computational Linguistics
Copenhagen Business School

Introduction

Form and Meaning

“Ellipsis continues to fascinate because its analysis goes directly to the heart of the main reason we study syntax: to discern the nature of the form/meaning correspondence.” (Merchant (2009))

- The syntactic system must *interface* with a general conceptual or semantic system
- Goal: explain ellipsis phenomena in terms of these irreducible semantic interface requirements, rather than in terms of additional complexities in the syntactic system

Discourse Integration

One interface requirement: integrate sentences into a coherent discourse. *Discourse Integration* has these general features:

- **Given-New:** determine what is *given* and what is *new*, when relating two structures.
(*E-given*, Merchant (2001), *Alternative Semantics*, Rooth (1985))
- **Maximize Structure:** Maximize Commonality between related structures.
(Maximize Common Theme, from Asher et al. (2001))
- **Least-Effort:** Minimize Size of Discourse Integration.

Main Claim

- Ellipsis occurrences are variables
 - Variables participate in “structure sharing”
 - The shared structure can be freely re-interpreted
 - Variable interpretation is part of Discourse Integration

The Plan

1. Discourse Integration vs LF Identity
 - Non-local Sloppy Identity
 - Sloppy Ellipsis
 - Split Antecedents
2. An Alternative View: Ellipsis as Definite Descriptions
3. More about Discourse Integration
 - Maximize Structure
 - Least-Effort
4. Conclusions

1 Discourse Integration vs LF Identity

(1) John loves his cat. Sam does ~~love his cat~~ too.

Observations:

- (1) can mean:
- John and Sam each love their own cats (“sloppy”)
- John and Sam both love John’s cat (“strict”)
- John and Sam both love some third person’s cat (“strict”)
- (1) *can’t mean*: John loves Harry’s cat and Sam loves John’s cat

Syntactic LF Identity Theory

Sag (1976); Williams (1977); Reinhart (1983); Heim & Kratzer (1998); Tomioka (1999); Sauerland (2004); Roelofsen (2008)

- (2) a. John₁ loves his cat. Sam₂ does too.
b. John₁, $\lambda x.x$ loves x’s cat.
c. John₁, $\lambda x.x$ loves 1’s cat.

Claims of Syntactic LF Theory:

- Lambda operator and variable indexing represented syntactically
- Ellipsis must be an LF-copy of some antecedent

Discourse Integration Instead of LF Identity

According to LF Identity, ellipsis is a copy of antecedent, which represents lambda binding and indexing. There is something right about this. But it is too limited.

(3) John adores his cat. Sam loves his cat too.

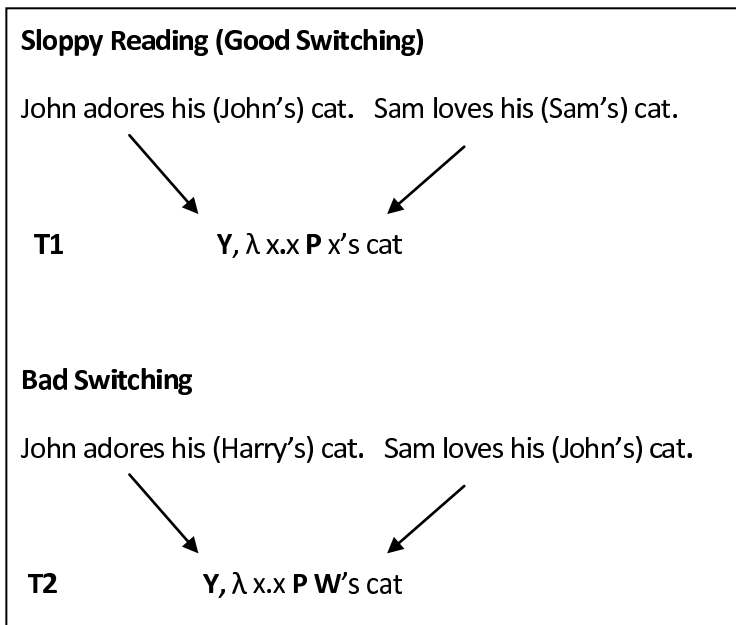
- Same interpretive effects
 - Sloppy: John - Sam
 - Strict: John - John
 - Strict: Harry - Harry
 - No “Bad Switches”: Harry - John
- But LF identity *cannot apply*. (Tancredi (1992))

