Sluicing without Deletion

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Sluicing

With Correlate:

- **Someone** left the room yesterday, but I don’t know **who**.
- **Someone** left the room yesterday. I wonder **who**.
- A: **Someone** left the room yesterday.
  B: **Who**?

Sprouting:

- They gave away the farm, but I don’t know **to whom**.
- They gave away the farm. I don’t know **to whom**.
- A: They gave away the farm.
  B: **To whom**?
3 Theories of Sluicing

- Deletion (Ross 1969, Sag 1976, Merchant 2001, ...)

- Classified as Surface Anaphora by Hankamer and Sag 1976 and Sag and Hankamer 1984

- LF Copying (Williams 1977, Chung, Ladusaw, & McCloskey 1995,...)

- Direct Interpretation (Ginzburg & Sag 2000, Culicover & Jackendoff 2005, ...)
S-Structure: **Someone** left the room yesterday.

\( \text{LF: } [\text{Someone } x] \ [_{IP} x \ \text{left the room yesterday}]. \)

\( \text{but I don’t know } [_{CP} [\text{who } x] \ [_{IP} \ ]]. \sim \)

\( \text{but I don’t know } [_{CP} \ [\text{who } x] \ [_{IP} x \ \text{left the room yesterday}]]. \)
Ginzburg & Sag 2000

\[
\begin{bmatrix}
\text{SYN} & S \\
\text{SEM} & \lambda \Sigma \Phi \\
\text{CNTXT} & \left\{ \begin{bmatrix}
\text{SYN} & \text{[CAT XP]} \\
\text{SEM} & \text{[IND i]} \\
\end{bmatrix} \right\} \\
\text{MAX-QUD} & \lambda \{ \} \Phi
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{SYN} & \text{[CAT XP]} \\
\text{SEM} & \text{[IND i]} \\
\text{STORE} & \Sigma
\end{bmatrix}
\]

where \( \Sigma \) is a nonempty set of parameters.
but I don’t know \([CP [+Q ] [IP Kim likes [who]]] \).

but I don’t know \([CP [+Q who_i ] [IP Kim likes __ i ]] \).

\(\sim\) but I don’t know \([CP [+Q who_i ] ]\)

just in case

‘[someone \textbf{i} [Kim likes \textbf{i } ]]’ is ‘e-given’. 
Road Map

Ever popular view: Deletion Theory of Sluicing (Merchant’s)

- Arguments for Deletion
  - P-Stranding Generalization
  - Evidence Against Deletion
  - Sprouting
  - A Revision of Ginzburg and Sag 2000
- Conclusions
Ellipsis is fundamentally semantic in nature: the content of an elliptical utterance is determined by the content of an appropriate linguistic antecedent.

Content = meaning fixed in context.

Deletion provides a seemingly simple account of the interpretation of elliptical utterances.
Semantic Motivation for Deletion Analyses

- But what is the identity condition licensing ellipsis?
- Syntactic form of remnant and antecedent may differ:

- Kim doesn’t want anything, but Lee does ⟨want something⟩.
- These people have gall bladders, but I don’t ⟨have a gall bladder⟩.
- I went home when they wouldn’t ⟨go home⟩.
- I can’t play quarterback. I don’t even know how ⟨to play quarterback⟩.
- I remember meeting him, but I don’t remember when ⟨I met him⟩.
A Purely Semantic Identity Condition


(1) A: Do you think they’ll like $\text{him}_C$?  
   B: Of course they will $\_\_$. [$\_\_ = \lambda x[\text{like}(x, C)]$]

(2) A: Do you think they’ll like $\text{me}$?  
   B: Of course they will $\_\_$. [$\_\_ = \lambda x[\text{like}(x, A)]; \neq \lambda x[\text{like}(x, B)]$]
Sag and Hankamer’s (1984) Semantic Theory:

Delete $VP_e$ in $S_e$ only if:

- $c_e$ is the Kaplan-context of $S_e$,
- $c_a$ is the Kaplan-context of some sentence $S_a$ not subsequent to $S_e$ in discourse, and
- there is some $VP_a$ in $S_a$ s.t. for all assignments $f$,

$$[[VP_e]]^{c_e f} = [[VP_a]]^{c_a f}.$$ 

(S&H were following Sag (1976) in assuming ‘no rebinding of traces’)
Merchant’s (2001) Semantic Theory

- An expression \( E \) counts as e-GIVEN iff \( E \) has a salient antecedent \( A \) and, modulo \( \exists \)-type shifting,
  1. \( A \) entails \( F\)-clo\( (E) \), and
  2. \( E \) entails \( F\)-clo\( (A) \)

- Focus condition on VP-ellipsis:

  \( \text{VP}_e \) can be deleted only if \( \text{VP}_e \) is e-GIVEN.
Questioning the e-GIVEN Identity Condition
A \( VP_e \) can be deleted only if \( VP_e \) is e-GIVEN.

