

Three kinds of resumption

Ash Asudeh

ICS & SLALS

Carleton University

<http://www.carleton.ca/~asudeh>

Resumptive Pronouns at the Interfaces

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1 Introduction

- **Resumptive pronoun**

A pronoun that occupies the foot of an unbounded dependency and is interpreted as a bound variable.

- McCloskey (2002:192):

A remarkable but little commented on property of resumptive pronouns is that they simply *are* pronouns. I know of no report of a language that uses a morphologically or lexically distinct series of pronouns in the resumptive function. If we take this observation to be revealing, there can be no syntactic feature which distinguishes resumptive pronouns from “ordinary” pronouns, and any appeal to such a feature must be construed as, at best, an indication of the limits of understanding.

(1) **McCloskey’s Generalization**

Resumptive pronouns in a language *L* are the ordinary pronouns of *L*.

- Two consequences of McCloskey’s Generalization:

1. There can be no underlying lexical/featural difference between a resumptive pronoun of *L* and the corresponding referential or bound pronoun.
2. There can be no difference in syntactic insertion or composition between a resumptive pronoun of *L* and the corresponding referential or bound pronoun.

- **Ordinary Pronoun Theory (of Resumption):**

No lexical/featural/syntactic difference between resumptive pronouns and referential or bound pronouns

- **Special Pronoun Theory (of Resumption):**

Some lexical/featural/syntactic difference between resumptive pronouns and referential or bound pronouns

1.1 Three kinds of resumption

McCloskey (2006):

Class 1 Base-generated resumptives

Example languages: Irish (and other Celtic langs.), Hebrew, varieties of Arabic, ...

- (2) an ghirseach a-r ghoid na síogaí í
 the girl COMP-PAST stole the fairies her
the girl that the fairies stole away (Irish; McCloskey 2002:189)

Class 2 ‘Movement resumptives’

Example languages: Vata, Gbadi, Swedish

- (3) àlò ò lē sáká lá
 who he eat rice wh
Who is eating rice? (Vata; Koopman 1982:128)

Class 3 Processor resumptives (outside the grammar)

Example languages: English (cf. ‘intrusive pronouns’, Sells 1984), Swedish, ...

- (4) I’d like to meet the linguist that Mary couldn’t remember if she had seen **him** before.
 (Sells 1984:11)

Asudeh (2004):

Class 3.1 Island/ECP resumptives (incl. (4) above)

- (5) This is a donkey that I wonder where **it** lives.
 (6) I’d like to meet the linguist that Peter knows a psychologist that works with **her**.

Class 3.2 Complexity resumptives

- (7) This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to **her**.

	Class 1	Class 2	Class 3.1	Class 3.2
Grammatical	Y	Y	N	N
Island-Sensitive	N	Y	N	Y/N
Weak Crossover Violation	N	Y	N	Y
Reconstruction Licensed	N	Y	N	Y
Parasitic Gap Licensed	?	Y	N	Y
RP-Gap Complementarity	N	N	Y	Y/N
Distance/Complexity Factor	N	N	N	Y

Table 1: Diagnostic properties of resumptive pronouns by class

1.2 Challenges for a unified theory

- Table 1 reveals the challenge of Class 2 resumptives:

1. They do not pattern like other resumptive pronouns.
2. They show characteristics of the base of a filler-gap dependency (‘traces’).

1. McCloskey (2006:109):

There is a sense, though, in which these results do not challenge what I have called here the consensus view in any very deep way. The two sets of properties (properties of movement-derived constructions and properties of non-movement-derived constructions) still line up in neat opposition. In Swedish, Vata, and Gbadi, those A-bar-binding relations which terminate in a pronoun show the complete constellation of properties associated with A-bar-movement. In Irish and similar languages, resumptive pronoun constructions show none of those properties. **As long as we can make sense of the idea of that a pronoun can be the ‘spell-out’ of a trace (as in the former group of languages), the larger conceptual architecture is not severely threatened.** (emphasis added)

2. McCloskey (2006:109):

[I]nterpreted in this way, the observations imply that the phenomenon of resumption is not theoretically uniform.

3. McCloskey (2006:109):

[I]n the theoretical context in which such proposals were first made, it was not clear that the notion ‘spell-out of a trace’ made much sense. Two strands of development, however, changed that. One has to do with our understanding of the movement operation, and the other has to do with our understanding of the category ‘pronoun’.

- Making sense of the notion ‘spell-out of a trace’ (McCloskey 2006:109–110):

1. Move = Copy + Delete

- A ‘trace’ is now really a deleted copy.
- Chomsky (1993): Deletion at Phonetic Form, after SPELL OUT
- “[I]t is easy to imagine that deletion of the original copy of the phrase might be partial rather than complete.” (McCloskey 2006:110)

2. Pronouns as determiners (Postal 1966, Abney 1987, Koopman 1999)

- “[I]t becomes easy to imagine derivations in which the NP-part of a moved phrase would be deleted stranding a D — that is, a ‘resumptive pronoun’.” (McCloskey 2006:110)

- A sample derivation (McCloskey 2006:110, (41)):

