Resumption and Intrusion:
Syntax and Semantics, Parsing and Production

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1 Introduction

Main goals of the talk

1. To present a generalized theory of resumption based on semantic composition

   (1) **Resumptive pronouns**
   Vilken elev   trodde Maria att <u>han</u> skulle fuska?   Swedish
   which student thought Maria that he   would cheat
   Literally: 'Which student did Maria think that he would cheat?'

   (2) **Copy raising**
   Thora seemed like <u>she</u> was mad at Pelle.

2. To present a processing model of the parsing and production of English resumptive-like elements ("intrusive pronouns"; Sells 1984)

   (3) That's the linguist that you couldn't remember what he proposed.

   (4) a.   That's the linguist that your dog liked.
       b. *That's the linguist that your dog liked her.

Outline of the talk

1. The syntax and semantics of resumption

   - Issues with previous approaches
   - A new perspective
   - Theoretical implications and empirical predictions

2. A processing model for intrusive pronouns

   - Production
   - Parsing

2 Resumption: Syntax and semantics

- A generalized theory of **resumption**:
  resumptive pronouns, copy raising

- Theory based on:

  – Syntax (lexical specification, local and unbounded dependencies, binding)

  – **Semantic composition**

2.1 Principal empirical phenomena

1. *Resumptive pronouns* in unbounded dependencies

   (5)   **Irish**

       a.   Relative clause
            an ghirseach ar   ghoid na síogaí í
            the girl   COMP.PAST stole   the fairies her
            the girl that the fairies stole away
            (McCloskey 2002: 189, (9b))

            Literally: 'the girl that the fairies stole her away'

       b.   Wh-question
            Céacu ceann a   bhfuil dúil agat <u>ann</u>?
            which one   COMP is   liking at.you in.it
            Which one do you like?
            (McCloskey 2002: 189, (10b))

            Literally: 'Which one do you like it?'

   Among others: Arabic, Greek, Hebrew, Igbo, Persian, Scots Gaelic, Swedish, Welsh

2. Pronouns in copy raising (*copy pronouns*)

   (6)   **English**
            No runner seems like <u>she</u> just ran a marathon.

   Among others: Dutch, Greek, Haitian Creole, Igbo, Irish, Persian, Swedish, Turkish

2.2   What *is* a resumptive pronoun?

(7)   Every girl thinks that the fairies menaced <u>her</u>.

(8)   *Every girl who the fairies menaced <u>her</u> wept.

- (7): not a resumptive pronoun

- (8): a resumptive pronoun

- Why? What is the definition of a resumptive pronoun?

- **Despite the substantial literature on resumptive pronouns:**

  - **Quite difficult to define *resumptive pronoun* in a theoretically sound manner**

  - **The term is typically defined only ostensively.**

2.2.1   Case 1: Resumption in unbounded dependencies

Note: *Unbounded dependency* is a theory-neutral term for *wh-movement*.

- **Common intuition**:

  - The resumptive pronoun in (8) occurs where a gap/trace might occur.

  - The non-resumptive pronoun in (7) does not:

(9)   *Every girl thinks that the fairies menaced.

(10)   Every girl who the fairies menaced __ wept.

- **Resumptive pronoun (definition 1)**
  A resumptive pronoun is a pronoun that occurs at the end of an unbounded dependency.

  - **Problems:**

    1. Resumptive pronouns by and large do not behave as if they are in typical unbounded dependencies, i.e. filler-gap dependencies.
       (a) Resumptives are generally not island-sensitive.
           (McCloskey 1979, 1990, 2002, Sells 1984).
       (b) Resumptives do not show weak crossover effects.
           (McCloskey 1990).
       (c) Resumptives trigger different morphological effects from gaps/traces.
           (McCloskey 1979, Sells 1984, Merchant 2001).
    2. Not sufficiently general

- **Resumptive pronoun (definition 2)**
  A resumptive pronoun is a pronoun that is operator bound.
  (Sells 1984: 16)

  - **Problem:**

    1. Fails to distinguish between the non-resumptive pronoun in (7) and the resumptive pronoun in (8) (repeated here):
       (7)   Every girl thinks that the fairies menaced <u>her</u>.
       (8)   *Every girl who the fairies menaced <u>her</u> wept.

       (At Logical Form (LF) the quantified subject of (7) is an operator, since it moves to a non-argument position by quantifier raising)

- **Resumptive pronoun (definition 3)**
  A resumptive pronoun is a pronoun that is operator bound at S-structure.
  (Sells 1984: 26, Sells 1987: 1)

  - **Problems:**

    1. Presumes a model of grammar that is derivational / transformational.
       The definition therefore fails to extend to monostratal / non-transformational syntactic theories.
    2. S-structure is not even an accepted level in the latest version of transformational grammar (the Minimalist Program; Chomsky 1995).

2.2.2 Case 2: Resumption in copy raising

- **Problem shared by unbounded dependency definition (def. 1) and operator-binding definition (def. 3)**:

  1. **Insufficiently general**:
     Fail to cover the intuitively resumptive-like use of pronouns in copy raising:

     (11)   Every baby seemed like <u>she</u> had eaten the crackers.

     (12)   *Every baby seemed like I had eaten the crackers.

  – Copy raising subject is licensed in the position occupied by the copy pronoun, not in matrix subject position

  – As in unbounded dependency resumption, the pronoun is "resuming" the reference of a displaced constituent

  – Connection made in other recent work: Ura (1998), Boeckx (2003)

- The **operator-binding definition** cannot distinguish between copy raising and S-structure binding of a resumptive, as in (8).

  – The copy pronoun's antecedent must be in an argument position at S-structure in order to satisfy the subject requirement of English clauses.
    (e.g., the Extended Projection Principle).

  – The pronoun is therefore not operator-bound at S-structure.

  ⇒ **In terms of operator-binding, copy raising is equivalent to the non-resumptive sentence (7) rather than the resumptive sentence (8).**

- The **unbounded dependency definition** also fails to extend to copy raising.

  1. **Lexically governed property of certain verbs**

     – For example, in English only *seem* and *appear* are true copy raising verbs.