A \( VP_e \) can be deleted only if there is a (salient) \( VP_a \) in the surrounding context s.t. for all assignments \( f \):

1. \( [[F\text{-clo}(VP_e)]][c_e^f \vdash [[F\text{-clo}(VP_a)]][c_a^f] \) and
2. \( [[F\text{-clo}(VP_a)]][c_a^f \vdash [[F\text{-clo}(VP_e)]][c_e^f] \).

i.e. only if \( [[F\text{-clo}(VP_e)]][c_e^f] = [[F\text{-clo}(VP_a)]][c_a^f] \)

(continuing the ‘no rebinding of traces’ assumption)
Merchant’s Analysis of VPE - the normal case:

(3) Kim will visit Lee, and then Sandy will \( \langle \text{visit Lee} \rangle \).
\[ \exists \text{-clo}(\text{VP}_a) = F\text{-clo}(\text{VP}_a) = \exists x. x \text{ visit Lee.} \]
\[ \exists \text{-clo}(\text{VP}_e) = F\text{-clo}(\text{VP}_e) = \exists x. x \text{ visit Lee.} \]

- Mutual entailment holds, so VP-ellipsis is possible.
(4) *John will beat someone at chess, and then Mary will lose to someone at chess.

- $\exists\text{-clo}(VP_a) = F\text{-clo}(VP_a)$
  - $= \exists x. x$ will beat someone at chess.

- $\exists\text{-clo}(VP_e) = F\text{-clo}(VP_e)$
  - $= \exists x. x$ will lose to someone at chess.

- $VP_a$ and $VP_e$ satisfy mutual entailment modulo $\exists$-type shifting. (If someone will beat someone at chess, then someone will lose to someone at chess, and vice versa.)

- Thus $VP_e$ is e-GIVEN, but ellipsis is impossible.
The Relational Opposites Puzzle is problematic for Merchant’s (2001) semantic theory of VP-Ellipsis (Hartman 2009).

Sag & Hankamer’s (1984)’s semantic theory of VP-Ellipsis solves the Relational Opposites Puzzle straightforwardly: Only the VP content is relevant to the possibility of deletion.

We think the relevant semantic generalization is naturally stated in a theory without deletion.
Evidence against Deletion? Sluices without Sources

- Ginzburg and Sag 2000, Culicover and Jackendoff 2005:
  
  What floor? Where to? How many more? What else? WTF?
  
  Guess who!,...
  
  A: Would you like a drink? B: Yeah, how about scotch?
  
  A: I saw hoosies. B: You saw WHAT\/? [Reprise Use 1: Echo Q]
  
  A: I saw it. B: You saw WHAT\/? [Reprise Use 2: Ref Q]

Evidence for Deletion? Case Matching Effects

(5)  *Er will jemandem schmeicheln, aber sie wissen nicht, wem/*wen.*
He wants someone.DAT to-flatter but they know not who.DAT/who.ACC
‘He wants to flatter someone, but they don’t know who.’

(6)  *Er meinte, er hätte geholfen, aber wir wüssten nicht, wem/*wen.*
He thought he had helped but we knew not who.DAT/who.ACC
‘He claims he had helped, but we couldn’t say who’
Case Matching Effects

- There is no syntactic identity condition in Merchant’s theory.
- Case matching is explained indirectly by assuming derivations where case marking feeds $WH$-Movement, which feeds Sluicing.
- E-Givenness must be mediated by verb identity, which must have object case identity as a side effect.
- We think the case assignment facts are naturally accounted for without deletion.
Questioning the Indirect Account of the Case-Matching Generalization
Case Matching is a Direct Effect: Hungarian

(Already argued for Hungarian fragments by Jacobson 2011)