- (8) a. $[_{IP} \text{ they are not sure } [_{CP} \text{ how } [_{IP} [_{DP} \text{ which } [_{NP} \text{ word}]]] \text{ is spelled}]]]$
- b. $[_{CP} [_{DP} \text{ which } [_{NP} \text{ word}]]] [_{IP} \text{ they are not sure } [_{CP} \text{ how } [_{IP} [_{DP} \text{ which } [_{NP} \text{ word}]]] \text{ is spelled}]]]$
- c. $[_{CP} [_{DP} \text{ which } [_{NP} \text{ word}]]] [_{IP} \text{ they are not sure } [_{CP} \text{ how } [_{IP} [_{DP} \text{ which } [_{NP} \emptyset]]] \text{ is spelled}]]]$
- d. $[_{CP} [_{DP} \text{ which } [_{NP} \text{ word}]]] [_{IP} \text{ they are not sure } [_{CP} \text{ how } [_{IP} [_{DP} \text{ it } [_{NP} \emptyset]]] \text{ is spelled}]]]$

- **Problems**

1. ‘Pronouns are determiners’ \neq ‘Determiners are pronouns’
 \Rightarrow Something curious happens between (8c) and (8d): *which* becomes *it*
 “Why exactly is it that the results of partial deletion systematically resemble pronouns?” (McCloskey 2006:110)
2. The trace/copy and pronouns are lexically distinct.
 \Rightarrow Why should the partially deleted D be realized with the same form as a base-generated pronoun?
 \Rightarrow This account treats the residue of resumption as a special pronoun.
3. Class 2 resumptives are interpreted like bound pronouns, not like gaps, in instances where there is divergence.

- **The main questions**

1. Is there a unifying aspect to Class 1 and Class 2 resumptives?
Yes, semantic composition
2. Can Class 2 resumptives and their ‘movement’-like properties be reconciled with McCloskey’s Generalization?
Yes, by recognizing that it is the regular filler-gap relation that needs to be adjusted to account for these resumptives, rather than the pronoun itself.
3. Can the interpretation of Class 2 resumptives be reconciled with their curiously gap-like syntax?
 – **Yes**, by treating these resumptives lexically as identical to other pronouns.

- **The key intuition**

- Resumption, in languages that have the lexical resources to license it, is just another thing that pronouns ‘do’, like referring and serving as bound variables.
- Resumptive pronouns are *always* regular pronouns licensed at the syntax semantics interface.
- Therefore, they always have the same possibilities of interpretation as regular pronouns and they always have the same morphological form as regular pronouns.
- **However**, the **relation** between the binder of the resumptive and the pronoun and can be realized in **two** different ways, one of which gives rise to Class 1 resumptives and the other of which gives rise to Class 2 resumptives.

\Rightarrow The simplest possible explanation of resumption:

Resumptive pronouns look like and are interpreted like ordinary pronouns because there is nothing special about resumptive pronouns *qua* pronouns. Resumptive pronouns are always underlyingly pronouns.

2 Outline

- | | |
|--------------------|--|
| 1. [Introduction] | 5. Lexical Functional Grammar |
| 2. [Outline] | 6. A theory of resumption based on composition |
| 3. Data | 7. Analysis |
| 4. Interim summary | 8. Conclusion |

3 Data

3.1 English (Class 3)

3.1.1 General uses

- (9) **Island-avoidance** Class 3.1
(Ross 1967, Sells 1984)

- a. *Weak island*
- i. I'd like to meet the linguist that Mary couldn't remember if she had seen **him** before. (Sells 1984:11, (9a))
>
 - ii. I'd like to meet the linguist that Mary couldn't remember if she had seen before. (Sells 1984:11, (9a))
- a. *Strong island*
- i. I'd like to meet the linguist that Peter knows a psychologist that works with **her**.
>
 - ii. I'd like to meet the linguist that Peter knows a psychologist that works with .

- (10) **ECP-avoidance** Class 3.1
(Ross 1967, Kroch 1981, Sells 1984, Swets and Ferreira 2003, Ferreira and Swets 2005)

- a. This is a donkey that I don't know where **it** lives. (F & S 2005: (3))
>
- b. This is a donkey that I don't know where lives.

- (11) **Distance/Complexity** Class 3.2
(Erteschik-Shir 1992, Asudeh 2004)

- a. i. This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to **her**. (Erteschik-Shir 1992:89, (4))
>
- ii. This is the girl that John likes **her**. (Erteschik-Shir 1992:89, (1))
- b. i. This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to **her**. (Erteschik-Shir 1992:89, (4))
>
- ii. This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to . (Erteschik-Shir 1992:89, (4))

3.1.2 Interpretation

- Chao and Sells (1983) present three tests that distinguish resumptive pronouns from intrusive pronouns.
- Each test shows that an intrusive pronoun does not support the bound reading that they argue is diagnostic of true, grammaticized resumptive pronouns, which pattern like gaps with respect to this aspect of their interpretation.

1. Ungrammaticality of quantificational antecedent

- (12) *I'd like to review every book that Mary couldn't remember if she'd read **it** before.
(Chao and Sells 1983:49, ~(5c))

2. Lack of support for a list answer to a *wh*-question

- (13) Which of the linguists do you think that if Mary hires **him** then everyone will be happy?
(Sells 1984:13, ~(10b))
- a. Chris
 - b. #Chris, Daniel, or Bill

3. Lack of support for a functional answer to a *wh*-question

- (14) Which exam question does no professor believe will be tough enough?
(Chao and Sells 1983:50, ~(8a))
- a. The one her students aced last year (functional)
 - b. Question 2A (individual)
- (15) Which exam question does no professor even wonder if **it** will be tough enough?
(Chao and Sells 1983:51, ~(10a))
- a. #The one her students aced last year (functional)
 - b. Question 2A (individual)

3.1.3 Summary

- English resumptive pronouns — dubbed “intrusive pronouns” by Sells (1984) — are really an extra-grammatical device; i.e. they are processing artifacts.
- They are not interpreted like bound variables, unlike grammaticized resumptives (Chao and Sells 1983, Sells 1984).
- They are rejected as ungrammatical by speakers in psycholinguistic tests, although these same speakers produce them (Swets and Ferreira 2003, Ferreira and Swets 2005).
- Asudeh (2004) offers a processing explanation of English processor resumptives which explains their interpretive restrictions and the puzzling production/parsing asymmetry. The processing model also explains why a fairly unrestricted range of referring expressions, not just pronouns or epithets, can perform the processor resumptive function (Kroch 1981, Prince 1990).