     – Other verbs that display superficially similar behaviour (**perceptual resemblance verbs**: *look*, *smell*, *sound*, *feel*, *taste*) in fact do not require a copied pronoun in their complement:

       (13)   Thora smells like someone has been baking bread.

     ⇒ **Copy raising should not be subject to a general mechanism of unbounded dependency formation.**

  2. **Local dependency between syntactic arguments of a particular verb**

     – Cannot long-distance copy-raise:

       (14)   *Thora thought that I seemed like she had eaten the crackers.

       (15)   Who did Thora think that I said had eaten the crackers?

  ⇒ **Copy raising:**

     – **Should not be analyzed in terms of unbounded dependencies**

     – **Should instead be analyzed in terms of lexically-governed raising-type dependencies**

- **Problems with previous proposals for copy raising:**

  1. Copy raising as **A-movement** analog of resumptive pronouns in **A-bar movement** (unbounded dependencies)   (Ura 1998, Boeckx 2003)

     (a) A-movement should not be possible from the site of the copy pronoun.
         (Tensed S Condition, Phases)

  2. Base-generated chain   (Potsdam and Runner 2001)

     (a) Unconstrained

     (b) Chain with two Case positions

     (c) (Treat copy raising and perceptual resemblance verbs on a par)

  3. Both approaches share the problem that they predict copy raising should only be possible from subjects:

     (16)   Judith seemed like the ombudsman had finally decided that she had been in the right.

     (17)   Richard seemed like Emma had scolded him.

     (18)   Richard seems like the assertion by Ida that Thora suspects the motives behind the gift has offended his dignity.

2.2.3 Summary

It is difficult to give a theoretically acceptable definition of resumptive pronouns that:

1. Relates resumptive pronouns to gaps/traces.

2. Properly distinguishes resumptive unbounded dependencies from unbounded dependencies with gaps/traces.

3. Relates resumptive pronouns to copy raising pronouns.

4. Properly distinguishes the relationship between the antecedent and the resumptive in an unbounded dependency from the relationship between the antecedent and the pronoun in copy raising.

3   A new perspective

- **Resumption (informal definition)**
  Resumption is the presence of a pronoun that is not required for semantic composition.

- This definition applies equally to resumptive pronouns in unbounded dependencies and copy raising pronouns.

  - Uniform treatment of the two cases
  - Captures differences between the two through the interplay of lexical specifications and the usual mechanisms for anaphoric binding and unbounded dependencies

- In each case:

  - The pronoun's semantic contribution is surplus to the basic compositional requirements of the sentence that it appears in.
  - **But** the pronoun must be consumed by something in order for there to be a successful derivation of the semantics.

- ⇒ A resumptive pronoun is only licensed in the presence of a special licenser that consumes the pronoun, removing it from semantic composition: **manager resources**.

- **Resumptive pronouns are ordinary pronouns.**

- **The relationship between the resumptive pronoun and its antecedent is captured through the standard mechanism of anaphoric binding.**

3.1   Behind the scenes: the theoretical basis for the proposal

- Hypothesis of **Resource Sensitivity**:
  Natural language is universally *resource-sensitive*.

- ⇒ **Semantics**: Lexically contributed meanings must each be used exactly once.

  (19)   Kim fooled Sandy.
  $= fool(kim, \ sandy)$
  $\neq fool(kim, \ kim)$

  (20)   This innocent man is allegedly guilty, according to some.
  $\neq$ This allegedly innocent man is allegedly guilty, according to some.

- Resource Sensitivity captured through use of resource logic *Linear Logic* (Girard 1987).

  - Yields a notion of **Logical Resource Sensitivity**

- Logical Resource Sensitivity can yield a linguistically useeful notion of **Linguistic Resource Sensitivity** (Asudeh 2004):

  - Set linguistically motivated goal condition on resource logical proofs.

- ⇒ Linear logic embedded in a linguistic theory of semantic composition: *Glue Semantics* (Dalrymple 1999, 2001, Asudeh 2004).

- Lexical items contribute *meaning constructors* that serve as *resources* in linear logic proofs for semantics.

  - ⇒ **Each meaning constructor must be used exactly once.**

- **A *resumptive pronoun* is a surplus resource that will lead to failure of semantic composition (proof failure in the linear logic), unless it is consumed by a lexically contributed *manager resource*, which thus licenses the resumption.**
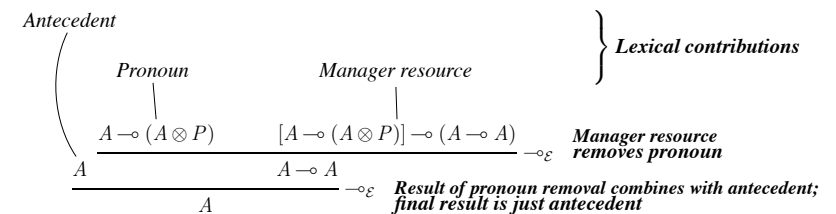

Figure 1: A manager resource removes a pronominal resource

3.2 Theoretical implications and empirical predictions

3.2.1 Implications

1. **Unification**
   A generalized theory of resumption in unbounded dependencies and copy raising

2. **Simplification**
   Syntactically and semantically ordinary pronouns

   (a) The terms *resumptive pronoun* and *copy raising pronoun* are not theoretical constructs, but rather just descriptive labels.

   (b) Resumptive pronouns as such have been eliminated from the theory — ordinary pronouns are all there is.

3. **Lexicalism**
   Pronouns in resumption are licensed by lexically contributed manager resources.

   (a) Resumption is licensed through the presence of lexically-specified licensers in lexical inventories.

   (b) Depending on its lexical inventory:
   - A language may have resumptive pronouns both in unbounded dependencies and copy raising (e.g., Irish, Swedish).
   - A language may have resumptive pronouns in one case and not the other. (e.g., English — only copy raising)
   - A language may have neither kind of resumption (e.g., German).

4. **An answer to the central question about resumption**

   Why are pronouns used for resumption?
   Pronouns are used in resumption because they lack inherent meaning.
   Pronominal meaning is recoverable.