Mari segített egy fiunak de nem tudom, hogy kinek/*kit
Mary helped.IND a boy.DAT but not I-know.DEF Q who.DAT/who.ACC

Mari segített egy fiut de nem tudom, hogy kit/*kinek
Mary helped.IND a boy.ACC but not I-know.DEF Q who.ACC/who.DAT

‘Mary helped a boy, but I don’t know who’
Evidence for Deletion? Sluicing Remnants are Clauses

- Sluices have the external distribution of clauses:
  We all wondered **who**. (embedded environments)
  It was unclear **who**. (extraposition)

- This is explained by assuming sluiced remnants are clauses (CPs) in which deletion has applied.

- We agree that sluices are clauses; This fits perfectly with the direct analysis of Ginzburg and Sag 2000.
Merchant’s P-Stranding Generalization

▸ A Language $L$ will allow preposition-stranding under Sluicing just in case $L$ allows preposition stranding under regular WH-Movement. (Merchant 2001, 107)

▸ Explained by assuming derivations where WH-Movement feeds Sluicing.

Preposition-Stranding Languages

▶ English:
Peter was talking with someone, but I don’t know (with) who.
Who was he talking with?
▶ Frisian, Swedish, Norwegian, Danish, Icelandic

Non-Preposition-Stranding Languages

▶ German:
Anna hat mit jemandem gesprochen,
Anna has with someone.DAT spoken,
aber ich weiss nicht *(mit) wem.
but I know not *(with) whom.DAT
*Wem hat sie mit gesprochen?
▶ Greek, Yiddish, Czech, Russian, Slovene, Polish, Bulgarian,
Serbo-Croatian, Persian, Hebrew, Moroccan Arabic, Basque.
Questioning the P-Stranding Generalization
Problematic data for the PSG have been noted from all the following languages:

- English (Chung et al. 1995, Fortin 2007)
- Polish (Szczegielniak 2008, Nykiel and Sag 2010, 2011)
- Bahasa Indonesia (Fortin 2007)
- Amis (Wei 2011)
- Serbo-Croatian (Stjepanović 2008)
Rescuing the Preposition-Stranding Generalization

- **Pseudo-Sluicing**

- **P-Deletion Transformation**
  P-omission in Sluicing arises through preposition deletion at PF. Hence *WH*-Movement need not strand prepositions. (Stjepanović 2008)

(7) ??Juan ha hablado con alguien, pero no sé cuién.
    Juan has talked with someone, but not know who
    ‘Juan talked with someone, but I don’t know who.’

Almeida & Yoshida 2007; Rodrigues et al. 2009:

(8) Juan ha hablado con una chica, pero no sé cuál
    Juan has talked to a girl but not know which.
    ‘Juan has talked to a girl, but I don’t know which.’
‘Pseudosluicing’ (Cleft Ellipsis)

(9) Juan ha hablado con una chica, pero no sé cuál
Juan has talked to a girl but not know which
[es la chica con la que ha hablado Juan.]
[is the girl with the that has talked Juan]
‘Juan has talked to a girl, but I don’t know which (girl it is
that he has talked to).’

(10) Juan ha hablado con una chica, pero no sé cuál ES.

‘The strongest implication of this analysis is that all languages that
appear to violate this generalization [...] should be reducible to a
pseudosluicing analysis.’
Is the Cleft Analysis Cross-Linguistically Viable?

- **Clefts in Polish:**
  The pivot must be in the instrumental case.

- **Prepositionless Sluicing Remnants:**
  NPs appear in a variety of cases, as long as the case of the remnant matches that of the correlate (the standard pattern):

  (11)  
  Adam regularnie dostaje prezenty od kogoś, ale nie wiem kogo/*kim.  
  ‘Adam regularly gets presents from someone, but I don’t know who.’
Is the Cleft Analysis Cross-Linguistically Viable?

No!
Preposition Deletion?

- Stjepanović shows P-Deletion cannot apply elsewhere.
- P-Deletion applies only to Sluicing remnants.
- P-Deletion has no independent motivation.
- Removes all empirical content from the Preposition-Stranding Generalization.
Prepositions that don’t strand may be omitted in Sluicing (Rosen 1976, Chung et al. 1995, Fortin 2007)

(12) They will all leave town barring certain circumstances/except for one guest/astride a certain horse, but we don’t know which.