3.2 Irish (Class 1)

3.2.1 General distribution

- McCloskey (1979, 1990, 2002, 2006) argues that the simplest generalization about resumptive pronouns in Irish is that they occur in any syntactic position in any unbounded dependency, except where blocked by independent constraints.
 - The key independent constraint is the Highest Subject Restriction (McCloskey 1983, Borer 1984, McCloskey 1990, 2002, 2006), an \bar{A} -disjointness requirement (essentially an \bar{A} -equivalent of Principle B).

(16) Restrictive relative clauses

- a. an ghirseach a-r ghoid na síogaí í
the girl COMP-PAST stole the fairies her
the girl that the fairies stole away (McCloskey 2002:189, (9b))
- b. an fear a dtabharann tú an tairgead dó
the man COMP give you the money to.him
the man to whom you give the money (McCloskey 1979:6, (3))

(17) Nonrestrictive relative clauses

Tháinig an saighdiúir eile, nach bhfaca mé roimhe é, aníos chugainn.
came the soldier other NEG.COMP saw I before him, up to.us
The other soldier, whom I hadn't seen before, came up to us.
(McCloskey 1990:238, (97a))

(18) Questions

- a. Cé acu ceann a bhfuil dúil agat ann?
which one COMP is liking at.you in.it
Which one do you like? (McCloskey 2002:189, (10b))
- b. d'inis siad cén turas a raibh siad air
told they what journey COMP be.PAST they on.3SG.MASC
they told what journey they were on (it) (McCloskey 1990:238, (98a))

(19) Clefts

Is tú a bhfuil an deallramh maith ort.
COP.PRES you COMP is the appearance good on.2SG
It is you that looks well. (McCloskey 1990:239, (99a))

(20) Reduced Clefts

Teach beag seascair a-r mhair muid ann.
house little snug COMP-PAST lived we in.it
It was a snug little house that we lived in. (McCloskey 2002:189, (11b))

(21) Comparatives

Do fuair sé leaba chó math agus a-r lui sé riamh uirthi.
get PAST he bed as good as COMP lie.PAST he ever on.3SG.FEM
He got a bed as good as he ever lay on (it). (McCloskey 1990:239, (100b))

3.2.2 Syntactic properties

- Irish resumptives are paradigmatic **Class 1** resumptives: they do not pattern like gaps with respect to several crucial syntactic diagnostics.

Islands

- Gaps in Irish are island-sensitive McCloskey (1979)

(22) Complex NP Islands

- a. * an fear aL phóg mé an bhean aL phós
the man COMP kissed I the woman COMP married
the man who I kissed the woman who married
(McCloskey 1979:30, (78))
- b. * Cén fear aL phóg tú an bhean aL phós?
which man COMP kissed you the woman COMP married
Which man did you kiss the woman who married?
(McCloskey 1979:30, (80))

(23) Wh-Islands

- a. * fear nachN bhfuil fhios agam cén cineál mná aL phósfadh
a man COMP.NEG I know what sort of a woman COMP would marry
a man who I don't know what woman would marry
(McCloskey 1979:32, (87))
- b. * Cén sagart nachN bhfuil fhios agat caidé aL dúirt?
which priest COMP.NEG you know what COMP said
Which priest don't you know what said?
(McCloskey 1979:32, (88))
- c. * Cén sagart aL d'fhiafraigh Seán diot arL bhuail tú?
which priest COMP asked John of you QUEST
Which priest did John ask you if you hit?
(McCloskey 1979:32, (89))

- Resumptive pronouns in Irish, in contrast, are **not** island-sensitive.

(24) Complex NP Island

Sin teanga aN mbeadh meas agam ar duine ar bith aL tá ábalta i a labhairt
that a.language COMP would be respect at me on person any COMP is able it to speak
That's a language that I would respect anyone who could speak it.
(McCloskey 1979:34, (95))

(25) Wh-Island

Sin fear nachN bhfuil fhios agam cén cineál mná aL phósfadh é
that a man COMP.NEG I know what sort of a woman COMP would marry him
That's a man who I don't know what kind of woman would marry him.
(McCloskey 1979:33, (91))

Weak Crossover

- Gaps in Irish are subject to weak crossover effects.

(26) a. * fear a d'fhág a bhean __
 man COMP left his wife
a man that his wife left

b. * an fear so a mhairbh a bhean féin __
 this man COMP killed his own wife
this man that his own wife killed

(McCloskey 1990:237, (95a–b))

- Resumptive pronouns in Irish are **not** subject to weak crossover effects.

(27) a. fear ar fhág a bhean é
 man COMP left his wife him
a man that his wife left

b. an fear so ar mhairbh a bhean féin é
 this man COMP killed his own wife him
this man that his own wife killed

(McCloskey 1990:236–7, (94a–b))

3.3 Swedish (Class 1???)

- (Engdahl 1982:156, (18)):

(28) Associate a preposed WH phrase with (i) an empty position anywhere in the sentence (ii) a pronoun which agrees in number, gender and person in the context $[_{CP} \text{COMP} [+LEX] _]$.