Discourse Integration: determine *Common Theme* between related sentences in discourse. (Asher et al. (2001))

- Given two related sentences A,B, determine a common theme T, such that T can be constructed from both A and B by a sequence of operations. These operations include lambda abstraction and the elimination of structure.
- If more than one Common Theme can be so constructed, prefer the maximal one(s).

To construct Common Theme in (3) (sloppy reading):

- Start with *John adores his cat*
- Lambda abstract: John, $\lambda x.x$ adores x’s cat
- Eliminate *John*: ~~John~~, $\lambda x.x$ adores x’s cat
- Eliminate *adores*: ~~John~~, $\lambda x.x$ adores x’s cat



- (Note: I show non-matching bits as bold capital letters – **Y**, **P** and **W** above.)
- T1 is preferred to T2 – more common structure
- Discourse Integration captures the desired readings in both (1) and (3), while LF identity only applies to (1)
- We claim therefore that *only* Discourse Integration deals with indexation and binding.

Key Points

- **Re-interpretation:** Variable structure sharing allows re-interpretation of antecedent. Many ways to think about this – for example:
 - Syntactic: Copy syntactic representation of antecedent, without information about indexation (since indexation and binding is the exclusive province of the semantic interface)
 - ”The VP-level condition requires . . . that the deleted VP and its antecedent must be made up of the same lexical material. . . it doesn’t care about matters of indexing”. (Heim (1997))
 - Copy discourse representation of antecedent, represented as a function of context (Hardt (1994, 1999))
- **Free Lambda Abstraction:** Can target any category in any position, as part of process of determining common theme.

Non-local Sloppy Identity

(4) If John was having trouble in school I would help him, but if Bill was having trouble I wouldn’t. (Hardt (1992))

- Doesn’t work with LF identity (requires local lambda binder)
- Common Theme for sloppy reading:
- *if x was having trouble in school I would help x*

“Third person” reading:

(5) Sometimes Sam needs help when other students cause trouble – but I only step in when needed.

(6) If John was making trouble in class I would help him, but if Bill was making trouble I wouldn’t.

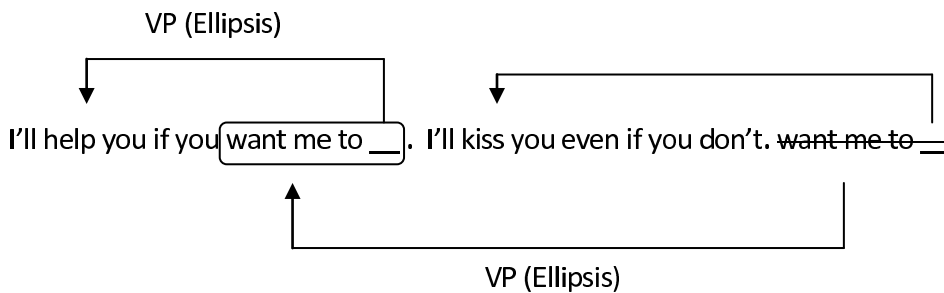
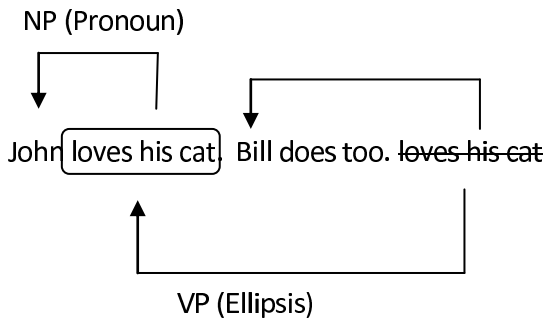
- We still rule out bad switches, eg from “Sam” to “John”.
- On this reading the Common theme would be:
- *if x was making trouble in class I would help Y*