(13) *We don’t know which circumstance they will leave barring __ .

(14) *We don’t know which guest they will leave town except for __ .

(15) *We don’t know which horse they will leave astride __ .
Prepositions that don’t strand in a particular construction may be omitted in Sluicing

(16) What happened with the car? What car?
(17) Thank you for the talk. What talk?

Not instances of Sluicing?
P-stranding with *wh*-interrogatives arose in the Middle English period (1150-1500).

Middle English had clefts similar to the Spanish examples cited by Rodrigues et al., even with P-stranding:

(18) But seide to Gamelyn myldely and stille
    Come a-fore oure maistre and sai to him thi wille
    yonge men saide Gamelyn bi youre lewte
    **What man is your maister that ye with be**
    [c. 1400 Chaucer’s Canterbury Tales, Royal MS 18 C ii folio 65a]
Historical Evidence

- English P-stranding—a relic of an Old English (c. 500-1150) construction.
- P-stranding expanded via loss of case marking.
- Clefts existed in parallel.
- No records of P-omission in Sluicing until the Early Modern English Period (1500-1800).
- This temporal gap is unlikely to be accidental.
Pseudo-Sluicing is unable to explain all the cross-linguistic variation.

P-Deletion analyses eviscerate the content of the PSG.

Historical record seems inconsistent with the PSG.

Pseudo-Sluicing or P-Deletion analyses of PSG violations in Bahasa Indonesian have been argued against by Fortin (2007).

Pseudo-Sluicing or P-Deletion analyses of PSG violations in Amis have been argued against by Wei (2011).

The Preposition-Stranding Generalization is either incorrect or vacuous.
Pattern

- Although, the PSG is incorrect, the literature shows a pattern: More linguistically complex remnants paired with more complex correlates are preferred: $(19) > (20)$

$(19)$ I called the loan company and they said the loan was turned over to a collection agency but they don’t know which.  

$(20)$ I called the loan company and they said the loan was turned over to someone but they don’t know who.
Pattern

- Spanish
- Polish
- Serbo-Croatian
- Bahasa Indonesia ?
- Amis ?
- Brazilian Portuguese ?
- German
- French
- Russian
Acceptability judgment studies of Polish P-omission under sluicing

Hypothesis (following from cross-linguistic patterns, Ariel’s Accessibility theory (1990, 2001), Hofmeister et al. (2007), and Hofmeister and Sag (2010)):

A less complex correlate and remnant induce a P-omission penalty.

This has been mistaken for a categorical grammaticality contrast in the literature.
Complexity manipulated via preposition complexity (in vs. against) or phrasal complexity of the correlate (NP vs. indefinite pronoun, e.g. somebody) and remnant (what/who vs. what/which-NP)

Hypothesis confirmed, but no evidence that less complex correlates and remnants are categorically unacceptable; only evidence of degradation in acceptability wrt complex correlates and remnants.
Questioning the Predictions of the Movement plus Deletion Analysis of Sluicing:

Island Constraints
(21) Bo talked to the people who discovered something, but we don’t know what (*Bo talked to the people who discovered). [CNPC/Subjacency]

(22) Terry wrote an article about Lee and a book about someone else from East Texas, but we don’t know who (*Terry wrote an article about Lee and a book about) [CSC (Element Constraint)]

(23) He wants a detailed list, but I don’t know how detailed (*he wants a list). [LBC] (Merchant 2001, p. 167)
Previous account 1: Some kind of pseudo-sluicing (no island violation)

Previous account 2: ‘certain island effects are not necessarily structural in the usual sense, but rather should be located at PF’ (Merchant 2001, p. 200)

The well-formedness of these sluicing examples follows immediately from a direct analysis of sluiced clauses. No movement ⊢ No island constraints in effect.