   - The theory ensures that pronouns are the only lexical items that can be consumed by manager resources.
   - ⇒ Only pronouns can be used in resumption because they are the only things that have the correct form to be consumed by manager resources.
   - Why do pronouns have this form?
     - Because of how they take their reference based on their antecedent.
     - This gives them a particular form in the logic assumed in the theory.
   - ⇒ Pronouns are used in resumption because of how they receive their meanings.
   - Why do pronouns receive their meanings in this manner?
     - Pronouns receive their meanings in the specific manner that they do because they lack inherent meaning and must take on the meaning of their antecedent, through saturation, coreference, or binding.
   - ⇒ Pronouns are used for resumption because they lack inherent meaning.
   - ⇒ Pronominal elements can be consumed by manager resources because it is precisely these elements whose removal is recoverable from elsewhere in the semantics.

3.2.2 Predictions

General

1. Resumptive pronouns are morphologically identical to non-resumptive pronouns with the same case and agreement features (McCloskey 2002).

2. Resumptive pronouns inherit any general restrictions on pronominal interpretation. (Doron 1982, Sells 1984, Sharvit 1999)

3. Given the uncontroversial premise that lexical specification affects morphological exponence, the analysis makes the following further prediction:

   (21)   Resumptive licensers may be distinguished by morphology or lexical class.

   - Irish and Welsh have resumptive-sensitive complementizers that show distinct morphological marking from non-resumptive complementizers and which have distinct morphophonological effects (mutations) on subsequent material (Awbery 1977, McCloskey 1979, Sells 1984, Willis 2000).
     - Irish: *aN* — resumptive pronoun
       aL — gap
   - English copy raising verbs are distinguished by lexical class: only a very limited subset of raising verbs allow copy raising (*seem* and *appear*).
   - Swedish copy raising is even more telling:
     Of the three verbs that mean 'seem' (*verka*, *tyckas*, *förefalla*), only one is a copy raising verb (*verka*).

Resumption in unbounded dependencies

Unbounded dependencies that end in resumptive pronouns are handled by anaphoric binding. Those that end in gaps are handled by structure-sharing/movement.

4. Unbounded dependencies with gaps may have different properties from those with resumptive pronouns.

   (a) Islands

   (b) Weak crossover

   (c) Form-identity effects

Resumption in copy raising

Copy raising is likewise mediated through anaphoric binding.

5. Copy raising is not limited to targeting subjects.

6. Copy raising and nonfinite raising differ with respect to quantifier scope.

7. Irish copy raising predicted:

   (22)   B'éigean daobhtha **gur**   innis <u>siad</u> an scéal dó.
           must   to.them   COMP told   they the story to.him
           They must have told him the story.
           (McCloskey and Sells 1988: 176, (65c))

   (23)   Ní   cosuúil dó   **go**   gcuireann rud   ar birth buaireamh <u>air</u>.
           NEG.COP like   to.him COMP puts   thing any   distress   on.him
           Nothing seems to bother him.
           (McCloskey and Sells 1988: 177, (68a))

   The puzzle: *aN* is the resumptive-sensitive complementizer and *go* is the neutral / non-unbounded dependency complementizer.

   Why then does copy raising in Irish not feature the complementizer *aN*?

   - *aN* licenses resumptives by contributing a manager resource.
   - The raising verb licences copy raising by contributing a manager resource.
   - Each manager resource must consume a separate pronoun.
   - But there is only a single copy pronoun to be consumed.
   ⇒ The non-resumptive/neutral complementizer *go* must be used in copy raising.
      - This is the only option that ensures proper resource accounting.

3.3   Summary

- A generalized theory of resumption
  (based on a resource logical approach to the syntax–semantics interface and semantic composition)

- Other phenomena that test Resource Sensitivity:

  - Resource deficit: coordination, right-node raising, parasitic gaps

  - Resource surplus: finite control

4   Intrusion: Parsing and Production

4.1   Background: Intrusive pronouns

- Chao and Sells (1983), Sells (1984):

  - *Intrusive pronouns* are resumptive-like uses of pronouns in languages that lack grammaticized resumptives:

    (24)   I met the linguist that Kate forgot if Thora had seen <u>him</u> before.
    (25)   *The girl who the fairies menaced <u>her</u> wept.

  - Key diagnostic: intrusive pronouns cannot be bound pronouns

    (26)   *I met every linguist that Kate forgot if Thora had seen <u>him</u> before.
    (27)   *I met no linguist that Kate forgot if Thora had seen <u>him</u> before.

- Kroch (1981): intrusive pronouns or other NPs inserted to avoid a grammatical violation that stems from poor planning

  (28)   There was one prisoner that we didn't understand why <u>he</u> was even in jail.
  (29)   There was one prisoner that we didn't understand why <u>the guy</u> was even in jail.

- Prince (1990): intrusive pronouns are discourse pronouns, part of a general attested pattern that also includes deictics (*that*, *this friend*), names and definite descriptions (*the bike*), relational nouns (*the subject*), epithets (*the damn thing*)

  (30)   You get a rack that the bike will sit on <u>it</u>.
  (31)   I have a friend who <u>she</u> does all the platters.
  (32)   I had a handout and notes from her talk that <u>that</u> was lost too.
  (33)   He's got this lifelong friend who he takes money from the parish to give to <u>this lifelong friend</u>.
  (34)   I have a manager, Joe Scandolo, who <u>we</u>'ve been together over twenty years.
  (35)   You assigned me to a paper which I don't know anything about <u>the subject</u>.

- Creswell (2002):

  - Intrusive pronouns do not just occur to avoid grammaticality violations (contra Kroch 1981); cf. Prince (1990) examples.

  - Intrusive pronouns are grammatically generated.

  - **Problems**:
    ○ Ungrammaticality of (25)
    ○ Distinction between (24) and (25)

- Swets and Ferreira (2003):

  – Psycholinguistic study of the production of resumptive pronouns in *wh*-islands by native English speakers.

  – Self-paced design: subjects completed partial descriptions that were presented with a picture array

  – Target sentences:

  (36)   This is a donkey that I don't know where <u>it</u> lives.

  – Grammaticality judgement experiment: same subjects

  (37)   This is donkey that __ doesn't know where it lives.