Sloppy Ellipsis

(7) I'll help you if you want me to. I'll kiss you even if you don't. ~~want me to kiss you~~

(Hardt (1994); Schwarz (2000))

- This shows VP ellipsis occurrences can be bound variables just like pronouns
- Common Theme for sloppy reading: $\lambda P, I$ will P if you want me to P
- "...the ellipsis site behaves like a variable in the semantics, [but need not in the syntax]." (Merchant (2009))



- *Expanded Paradigm for Sloppy Identity* (Hardt (1994)): Any combination of variables can participate in sloppy identity as shown above
- Stone & Hardt (1997) show this includes tense and modals in addition to pronouns and ellipsis forms.

Split Antecedents

(8) Bob wants to sail round the world and Alice wants to climb Kilimanjaro, but neither of them can, because money is too tight.

(Bob can't sail round the world, and Alice can't climb Kilimanjaro)

(9) I can walk, and I can chew gum. Gerry can too, but not at the same time.

(Gerry can walk and Gerry can chew gum.)

(Webber (1978); Hardt (1992))

- VP ellipsis here is a kind of "plural VP" (Elbourne (2008))
- (8) reflects a "cumulative" reading: they (bob \oplus alice) can (sail \oplus climb)
- A standard treatment (Heim (2006)): two-place plural operator gives
- they (bob \oplus alice) can (sail \oplus climb) = bob can sail and alice can climb
- Compare: the vets (v1 \oplus v2) weighed the kittens (k1 \oplus k2) = v1 weighed k1 and v2 weighed k2

2 An Alternative View: Ellipsis as Definite Descriptions

Elbourne (2008)

Split Antecedents

- Ellipsis occurrences are *implicit definite descriptions*
- Paraphrase of (8): they can perform the action out of *sailing around the world* and *climbing Kilimanjaro* that they desire
- THE R {sail around the world, climb Kilimanjaro}
- R = the agent wants to perform the action
- R is implicit Restrictor variable, on analogy with quantifier domain restriction as in von Stechow (1994) and many others.
- R variable gets its meaning from context in quite a free manner – need not be associated with any syntactic constituent
- In split antecedent examples, R does the work I attributed to two-place plural operator above

Sloppy Ellipsis

(10) When John had to cook, he didn't want to. When he had to clean, he didn't either.

- Paraphrase of ellipsis site: *want to perform the particular action out of cook and clean that he had to perform then*
- THE R {cook, clean}
- R = *he had to perform then*
- This requires both *cook* and *clean* to be available antecedents for both ellipsis sites
- Such “backwards” anaphora across sentence boundaries is unusual – normally considered to be impossible
- No reason for appealing to a split antecedent combined with context variable R here: all that is necessary is to treat VP ellipsis as a variable

Non-local Sloppy Identity

(11) If John was having trouble in school I would help him, but if Bill was having trouble I wouldn't.

- Paraphrase of ellipsis site: *help the individual out of John or Bill who is having trouble in school*
- help THE R {Bill, John}
- R = *Bill if Bill is having trouble in school, John if John is having trouble in school*
- Similar to Tomioka (1999): Sloppy pronouns as E-Type
- Such an approach still must rely on Discourse Integration to rule out “bad switching” example – E-Type strategy by itself does not do this.