Complexity factors? Pragmatic factors? Informational/Prosodic factors?
Our Analysis


- Direct Generation of Sluiced Clauses (likewise Stripping (BAE))
- Indirect Licensing of Remnants by Elements of Surrounding Context [Ginzburg & Sag 2000]
- Reasonably complete analysis of reprise uses, as well. (These are pretty much completely ignored in the literature.)
- ‘Simpler Syntax’ Hypothesis [Culicover and Jackendoff 2005] and ‘Concrete Minimalism’ [Culicover 1999]
A Language is a Set of Signs

<table>
<thead>
<tr>
<th>word</th>
<th>phrase</th>
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<tbody>
<tr>
<td>FORM</td>
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<tr>
<td>SYN</td>
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<td>SEM</td>
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<th>⟨Lee⟩</th>
<th>⟨Lee, loves, Pat⟩</th>
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<td>⟨Lee, loves, Pat⟩</td>
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<td>word SEM</td>
<td>Lee</td>
<td>love(Lee, Pat)</td>
</tr>
<tr>
<td>word CTXT</td>
<td>[...]</td>
<td>[...]</td>
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</tbody>
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...
A Grammar is a Recursive System of Constructions (Constraints that license signs)

- \( \text{sign}_0 \rightarrow \text{sign}_1 \ldots \text{sign}_n \)

- \[
\begin{bmatrix}
\text{FORM} & \ldots & \\
\text{SYN} & \ldots & \\
\text{SEM} & \ldots & \\
\text{CTX} & \ldots & \\
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{FORM} & \ldots & \\
\text{SYN} & \ldots & \\
\text{SEM} & \ldots & \\
\text{CTX} & \ldots & \\
\end{bmatrix}
\ldots
\begin{bmatrix}
\text{FORM} & \ldots & \\
\text{SYN} & \ldots & \\
\text{SEM} & \ldots & \\
\text{CTX} & \ldots & \\
\end{bmatrix}
\]
Semantic Assumptions

- Questions are propositional abstracts (Hull 75, Hausser 83, Scha 83, G&S 00)
  - Unary *wh*-question: $\lambda\{\pi^i\}[\text{love}(K, i)]$ ‘who does Kim love?’
  - Multiple *wh*-question: $\lambda\{\pi^i, \pi^j\}[\text{love}(j, i)]$ ‘who loves who?’
  - Polar question: $\lambda\{ \}\[\text{love}(K, L)]$ ‘Does Kim love Lee?’

- A parameter consists of an index and a set of restricting propositions.

- The content of *who*: $\pi^i_{\{\text{person}(i)\}}$
[PHON \( \langle \text{whose, book, do, you, like} \rangle \)]

[SYN \( S[\text{GAP } \langle \rangle ] \)]

[SEM \( \lambda \{ \pi^i_{\{\text{person}(i)\}} \}\)[you like i’s book]]

[STORE \{\}]

---

[PHON \( \langle \text{whose, book} \rangle \)]

[SYN \( \text{NP} \)]

[SEM \( i’s \text{ book} \)]

[STORE \( \{\pi^i_{\{\text{person}(i)\}}\}\)]

[FORM \( \langle \text{do, you, like} \rangle \)]

[SYN \( S[\text{GAP } \langle \rangle ] \)]

[SEM \( \text{you like i’s book} \)]

---

[PHON \( \langle \text{book} \rangle \)]

[SYN \( \text{NP} \)]

[SEM \( i \)]

[STORE \( \{\pi^i_{\{\text{person}(i)\}}\}\)]

---

[PHON \( \langle \text{book} \rangle \)]

[SYN \( \text{NP} \)]

[SEM \( \text{book} \)]
Theory of Dialogue


- Dialogues are described via a Dialogue GameBoard (DGB) where the contextual parameters are ‘anchored’ and where there is a record of who said what to whom, what/who they were referring to, ...
- DGB monitors which questions are ‘under discussion’, what answers have been provided, by whom, etc.
- The conversational events are tracked by various conversational ‘Moves’ that have specific preconditions and effects.
- The main claim is that Non-Sentential Utterances (NSU)s are resolved to the contextual parameters of the DGB.
Back to Sluicing!

Just about any Indexed NP can be a Correlate:

- Indefinite NP: *Some senator* is arriving. Who?
- Quantified NP: I talked to *most of the players*. Oh yeah, Who, exactly?
- MON↓ Quantified NP: I talked to *few infielders* yesterday. But how many outfielders?
- Definite NP: *The tallest guy on the team* is here. Who else?
- Proper Noun: I met *Kim Lee*. Who else?
- Pronoun: *She* came to the party. Who else?