  (38)   > This is a donkey that I didn't say __ lives in Brazil.

  (39)   > This is a donkey that I don't know where <u>it</u> lives.

  – Two production experiments: deadline (pressure to speak quickly) and no deadline (unlimited time to plan)

  – If intrusive pronouns inserted as a result of poor planning (Kroch 1981), they should not occur in the no deadline condition, since subjects can take as much time as they want to plan their utterance.

  – Subjects should be able to avoid both the island and the intrusive:

  (40)   This is a donkey and I don't know where it lives.

  – **Subjects overwhelmingly produced islands with intrusive pronouns in *both* experiments.**

  – Swets and Ferreira (2003) conclude that intrusive pronouns are not a result of poor planning and are grammatically licensed.

  – **Problems**:

    ○ Ungrammaticality of (25)

    ○ Distinction between (24) and (25)

  – Swets and Ferreira cite *centre embedding* as another instance of an underlyingly grammatical construction that is judged ungrammatical:

  (41)   The psychologist the linguist the cognitive scientist likes saw vanished.

  – Intrusive pronoun sentences are nowhere near as structurally complex or as hard to process as centre embeddings.

4.2   The processing model

1. Parsing and production are incremental.

2. Incremental parsing and production attempt to construct *locally* well-formed structures.

3. Global well-formedness applies only to the output of parsing and production.

4. Parsing and production are constrained by memory limitations based on complexity factors, including distance, structural complexity, intersecting dependencies (Kimball 1973, Dickey 1996, Lewis 1996, Gibson 1998).

Questions

Production

Q1 Why do speakers who judge intrusive pronouns as ungrammatical nevertheless produce them, *even if given time and opportunity to avoid them*?   (Swets and Ferreira 2003)

(42)   *This is a donkey that I don't know where <u>it</u> lives. ⇐

(43)   ✓ This is a donkey and I don't know where it lives.

Parsing

Q2 Why does the acceptability of intrusive pronouns improve where gaps are independently blocked?

(44)   **Islands**   (Ross 1967, Sells 1984)

     a.   *Weak island*

         i.   I'd like to meet the linguist that Mary couldn't remember if she had seen <u>him</u> before.

         ii. > I'd like to meet the linguist that Mary couldn't remember if she had seen __ before.

     (Sells 1984: 11, (9a))

     b.   *Strong island*

         i.   I'd like to meet the linguist that Peter knows a psychologist that works with <u>her</u>.

         ii. > I'd like to meet the linguist that Peter knows a psychologist that works with.

(45)   *That*-**trace / Empty Category Principle**
     (Ross 1967, Kroch 1981, Sells 1984, Swets and Ferreira 2003)

     a.   i.   Who did Mary imagine that <u>he</u> cheated?

         ii. > Who did Mary imagine that __ cheated?

     b.   i.   This is a donkey that I wonder where <u>it</u> lives.

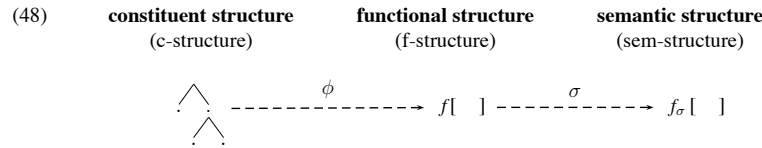   ii. > This is a donkey that I wonder where __ lives.

Q3 Why can't intrusive pronouns be bound pronouns?   (Chao and Sells 1983, Sells 1984)

(46)   I met a / the linguist that Kate forgot if Thora had seen <u>him</u> before.

(47)   *I met every / no linguist that Kate forgot if Thora had seen <u>him</u> before.
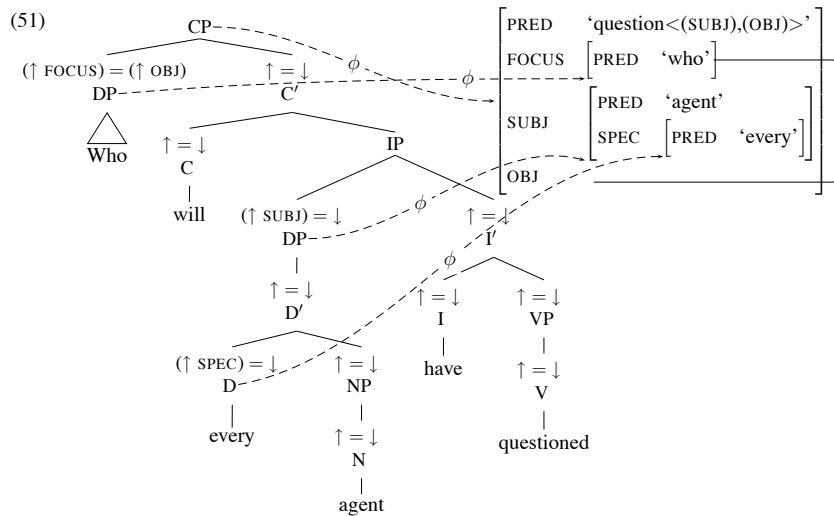
4.3 Background: The theoretical foundations of the processing model

- Lexical Functional Grammar   (Kaplan and Bresnan 1982, Bresnan 2001, Dalrymple 2001)

- Grammatical architecture:

(48)   **constituent structure**   **functional structure**   **semantic structure**
      (c-structure)   (f-structure)   (sem-structure)

$$\cdots \xrightarrow{\phi} f[\quad] \xrightarrow{\sigma} f_\sigma[\quad]$$

- Filler-gap unbounded dependencies in LFG   (Kaplan and Zaenen 1989)

  - Modelled using functional equality in f-structure (token identitiy / structure sharing)
  - Filler-driven: outside-in functional uncertainty path

  (49) $(\uparrow \text{UDF}) = (\uparrow \text{COMP}^* \text{ GF})$ (**Note**: UDF := TOPIC ∨ FOCUS)

  - Constraints on extraction stated on uncertainty path

  (50) $(\uparrow \text{UDF}) = (\quad \uparrow \text{COMP}^* \text{ GF})$ ("islands"; Ross 1967)
                $\neg (\rightarrow\text{UDF})$