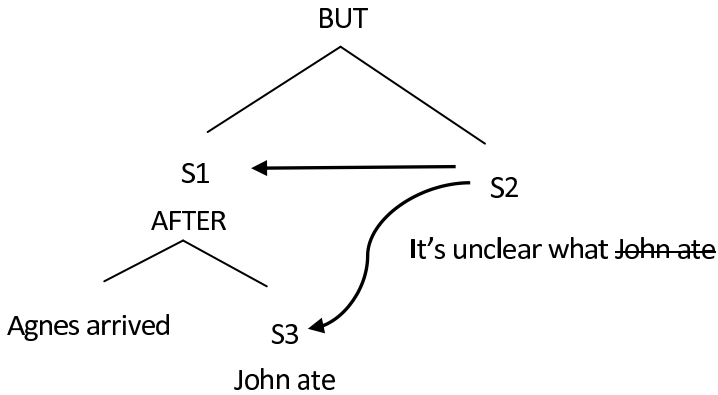
For example, Elbourne's strategy would not rule out the following (assuming Sam, John and Bill are all students:)

- If John was having trouble in school I would help him (Sam) but if Bill was having trouble I wouldn't. ~~help John~~
- help THE R {Sam, Bill, John}
- R = *Sam if John is making trouble, John otherwise*

3 More about Discourse Integration

Maximize Structure

- (12) *Agnes arrived after John ate, but it's unclear what ~~John ate~~ (Chung et al. (1995); Hardt & Romero (2004))



- Prefer matching S2 to S1 rather than S2 to S3
- In general, prefer to relate more structure rather than less
- Takahashi (2008): this involves the presence of an implicit temporal adverbial in the antecedent, which doesn't appear at the ellipsis site.

- (13) John kept getting closer to the window while I ate lunch AT t. *Bill didn't eat ~~lunch~~.

- (14) *ate lunch AT t* does not match *eat lunch*

- (15) Bill got healthy after Sue went to the hospital AT t, but John got sick after Mary did ~~go to the hospital AT t~~

- Takahashi: here ellipsis is ok, because there is "AT t" in ellipsis and antecedent
- Discourse Integration also correctly picks smaller antecedent
- It could also be that the temporal relations are just one way of showing the discourse structure

- (16) I thought Bill would get healthy after he received his fifth treatment. But he never did.

- get healthy after he received his fifth treatment AT t
- ?receive his fifth treatment AT t

- Both possible antecedents have implicit "AT t" clauses – so both are fine according to Takahashi's proposal
- But Discourse Integration correctly prefers larger antecedent

Least-Effort

- (17) John said Mary hit him.

- (18) a. Bill did too. ~~said Mary hit Bill/John~~
 b. Bill said she did too. ~~hit ?Bill/John~~

- (Sag (1976)) Smaller ellipsis seems to prefer strict over sloppy – why?
- Proposal:
 - Discourse Integration is checked incrementally for subparts of sentences – but hearer tries to *minimize effort*
 - First try smallest possible structure and then move to larger containing structures until Discourse Integration is satisfied (Hardt (2006))
 - Incremental Discourse Integration is aligned with pronunciation – compare with Cyclic Linearization (Fox & Pesetsky (2005))

Determining Common Theme

- **Example**

- A = John₁ said Mary₂ hit him₁.
- B = BILL₃ did too. ~~said Mary₂ hit him₃~~
- Sloppy Common Theme: [X,λ x.x said Mary₂ hit x]
- Strict Common Theme: [X,λ x.x said Mary₂ hit 1]
- Both acceptable

Good and Bad Sloppy Reading

Bad Sloppy Reading:

(19) John₁ said Mary₂ hit him₁. Bill said she did. hit him

- Discourse Integration of *she did hit him*
- Sloppy Common Theme: [Mary₂ hit **X**]
- Strict Common Theme: [Mary₂ hit John]
- Strict is preferred (more common structure)

Good Sloppy Reading:

(20) Nearly EVERY boy₁ said Mary₂ hit him₁. But BILL₃ didn't say she did. ~~hit him~~

- Sloppy reading is not blocked by strict here: only reading is *Bill didn't say Mary hit Bill*

4 Conclusions

- Ellipsis occurrences are variables
- Variable interpretation completely regulated by Discourse Integration
- No indexation or lambda abstraction in syntax
- “Structure sharing” in variable interpretation may be syntactic or semantic – but it must permit reinterpretation of indices
- Discourse Integration involves Maximal Structure and Least-Effort preferences

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