More complex NP: *Kim or Lee* will visit me. Which one?
As Long as the Dialogue Can Accommodate a Compatible ‘MAX-QUD’ (Maximal Question-under-Discussion):

- **No one** arrived. *Who?*
  The question of who arrived is no longer under discussion.
- **Kim Chang** arrived. *Who?*
  The question of who arrived is no longer under discussion.
- **Kim** arrived. Who else?
  ‘Else’ changes the MAX-QUD.
- **Kim or Lee** will visit Pat. Which one?
  The question of whether Kim or Lee will visit Pat is still under discussion.
- **Kim and Lee** will visit Pat. *Which one?/*Who?
  The question of who will visit Pat is no longer under discussion.
Question Introduction Appropriateness Condition (QIAC)

A question $q$ can be introduced into QUD by A only if there does not exist a fact $\tau$ such that $\tau \in \text{FACTS}$ and $\tau$ resolves $q$.

(Informally:) Resolved questions can’t be under discussion.

Maybe modify to: ‘Don’t introduce a question that is already partially resolved’.
Context Updating 1:

\[ \text{FORM} \quad \langle \text{Kim, loves, some, pacifist} \rangle \]
\[ \text{SEM} \quad \text{someone}^i_{\{\text{pacifist}(i)\}}[\text{love}(\text{Kim}, i)] \]

\[ \text{Uttering}(\text{Kim loves some pacifist}) \sim \]
\[ \text{dgb} \]
\[ \text{MAX-QUD} \]
\[ \begin{bmatrix}
\text{PHON} & \langle \text{some, pacifist} \rangle \\
\text{SYN} & \text{NP} \\
\text{SEM} & i
\end{bmatrix} \]
\[ \lambda \{\pi^i_{\{\text{pacifist}(i)\}}\}[\text{love}(\text{Kim}, i)] \]
Context Updating 2:

\[\text{FORM} \quad \langle \text{Kim, loves, some, senators} \rangle \]

\[\text{SEM} \quad \text{some}_{\{\text{senator}(i)\}}[\text{love(Kim, i)}] \]

\[\text{Utter} \quad (\text{Kim loves some senators}) \sim \]

\[\text{dgb} \]

\[\text{MAX-QUD} \]

\[\text{FEC} \]

\[\text{PHON} \quad \langle \text{some, senators} \rangle \]

\[\text{SYN} \quad \text{NP} \]

\[\text{SEM} \quad i \]

\[\text{Q} \quad \lambda\{\pi_{\{\text{senator}(i)\}}\}[\text{love(Kim, i)}] \]
Kim loves some pacifist. I wonder who.

\[ \lambda \{ \pi^i_{\text{pacifist}(i)} \}[\text{love}(\text{Kim}, i)] \]

Kim loves some senators. I wonder which democrats.

\[ \lambda \{ \pi^i_{\text{senator}(i), \text{democrat}(i)} \}[\text{love}(\text{Kim}, i)] \]
Sluiced Interrogative Clause Construction

\[
\begin{bmatrix}
\text{SYN} & S \\
\text{SEM} & \lambda\{\pi_{\sigma_1}^i \cup \sigma_2\}[\Phi] \\
\text{DGB} & \text{MAX-QUD} \left[ \begin{array}{c}
\text{FEC} \ [\text{SYN} \ [\text{CAT} \ \text{XP}]] \\
Q \ \lambda\{\pi_{\sigma_1}^i\}[\Phi]
\end{array} \right]
\end{bmatrix}
\rightarrow
\begin{bmatrix}
\text{SYN} & \text{[CAT XP]} \\
\text{STORE} & \{\pi_{\sigma_2}^i\}
\end{bmatrix}
\]

where: \( \pi_{\sigma}^i = \begin{bmatrix}
\text{parameter} \\
\text{IND} & i \\
\text{RESTR} & \sigma
\end{bmatrix} \)
\[
\begin{align*}
\text{FORM} & \langle \text{who} \rangle \\
\text{SYN} & \quad S \\
\text{SEM} & \quad \lambda \left\{ \pi^i_{\sigma} \cup \{ \text{person}(i) \} \right\} [\text{love}(\text{Kim}, i)] \\
\text{DGB} & \quad [\text{FEC} \quad \text{NP}_i] \\
& \quad \text{MAX-QUD} \quad \lambda \left\{ \pi^i_{\sigma} \right\} [\text{love}(\text{Kim}, i)] \\
\end{align*}
\]
Context Updating (Argument Sprouting 1):

\[
\begin{align*}
\text{FORM} & \quad \langle \text{Kim, loaded, the, truck} \rangle \\
\text{SEM} & \quad \text{loaded(Kim, the-truck)} \\
\text{ARG-ST} & \quad \langle \text{loaded} \rangle \\
\end{align*}
\]

where ‘\text{ini}’ is Fillmore’s \textit{indefinite null instantiation}
Context Updating (Argument Sprouting 2):