- An example:

(51)

$$\begin{bmatrix} \text{PRED} & \text{'question}\langle(\text{SUBJ}),(\text{OBJ})\rangle\text{'} \\ \text{FOCUS} & \begin{bmatrix} \text{PRED} & \text{'who'} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'agent'} \\ \text{SPEC} & \begin{bmatrix} \text{PRED} & \text{'every'} \end{bmatrix} \end{bmatrix} \\ \text{OBJ} & \end{bmatrix}$$

- A notion of *fragments* / local well-formedness based on Completeness and Coherence:

(52)   **Completeness**: All subcategorized arguments represented in the PRED feature must be present in the f-structure

(53)   **Coherence**: All arguments that are present in the f-structure must be subcategorized by a PRED.
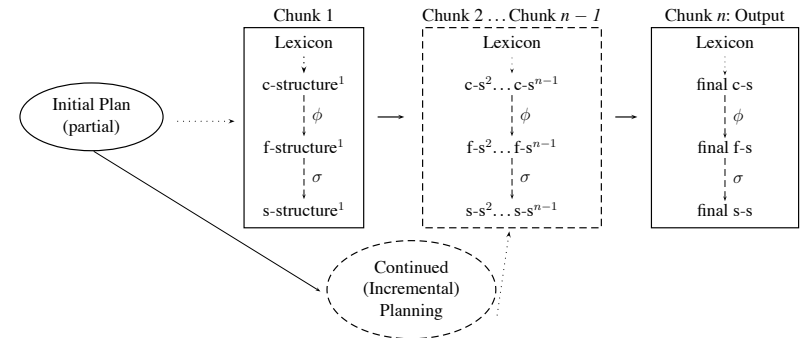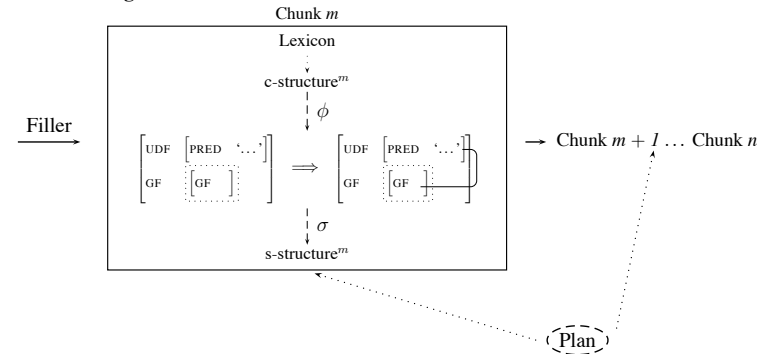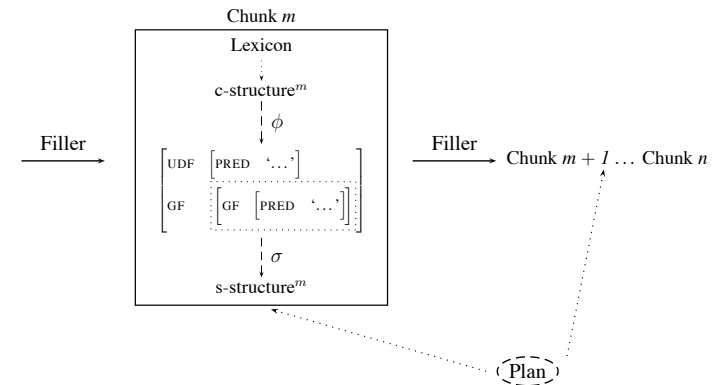
4.4 Production

Figure 2: The production model

4.4.1 Incremental production of locally well-formed structures

(54)   **Filler integration**
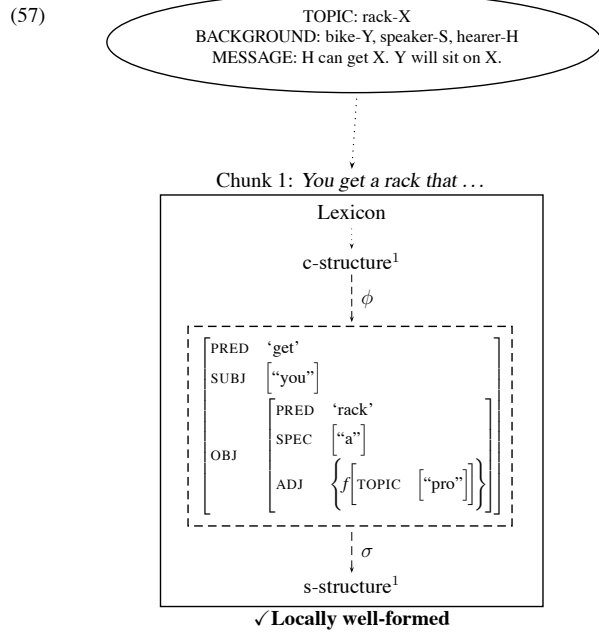

(55)   **Lexical insertion**

4.4.2   Example: intrusive pronoun, no island

(56)   You get a rack that the bike will sit on <u>it</u>.

(57)

> TOPIC: rack-X
> BACKGROUND: bike-Y, speaker-S, hearer-H
> MESSAGE: H can get X. Y will sit on X.

Chunk 1: *You get a rack that . . .*

Lexicon

c-structure^1

$\downarrow \phi$

$$\begin{bmatrix} \text{PRED} & \text{'get'} \\ \text{SUBJ} & [\text{"you"}] \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'rack'} \\ \text{SPEC} & [\text{"a"}] \\ \text{ADJ} & \left\{ f\begin{bmatrix} \text{TOPIC} & [\text{"pro"}] \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

$\downarrow \sigma$

s-structure^1

✓**Locally well-formed**

(58)   You get a rack that the bike will sit on __.