- Swedish resumptives occur when there is a subject gap following material in the left periphery of an embedded clause:

(29) [Vilket ord]_i visste ingen [_{CP} [hur många M]_j [_{C'} det_i stavas med ___]_j]
 which word knew nobody how many Ms it is.spelled with ___
Which word did nobody know how many Ms (it) is spelled with?
 (Engdahl 1985:8, ~ (11))

(30) [Vilket ord]_i visste ingen [_{CP} [_{C'} om det_i stavas med ett M]_j]
 which word knew nobody if it is.spelled with an M
Which word did nobody know if (it) is spelled with an M?
 (Engdahl 1985:8, ~ (11))

Islands

- Swedish resumptives do not seem to improve islands, although Swedish does not have nearly as many restrictions on extraction as English does (Engdahl 1982).

(31) * Vilken kung_i hänger [_{NP} många porträtt av ___]_i på Gripsholm?
 which king hang many portraits of at Gripsholm

(32) * Vilken kung_i hänger [_{NP} många porträtt av honom_i]_j på Gripsholm?
 which king hang many portraits of him at Gripsholm
 (Engdahl 1982:164, (54a–b))

- However, the Swedish island data with respect to islands is seriously confounded by the fact that the resumptives in question are not the true, left-peripheral resumptives.

Parasitic gaps

- True resumptives in Swedish license parasitic gaps:

(33) Det var den fången_i som läkarna inte kunde avgöra om han_i verkligen var sjuk utan att
 it was that prisoner that the.doctors not could decide if he really was ill without to
 tala med p_i personligen.
 talk with ___ in person
(This is the prisoner that the doctors couldn't determine if he really was ill without talking to in person.)

ATB extraction

- True resumptives in Swedish allow across-the-board extraction:

(34) Där borta går en man som jag ofta träffar __ men inte minns vad han heter.
 There goes a man that I often meet ___ but not remember what he is called
There goes a man that I often meet but don't remember what he is called.
 (Zaenen et al. 1981:681, (9))

3.4 Vata (Class 2)

- Vata requires the foot of a bounded dependency to be a resumptive pronoun if it is a subject and a gap otherwise (Koopman 1982, Koopman and Sportiche 1982).

(35) Wh-questions**a. Highest subject**

àlɔ̌ ð / * __ lē sáká lá
 who heR / * __ eat rice wh
Who is eating rice?

(Koopman 1982:128, (1a))

b. Embedded subject

àlɔ̌ ñ gūgū nā ð / * __ yì lá
 who you think that heR / * __ arrive wh
Who do you think arrived?

(Koopman 1982:128, (4a))

c. Highest object

yī kòfì lé __ / * mī lá
 what Kofi eat __ / * it wh
What is Kofi eating?

(Koopman 1982:128, (1b))

d. Embedded object

àlɔ̌ ñ gūgū nā wá yé` __ / * m̀̀ yé lá
 who you think that they see __ / him PART wh
Who do you think they saw?

(Koopman 1982:128, (4b))

3.4.1 Weak Crossover

- Vata pronouns behave like gaps with respect to weak crossover (Koopman and Sportiche 1982).

(36) * àlɔ̌_i ò_i nɔ̌ gùgù nā ð_i mlì lá
 who_i his_i mother think that he_i left wh
Who did his mother think left?

(Koopman and Sportiche 1982:10a)

(37) * àlɔ̌_i ñ yrà ò_i nɔ̌ nā ð_i mlì lá
 who_i you tell his_i mother that he_i left wh
Who did you tell his mother left?

(Koopman and Sportiche 1982:10b)

3.4.2 Form

- Vata pronouns have distinct tone in their resumptive function. Resumptive pronouns have low tone (ò, ì, ...) instead of mid-high tone (ó, í, ...) (Koopman and Sportiche 1982).

(38) àló ð mlì lá
 who heR left *wh*
Who left? (Koopman and Sportiche 1982:14a)

(39) ó mlì
 he left
He left. (Koopman and Sportiche 1982:14b)

3.4.3 Distribution

- Koopman and Sportiche (1982:24):

[A] low tone pronoun may also occur in a position which is, informally speaking, neither too close, nor too far from the site of a *wh*-element provided that it is coindexed with a *wh*-trace, or a low tone pronoun [+*wh*].

(40) àló_i ð gūgū nā ð_j / * ð_i / ð_i ní yà lá
 who_i heR_i think that he-ð_j / * he-ð_i / he-ð_i NEG healthy *wh*
Who thinks he is sick? (Koopman and Sportiche 1982:(15a))

- Instances of low tone pronouns as in (40) **do not** cause WCO violations:

(41) àló_i ð_i yrá ð_i nó nā ð_i mlì lá
 who_i heR tell his_i mother that he_i left *wh*
Who told his mother that he left? (Koopman and Sportiche 1982:16)

⇒ The low tone marking cannot be interpreted as diagnostic of a resumptive pronoun *qua* spelled out variable.

⇒ The low tone actually seems to be a marking on subjects that is a reflex of being bound by a *wh*-operator.