- **Uttering** *(Kim loaded the truck)* \(\leadsto\)

\[
\begin{bmatrix}
dgb \\
\text{MAX-QUD} \\
Q
\end{bmatrix}
\begin{bmatrix}
\text{FEC} \\
\text{ini} \\
\text{PHON} \\
\text{SYN} \\
\text{SEM}
\end{bmatrix}
\lambda\{\pi_i^i \{\text{thing}(i)\}\} [\text{loaded(Kim, the-truck)}]
\]
Context Updating (Argument Sprouting 3):

$\begin{align*}
\text{FORM} & \quad \langle \text{loaded} \rangle \\
\text{ARG-ST} & \quad \langle \text{NP, NP}, \left[ \begin{array}{c}
\text{ini} \\
\text{SYN PP} \sqrt{\text{with}} \\
\text{SEM } i
\end{array} \right] \rangle
\end{align*}$

- Kim loaded the truck. *(With) what? (cf. CLM 95, CLM 10))

$\begin{align*}
\text{FORM} & \quad \langle \text{sent} \rangle \\
\text{ARG-ST} & \quad \langle \text{NP, NP} \sqrt{\text{overt}}, \text{PP} \sqrt{\text{dir}} \rangle
\end{align*}$

- Bo sent flowers. Where/*(To) who?
Context Updating (Adjunct Sprouting 1):

\[
\begin{array}{c}
\text{FORM} & \langle \text{Kim, laughs} \rangle \\
\text{SEM} & \left[ \text{at } t \right] \left( \text{laugh} \left( \text{Kim} \right) \right)
\end{array}
\]

\[
\begin{array}{c}
\text{FORM} & \langle \text{laughs} \rangle \\
\text{ARG-ST} & \left( \text{NP, NP, } \left[ \begin{array}{c} \text{ini} \\
\text{SYN Adv} \\
\text{SEM } t \end{array} \right] \right)
\end{array}
\]
Context Updating (Adjunct Sprouting 2):

- **Uttering**(Kim laughs) \(\sim\)

\[
\begin{bmatrix}
\text{dgb} \\
\text{MAX-QUD}
\end{bmatrix}
\begin{bmatrix}
\text{FEC} \\
\text{ini} \\
\text{PHON} \\
\text{SYN} \\
\text{SEM} \\
\lambda\{\pi_{\text{time}(t)}^t\}
\end{bmatrix}
\begin{bmatrix}
\text{Adv} \\
t \\
\text{Q}
\end{bmatrix}
\begin{bmatrix}
\text{at} \\
\text{t} \\
\text{laugh(Kim)}
\end{bmatrix}
\]
Contrast with CLM

Our analysis differs from the LF-Copying analysis of Chung, Ladusaw and McCloskey (1995, 2011) in that:

- It has no problem avoiding *Who\(^x\) did you see someone\(^x\)? (cf. Merchant 2001, p. 150)
- It solves the semantic problems for ellipsis theories noted by Sag & Hankamer (1984).
- It solves the problem of case matching between remnant and correlate. (raised by Merchant 2001, p. 150)
- It provides a basis for dealing with cases of ‘content clash’ (She has five CATS, but I don’t know how many DOGS.) via focus-induced changes to MAX-QUD.
Conclusions

- Unified analysis of Sluicing: Merger and Sprouting.
- The analysis relies on discourse information (via DGB) and constantly evolving ‘Questions Under Discussion’...
- Our adaptation of GS-00 solves the semantic problems for ellipsis theories noted by Sag & Hankamer (1984).
- But it also relies on syntactic information specified by the Focus-Establishing Constituent.
- And it explains the absence of island effects under Sluicing.
- Our analysis correctly separates P-omission (very common, cross-linguistically) from P-stranding (very rare, cross-linguistically).
- It also solves key problems raised by Merchant as objections to CLM-95.
Thank You!

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