(59)

Chunk 2: *. . . the bike will sit on*

Lexicon

c-s^2

$\downarrow \phi$

Filler:
$(f \ldots \text{GF})$
$\longrightarrow$

$$\begin{bmatrix} \text{PRED} & \text{'get'} \\ \text{SUBJ} & [\text{"you"}] \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'rack'} \\ \text{SPEC} & [\text{"a"}] \\ \text{ADJ} & \left\{ f\begin{bmatrix} \text{PRED} & \text{'sit'} \\ \text{TOPIC} & [\text{"pro"}] \\ \text{SUBJ} & [\text{"the bike"}] \\ \text{OBL} & \begin{bmatrix} \text{PRED} & \text{'on'} \\ \text{OBJ} \end{bmatrix} \\ \text{TENSE} & \text{future} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

$\downarrow \sigma$

s-s^2

✓**Locally well-formed**

(60) | *You get a rack that . . .* | $\xrightarrow{\text{Filler}}$ | *. . . the bike will sit on* |

       ✓**Locally well-formed**   ✓**Locally well-formed**

     ├──── ✓**Globally well-formed** ────┤

(61)   You get a rack that the bike will sit on <u>it</u>.

(62)

Chunk 2: ... *the bike will sit on it*

Lexicon

c-s^2

ϕ

$$\begin{bmatrix} \text{PRED} & \text{'get'} \\ \text{SUBJ} & [\text{"you"}] \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'rack'} \\ \text{SPEC} & [\text{"a"}] \\ \text{ADJ} & \left\{ f \begin{bmatrix} \text{PRED} & \text{'sit'} \\ \text{TOPIC} & [\text{"pro"}] \\ \text{SUBJ} & [\text{"the bike"}] \\ \text{OBL} & \begin{bmatrix} \text{PRED} & \text{'on'} \\ \text{OBJ} & [\text{"it"}] \end{bmatrix} \\ \text{TENSE} & \text{future} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

Filler:
$(f \ldots \text{GF})$

Filler:
$(f \ldots \text{GF})$

σ

s-s^2

✓Locally well-formed

- Filler integration now impossible

(63) | *You get a rack that ...* | → Filler → | *... the bike will sit on it* | → Filler →
         | **✓Locally well-formed** | | **✓Locally well-formed** |

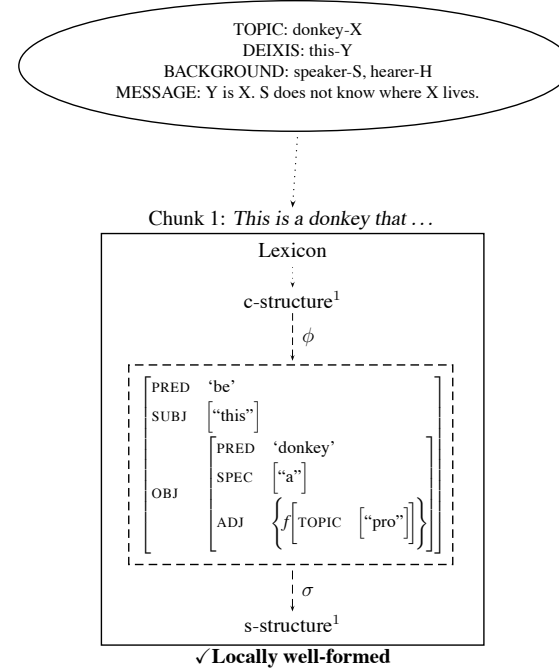 |————————————————— *** Globally ill-formed** —————————————————|

- The grammar ultimately fails to sanction the structure that has been attempted.

- **But**, due to incremental production, the ungrammatical sentence has been *uttered*.
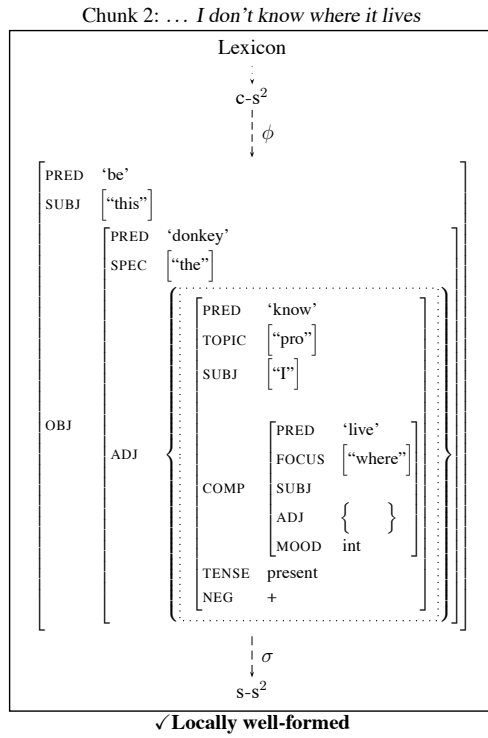
4.4.3   Example: intrusive pronoun, *wh*-island

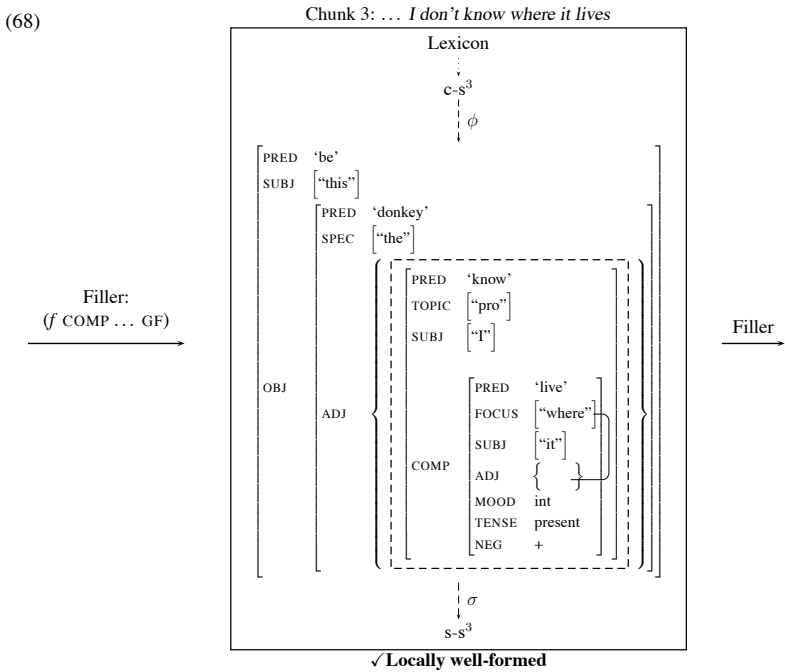(64)   This is a donkey that I don't know where <u>it</u> lives.