4 Interim summary

• The main questions

1. Is there a unifying aspect to Class 1 and Class 2 resumptives?

Yes, semantic composition

2. Can Class 2 resumptives and their ‘movement’-like properties be reconciled with McCloskey’s Generalization?

Yes, by recognizing that it is the regular filler-gap relation that needs to be adjusted to account for these resumptives, rather than the pronoun itself.

3. Can the interpretation of Class 2 resumptives be reconciled with their curiously gap-like syntax?

– **Yes**, by treating these resumptives lexically as identical to other pronouns.

• The key intuition

- Resumption, in languages that have the lexical resources to license it, is just another thing that pronouns ‘do’, like referring and serving as bound variables.
- Resumptive pronouns are *always* regular pronouns licensed at the syntax semantics interface.
- Therefore, they always have the same possibilities of interpretation as regular pronouns and they always have the same morphological form as regular pronouns.
- **However**, the **relation** between the binder of the resumptive and the pronoun and can be realized in **two** different ways, one of which gives rise to Class 1 resumptives and the other of which gives rise to Class 2 resumptives.

⇒ The simplest possible explanation of resumption:

Resumptive pronouns look like and are interpreted like ordinary pronouns because there is nothing special about resumptive pronouns *qua* pronouns. Resumptive pronouns are always underlyingly pronouns.

5 Lexical Functional Grammar

5.1 Parallel Projection Architecture

- (42) **The original LFG architecture** (Kaplan and Bresnan 1982):

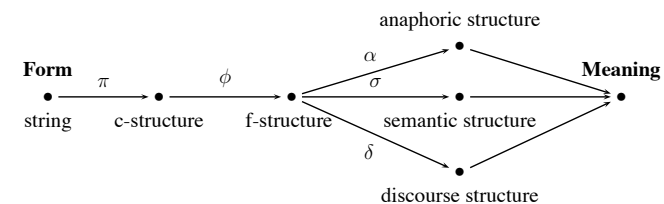
constituent structure $\xrightarrow{\phi}$ functional structure

- The understanding of LFG’s architecture has for some time now been as a modular architecture that consists of several simultaneously present levels related by projection functions (Kaplan 1987, 1989).

⇒ Linguistic generalizations are factored into separately constrained levels with explicit correspondences between the levels.

- The levels and the correspondences constitute the form–meaning mapping.

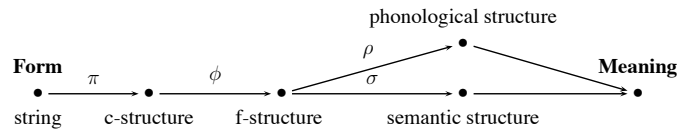
- (43) **An initial sketch of LFG’s parallel projection architecture** (Kaplan 1987, 1989):



- Asudeh (2006) discusses an updated version of the projection architecture, incorporating subsequent proposals in the LFG literature.

- Here I will assume the architecture in (44).

(44) **LFG architecture:**



- There are two principle methods for capturing the relations between structures:
 1. Description by analysis
 2. Codescription
- In description by analysis, one structure is analyzed to yield another structure. This is akin to the kind of interpretive semantics one finds in LF-based approaches, in which a logical form is interpreted in toto to yield the semantics (although compositionally).
- In codescription, which is now the prevailing approach in LFG, a single description simultaneously describes various structures. For example, in a single lexical entry, there may be specifications about f-structure, phonological information, and meaning terms for semantics, as well as the basic c-structural category of the lexical item. This is more akin to syntax and semantics in Categorical Grammar, in which each lexical item specifies its syntactic combinatorics, semantic combinatorics, and prosodic combinatorics.
- The analysis of Class 2 resumptives that I present relies on codescription and thus, to the extent that it is right, constitutes an argument for codescriptional approaches to grammar.

5.2 Unbounded dependencies

- There are versions of LFG that postulate traces/empty categories at the base of (at least some) unbounded dependencies (Bresnan 1995, 2001) and versions which eliminate traces entirely (Kaplan and Zaenen 1989, Dalrymple 2001).
- All else being equal, elimination of empty categories is clearly more parsimonious, so I assume the latter, trace-less variant.
- An unbounded dependency in this approach generally involves equations of the following general form:

$$(45) \quad (\uparrow \text{TOP}) = (\uparrow \text{BODY BASE})$$
- The top of the unbounded dependency is an unbounded dependency function, TOPIC or FOCUS (Asudeh 2004):

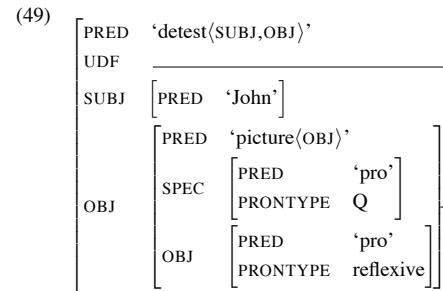
$$(46) \quad \text{UDF} \equiv \text{TOPIC} \vee \text{FOCUS}$$

- The unbounded nature of the dependency is captured through a *functional uncertainty* (Kaplan and Zaenen 1989). For example, the following unbounded dependency relation states that the top of the unbounded dependency is equated with a grammatical function that can be embedded within an unbounded number of grammatical functions at f-structure.

$$(47) \quad (\uparrow \text{UDF}) = (\uparrow \text{GF}^* \text{GF})$$

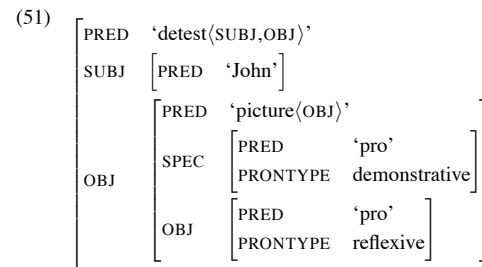
- **Reconstruction** is a direct consequence of **token equality** at f-structure, with the filler serving two grammatical functions. Token equality is the strongest possible theory of reconstruction.
 - Here I use reflexive-binding reconstruction for expository purposes only (such cases may in fact depend on a logophoric/‘exempt’ reading of the reflexive).
 - Notice that this kind of reconstruction theory naturally predicts asymmetry between structurally-sensitive conditions such, as Principle C of binding theory (normally stated in terms of some structural command relation) and cases that do not necessarily involve structural conditions, such as quantificational binding, where quantifiers do not necessarily have to command their ‘variables’ on the theory I assume (Glue Semantics).