(65)

TOPIC: donkey-X
DEIXIS: this-Y
BACKGROUND: speaker-S, hearer-H
MESSAGE: Y is X. S does not know where X lives.

Chunk 1: *This is a donkey that ...*

Lexicon

c-structure^1

ϕ

$$\begin{bmatrix} \text{PRED} & \text{'be'} \\ \text{SUBJ} & [\text{"this"}] \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'donkey'} \\ \text{SPEC} & [\text{"a"}] \\ \text{ADJ} & \left\{ f \begin{bmatrix} \text{TOPIC} & [\text{"pro"}] \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

σ

s-structure^1

✓Locally well-formed

(66) $(\uparrow \text{TOPIC}) = (\ \uparrow \ \text{COMP}^* \ \ \text{GF}\ )$
         $\neg\ (\rightarrow\text{UDF})$

(67)

Chunk 2: … *I don't know where it lives*

Filler:
(f COMP … GF)

$$
\begin{bmatrix}
\text{PRED} & \text{'be'} \\
\text{SUBJ} & \left[\text{"this"}\right] \\
\text{OBJ} & \begin{bmatrix}
\text{PRED} & \text{'donkey'} \\
\text{SPEC} & \left[\text{"the"}\right] \\
\text{ADJ} & \left\{ \begin{bmatrix}
\text{PRED} & \text{'know'} \\
\text{TOPIC} & \left[\text{"pro"}\right] \\
\text{SUBJ} & \left[\text{"I"}\right] \\
\text{COMP} & \begin{bmatrix}
\text{PRED} & \text{'live'} \\
\text{FOCUS} & \left[\text{"where"}\right] \\
\text{SUBJ} & \\
\text{ADJ} & \{ \quad \} \\
\text{MOOD} & \text{int}
\end{bmatrix} \\
\text{TENSE} & \text{present} \\
\text{NEG} & +
\end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Lexicon
$\quad$ c-s^2
$\quad$ ϕ

σ
s-s^2

√ **Locally well-formed**

(68)

Chunk 3: … *I don't know where it lives*

Filler:
(f COMP … GF)

Filler

$$
\begin{bmatrix}
\text{PRED} & \text{'be'} \\
\text{SUBJ} & \left[\text{"this"}\right] \\
\text{OBJ} & \begin{bmatrix}
\text{PRED} & \text{'donkey'} \\
\text{SPEC} & \left[\text{"the"}\right] \\
\text{ADJ} & \left\{ \begin{bmatrix}
\text{PRED} & \text{'know'} \\
\text{TOPIC} & \left[\text{"pro"}\right] \\
\text{SUBJ} & \left[\text{"I"}\right] \\
\text{COMP} & \begin{bmatrix}
\text{PRED} & \text{'live'} \\
\text{FOCUS} & \left[\text{"where"}\right] \\
\text{SUBJ} & \left[\text{"it"}\right] \\
\text{ADJ} & \{ \quad \} \\
\text{MOOD} & \text{int} \\
\text{TENSE} & \text{present} \\
\text{NEG} & +
\end{bmatrix}
\end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

Lexicon
$\quad$ c-s^3
$\quad$ ϕ

σ
s-s^3

√ **Locally well-formed**

(69) | This is a donkey that … | → Filler → | … I don't know where it lives | → Filler →

√ **Locally well-formed**   √ **Locally well-formed**
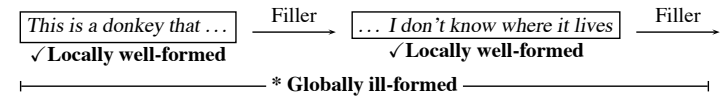
├───────── * **Globally ill-formed** ─────────┤

4.4.4　Summary

Q1 Why do speakers who judge intrusive pronouns as ungrammatical nevertheless produce them, *even if given time and opportunity to avoid them*?　　　　　(Swets and Ferreira 2003)

(70)　　*This is a donkey that I don't know where <u>it</u> lives. ⇐

(71)　　✓ This is a donkey and I don't know where it lives.

Answer

1. Speakers produce these utterances in an attempt to construct a locally well-formed structure that is consistent with the message plan (Levelt 1989).
   ⇒ Not a result of poor planning

2. The sentences are nonetheless rejected by the same speakers as ungrammatical, because they are *globally ill-formed*, despite resulting from incremental production of locally well-formed structure.
   ⇒ Intrusive pronouns are not treated as underlyingly grammatical

- Crucial assumptions of the solution:

   1. Assumptions of the processing model

   2. Filler-driven (outside-in) approach to filler-gap dependencies
      (standard for LFG & certain other theories, not standard in Tree-Adjoining Grammar, Minimalist Program / Principles and Parameters Theory)

   3. Islands defined externally to the island: island structure *locally* well-formed, but filler cannot be integrated

4.5　Parsing
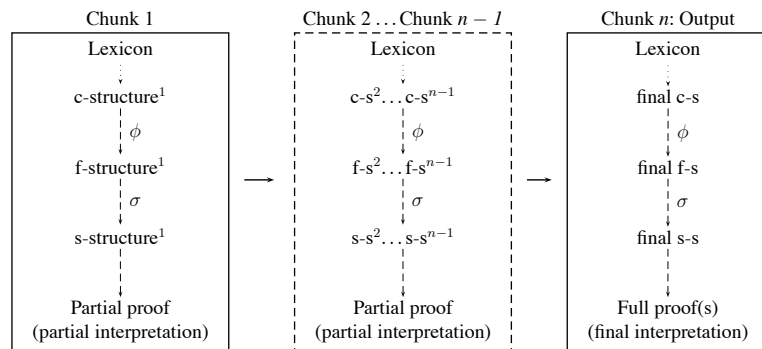
Figure 3: The parsing model

4.5.1　Intrusive pronouns and amelioration

(72)　　**Islands**

    a.　*Weak island*

        i.　I'd like to meet the linguist that Mary couldn't remember if she had seen <u>him</u> before.

        ii. > I'd like to meet the linguist that Mary couldn't remember if she had seen __ before.