(48) Which pictures of himself does John detest?



- Compare:

(50) John detests these pictures of himself.



- (64) *laughs* @INTRANSITIVE(laugh)
 @PRESENT
 @3SG

6 A theory of resumption based on composition

- **Resumption (informal definition)**

Resumption is the presence of a pronoun that is not required for semantic composition.

- 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.**

– Resumptive pronouns as such have been eliminated from the theory.

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

6.1 Resumption and resource management

- Hypothesis of **Resource Sensitivity**:

Natural language is universally *resource-sensitive*.

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

- (65) Kim fooled Sandy.
 = *fool(kim, sandy)*
 ≠ *fool(kim, kim)*

- (66) This innocent man is allegedly guilty, according to some.
 ≠ 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 useful notion of **Linguistic Resource Sensitivity** (Asudeh 2004):

– Set linguistically motivated goal condition on resource logical proofs.

- Resource Sensitivity potentially explains a number of postulates of grammatical theory through the underlying logic of composition and thus eliminates the need for these postulates as separate principles. Examples include:

1. Bounded Closure (Klein and Sag 1985)
2. Completeness and Coherence (Kaplan and Bresnan 1982)

3. The Theta Criterion (Chomsky 1981)
4. The Projection Principle (Chomsky 1981)
5. No Vacuous Quantification (Chomsky 1982, 1995, Heim and Kratzer 1998)
6. Full Interpretation (Chomsky 1986, 1995, and many others)
7. Interpret Once under Agree (Adger and Ramchand 2005)

⇒ 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.

- An example of Glue Semantics:

(67) John laughed.

(68) **Lexically-contributed meaning constructors**

1. *john* : j_e
2. *laugh* : $j_e \multimap l_t$

(69)
$$\frac{j_e \quad j_e \multimap l_t}{j_e \multimap l_t} \multimap_{\mathcal{E}}$$

- The logic of composition in Glue Semantics, linear logic, is a resource logic.

⇒ **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.**

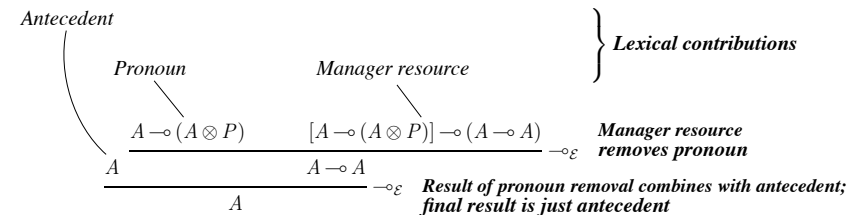


Figure 1: A manager resource removes a pronominal resource

7 Analysis

7.1 Irish resumptives (Class 1)

- Irish has been of particular interest in the study of resumptive pronouns and successive cyclic unbounded dependencies, because its complementizer system differentiates between gap-based unbounded dependencies — signalled by the leniting complementizer, typically written *aL* — and resumptive-based unbounded dependencies — signalled by the nasalizing complementizer, typically written *aN* (McCloskey 1979, 1990, 2002, 2006).
- Asudeh (2004) analyzes the unbounded dependency system of Irish in detail. Here I give just the intuition.
 - The lexical entry for *aL* consists of a filler-gap equation of the kind we saw before.

(70) *aL* **Filler-gap equation**
 - The lexical entry for *aN* contains both a standard LFG anaphoric binding equation and a resumptive-licensing manager resource.

(71) *aN* **Anaphoric-binding equation**
Manager resource
- For further details, please see Asudeh (2004). There I also account for complex ‘mixed chain’ cases (McCloskey 2002), which reveals a generalized notion of successive cyclicity (without movement).
- The key aspect of the analysis, for present purposes, is that the relation between the top of an Irish resumptive unbounded dependency and the pronoun at the base is just one of anaphoric binding and the pronoun is a full pronoun in the syntax.
- This immediately predicts that the resumptive does not behave like a gap with respect to syntactic phenomena such as islands, weak crossover, and across-the-board extraction and reconstruction.
- Furthermore, the resumptive pronoun is lexically a completely ordinary pronoun, so the fact that resumptives have the same form as ordinary pronouns in Irish is immediately explained.