        (Sells 1984: 11, (9a))

    b.　*Strong island*

        i.　I'd like to meet the linguist that Peter knows a psychologist that works with <u>her</u>.

        ii. > I'd like to meet the linguist that Peter knows a psychologist that works with __.

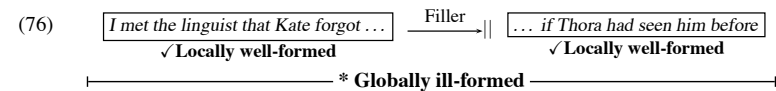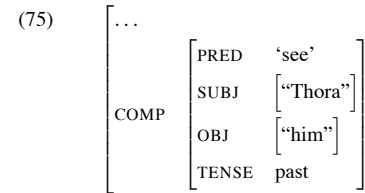(73)　　*That*-**trace / Empty Category Principle**

    a.　i.　Who did Mary imagine that <u>he</u> cheated?

        ii. > Who did Mary imagine that __ cheated?

    b.　i.　This is a donkey that I wonder where <u>it</u> lives.

        ii. > This is a donkey that I wonder where __ lives.

- A simplified island example:

(74)　　I met the linguist that Kate forgot if Thora had seen him before.

- Two options to form locally well-formed structure:

   1. **Lexical insertion**

(75)　　$$\left[\begin{array}{l} \ldots \\ \text{COMP}\left[\begin{array}{ll} \text{PRED} & \text{'see'} \\ \text{SUBJ} & [\text{"Thora"}] \\ \text{OBJ} & [\text{"him"}] \\ \text{TENSE} & \text{past} \end{array}\right] \end{array}\right]$$

(76)　　

   2. **Filler integration**: impossible due to independent constraint against gap (island, *that*-trace, ECP)

⇒ Lexical insertion is the only option for forming locally well-formed structure; otherwise:

(77)　　
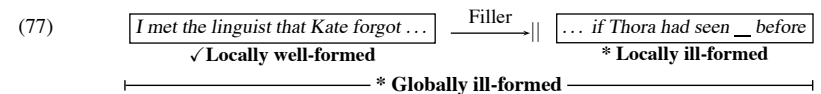
Summary

Q2 Why does the acceptability of intrusive pronouns improve where gaps are independently blocked?

Answer

1. The intrusive pronoun option is globally ill-formed, but consists of locally well-formed sub-parts.

2. In the absence of an intrusive pronoun, the sentence is not only globally ill-formed, it also has a locally ill-formed subpart.

4.5.2   Intrusive pronouns and interpretation

- Intrusive pronouns result in *partial interpration*,
unless they can be reanalyzed successfully, in which case they result in full interpretation.
(reanalysis not a subject in today's talk)

- Partial interpretation is informative for type e antecedents (indefinites, definites, names), but not for quantificational antecedents.

(78)   I met a / the linguist that Kate forgot if Thora had seen <u>him</u> before.

  – Resource logic for semantic composition does not allow intended full interpretation:

  (79)   **The speaker met a / the y such that y is a linguist**
          & Kate forgot if Thora had seen y before

  – Resulting partial interpretation for (78):

  (80)   1. **The speaker met a / the linguist y**
          2. **Kate forgot if Thora had seen y before**

  ⇒ Partial interpretation is crucially **informative**

(81)   *I met every / no linguist that Kate forgot if Thora had seen <u>him</u> before.

  – Resulting partial interpretation for (81):

  (82) 1. **The property of being a y such that**   1.1. **The speaker met y**
                                                      1.2. **Kate forgot if Thora had seen y**

        2. **The scope of *every linguist***

  ⇒ Partial interpretation is **uninformative**

Summary

Q3 Why can't intrusive pronouns be bound pronouns?   (Chao and Sells 1983, Sells 1984)

(83)   I met a / the linguist that Kate forgot if Thora had seen <u>him</u> before.

(84)   *I met every / no linguist that Kate forgot if Thora had seen <u>him</u> before.

Answer

1. Intrusive pronouns are not properly semantically integrated (since they are not properly syntactically integrated): they are therefore never bound pronouns.

⇒ Only a partial interpretation can be constructed for intrusive pronoun sentences.

2. The resulting partial interpretation is **informative** if the antecedent is not a variable-binder.

3. If the antecedent *is* a variable-binder, the resulting partial interpretation is **uninformative**.

5   Conclusion

- Resumptive pronouns (grammaticized)

- Resumptive-like intrusive pronouns (non-grammaticized)

  1. A generalized theory of resumption based on resource logical semantic composition: resumptive pronouns, copy raising

  2. A processing model for intrusive pronouns

⇒ Proper separation of problems of grammatical theory (linguistic competence) from problems of processing (linguistic performance): better overall theory

Current and future work

- Theoretical linguistics:

  1. Syntax and semantics of copy raising: expletives, crosslinguistic perspective, perceptual reports, event semantics (Asudeh and Toivonen 2005)

  2. Syntax and semantics of Austronesian incorporation (Asudeh and Ball 2005)

  3. Further investigations of resource sensitivity
     – Syntax and semantics of raising and control; crosslinguistic perspectives on finite varieties (Asudeh 2005a)
     – Semantic composition as the basis for single conjunct agreement (Asudeh 2005c)

  4. Applications of proof theory to linguistics:
     – The relationship between proof theory and model theory / direct compositionality (Asudeh 2005b, Asudeh and Toivonen 2005)

  5. Applications of resource logics to linguistics:
     – Feature checking and interpretation in the Minimalist Program (Asudeh and Potts 2004)

- Psycholinguistics:

  1. Experimental testing of the processing model for intrusive pronouns and the theory of resumption

- Computational linguistics:

  1. Grammar engineering: syntactic and semantic implementations of Persian, others

  2. Computational semantics: proof theory, composition, context and anaphora

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