7.2 Vata resumptives (Class 2)

- The essential puzzle of Class 2 resumptives is that they behave like gaps syntactically, but nevertheless look exactly like other pronouns.
- The strongest possible explanation of these facts is that there is no underlying distinction between the resumptives and other pronouns.
- The tonal marking on Vata pronouns initially seems to offer a challenge, but Koopman and Sportiche (1982) demonstrate that the tonal marking can’t be about resumption per se, because it occurs on non-resumptive pronouns, as we saw before.
- These facts are explained by an analysis that grows out of LFG’s trace-less treatment of unbounded dependencies through f-structural token equality and the Restriction operator.
- First, let us give a uniform treatment of Vata pronouns, resumptive or otherwise, using \circ as an example:

$$(72) \quad \circ \quad \begin{array}{l} (\uparrow \text{ PERS}) = 3 \\ (\uparrow \text{ NUM}) = \text{sg} \\ (\uparrow \text{ GEND}) = \text{masc} \\ @\text{PRONOUN} \\ @\text{DEFAULT-TONE} \\ @\text{WH-TONE} \end{array}$$

The pronoun thus specifies its agreement features but otherwise invokes a number of generalization templates that are common to all personal pronouns in the language.

- The templates are defined as follows:

$$(73) \quad @\text{PRONOUN} \quad (\uparrow \text{ PRED}) = \text{‘pro’}$$

$$(\uparrow_{\sigma} \text{ ANTECEDENT}) \multimap [(\uparrow_{\sigma} \text{ ANTECEDENT}) \otimes \uparrow_{\sigma}]$$

$$(74) \quad @\text{DEFAULT-TONE} \quad \{ (\uparrow_{\rho} \text{ TONE}) \mid (\uparrow_{\rho} \text{ TONE} = \text{MID-HIGH}) \}$$

$$(75) \quad @\text{WH-TONE} \quad [(\text{SUBJ } \uparrow) \wedge (\uparrow_{\sigma} \text{ ANTECEDENT WH-OPERATOR})] \Rightarrow (\uparrow_{\rho} \text{ TONE}) = \text{LOW}$$

- According to (73), the pronoun contributes a standard PRED ‘pro’ to the syntax at f-structure and contributes a standard pronominal meaning constructor to the semantics.
- According to (74), the pronoun has to have a TONE specification at phonological-structure. If nothing else specifies the tone, then the value of TONE is MID-HIGH, as in \acute{o} .
- According to (75), if the pronoun is a subject and is bound by a *wh*-operator, then it must have LOW TONE, overriding the default in (74). This accounts for the otherwise puzzling pattern of data in (40) and (41), repeated here:

$$(40) \quad \text{\acute{a}l}\acute{o}_i \ \acute{o} \ g\acute{u}g\acute{u} \ n\acute{a} \ \acute{o}_j \ / * \acute{o}_i \ / \acute{o}_i \ n\acute{i} \ y\acute{a} \ l\acute{a}$$

who_i heR_i think that he- \acute{o}_j / * he- \acute{o}_i / he- \acute{o}_i NEG healthy *wh*
Who thinks he is sick? (Koopman and Sportiche 1982:15a)

$$(41) \quad \text{\acute{a}l}\acute{o}_i \ \acute{o}_i \ y\acute{r}\acute{a} \ \acute{o}_i \ n\acute{o} \ n\acute{a} \ \acute{o}_i \ m\acute{l}\acute{i} \ l\acute{a}$$

who_i heR tell his_i mother that he_i left *wh*
Who told his mother that he left? (Koopman and Sportiche 1982:16)

- Second, we parametrize the base of the filler-gap unbounded dependency function:

$$(76) \quad \{ \text{GF} - \text{SUBJ} \mid \begin{array}{l} \text{SUBJ}|\text{PRED} \\ \text{SUBJ}|\text{PRONTYPE} \end{array} \}$$

- This does not affect the body of the unbounded dependency function. It just means that the base can be realized as a pronoun, because the dependency equation removes core pronominal syntactic information.
- Since the body is unaffected, this means that the resumptive dependency inherits all island constraints.
- Notice also that the pronoun is **present in c-structure**, LFG’s representation of surface syntax.

- A schematic of the full dependency equation with top, body and base represented is as follows:

$$(77) \quad (\uparrow \text{ UDF}) = (\uparrow \quad \text{GF}^* \quad \{ \text{GF} - \text{SUBJ} \mid \begin{array}{l} \text{SUBJ}|\text{PRED} \\ \text{SUBJ}|\text{PRONTYPE} \end{array} \})$$

Island Constraints

- The result of this kind of unbounded dependency relation is that the *wh*-phrase must agree with the pronoun (if the *wh*-phrase bears agreement morphology), but it does by actually unifying with the pronominal *f*-structure, since the removal of the PRED and PRONTYPE features prevent any Uniqueness violations.²

(78) àl5 ð mli lá
 who heR left *wh*
Who left?

(Koopman and Sportiche 1982:14a)

(79)

PRED	‘leave(SUBJ)’	}						
UDF	<table style="border-collapse: collapse; margin-left: 20px;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">PRED</td> <td style="padding-left: 5px;">‘pro’</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">PRONTYPE</td> <td style="padding-left: 5px;">Q</td> </tr> </table>		PRED	‘pro’	PRONTYPE	Q		
PRED	‘pro’							
PRONTYPE	Q							
SUBJ	<table style="border-collapse: collapse; margin-left: 20px;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">PERS</td> <td style="padding-left: 5px;">3</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">NUM</td> <td style="padding-left: 5px;">sg</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">GEND</td> <td style="padding-left: 5px;">masc</td> </tr> </table>	PERS	3	NUM	sg	GEND	masc	}
PERS	3							
NUM	sg							
GEND	masc							

- The unification of the filler *f*-structure and the *f*-structure of the pronoun also has immediate consequences for reconstruction and weak crossover.
 1. The filler occupies two token-identical *f*-structural spots, thus reconstructing at the site of the resumptive.
 2. Any weak crossover restrictions will be realized as in a filler-gap dependency, because the filler occupies a less-embedded and more-embedded *f*-structural position through the token equality.
- As I just noted, this modification of the basic filler-gap dependency means that the base of the dependency *can* be realized as a resumptive pronoun, but what ensures that in the relevant cases it *must* be?
- First, note that I’m assuming an LFG based on codescription. In other words, a single lexical entry contributes semantic information, phonological information, categorial information, and *f*-structural information. Crucially, these contributions are made separately. Thus, even if the unbounded dependency equation impacts on some of the syntactic information contributed by the pronoun, the phonological specifications and, most importantly, semantic specifications are left untouched.
- The relevant facts are therefore immediately explained if we assume that Vata has a resumptive licenser that contributes a manager resource, much like Irish, but in this case it is presumably not phonologically realized.
 - The pronoun is lexically just an ordinary pronoun, so it contributes a pronominal meaning constructor.
 - The manager resource anaphorically binds subjects, matrix or embedded, and removes their meaning constructor.
 - According to Resource Sensitivity, the manager resource can only be satisfied if it actually finds a subject pronoun to consume.
 - The end result is that a pronoun must be inserted from the lexicon in order to satisfy the manager resource.

²Case is still an open issue, but could be handled similarly and an analysis of case in terms of restriction is possibly independently motivated by Icelandic (Andrews 1982).

- In sum, Class 2 Vata-like resumptives and Class 1 Irish-like resumptives are unified at the syntax-semantics interface.
 - Both types of resumptive equally constitute a problem for semantic composition and must be removed for composition to succeed.
 - The element that removes the pronoun (the manager resource) is lexically contributed and licenses the resumption through removal of the pronoun at the syntax-semantics interface (i.e., in the Glue proof).
 - The relation between the manager resource and the pronoun is anaphoric binding.
- The difference between Class 2 resumptives and Class 1 resumptives is that while the latter are only removed at the syntax-semantics interface, the former are removed both at the interface and in the syntax.
 - ⇒ In the syntax, Class 1 resumptives act like pronominals, thus **not being** subject to island constraints, weak crossover, reconstruction, etc.
 - ⇒ In the syntax, Class 2 resumptives are absent, acting like gaps, thus **being** subject to island constraints, weak crossover, reconstruction, etc.
- However, in all cases there is no lexical distinction between resumptive pronouns and ordinary pronouns.
 - ⇒ McCloskey’s Generalization is immediately explained: there can be no form distinction between resumptives and other pronouns, because there is in fact only a single set of pronouns which serve a variety of functions.
 - ⇒ Resumptive pronouns are expected to behave like other pronouns with respect to any semantic restrictions they place on their antecedents (see, e.g., Sells 1984 on reference to concepts).

7.3 Lebanese Arabic

- We have seen that there are basically two strategies for resumptive-licensing, one which removes the resumptive from semantics but leaves it intact in syntax (Class 1) and one that removes the resumptive from both syntax and semantics (Class 2).
- There is no a priori reason why a language could not engage both strategies.
- Aoun et al. (2001) note that Lebanese Arabic allows reconstruction at the site of resumption if the resumptive is not in an island, but resumptives in islands do not allow reconstruction.

(80) **No island**

təlmiiiz-[a]_i l-kəsleen ma baddna nyabbir [wala mʕallme]_i ?əno **huwwe** zaʕbar b-l-faḩḩ.
 student-her the-bad NEG want.1P tell.1P no teacher that he cheated.3SM in-the-exam
Her bad student, we dont want to tell any teacher that he cheated on the exam.
 (Aoun et al. 2001:381, (26b))

(81) **Adjunct island**

* təlmiiiz-[a]_i l-kəsleen ma ḩkiina maʕ [wala mʕallme]_i ?abl-ma **huwwe** yuʕṣal
 student-her the-bad NEG talked.1P with no teacher before he arrive.3SM
Her bad student, we didnt talk to any teacher before he arrived.
 (Aoun et al. 2001:381, (27b))

- This facts are immediately explained if Lebanese Arabic has both resumptive strategies available in its grammar.
 - In an island, only the Class 1 strategy could be grammatical and this strategy does not allow reconstruction, since the pronoun is syntactically present.
 - Outside an island, either strategy is available and the Class 2 strategy allows reconstruction, since the pronoun is syntactically absent.
- This furthermore means that there is no motivation for an extraneous Last Resort strategy, contra Aoun et al. (2001).

7.4 English resumptives (Class 3)

- English does not have a robust grammatical resumptive strategy, as we saw above.
- English resumptives are processing artifacts that are inserted during production and accommodated (partially) during parsing.
- I present a production and parsing model of English processor resumptives in Asudeh (2004).
- The key assumptions of the processing model are:
 1. Production and parsing are incremental.
 2. Incremental production and parsing attempt to construct *locally* well-formed structures.
 3. Global well-formedness applies only to the output of production and parsing.
 4. Production and parsing are constrained by memory limitations based on complexity factors, including distance, structural complexity, and intersecting interpretations of unbounded dependencies. (Kimball 1973, Dickey 1996, Gibson 1998).
 5. Parsing of unbounded dependencies is *filler-driven*. (Active Filler Strategy (AFS); Frazier 1987, Frazier and Flores d’Arcais 1989)
 6. Unsuccessful parsing results in reanalysis.
- The production and parsing models are sketched in Figures 2 and 3.
- The model explains certain facts about resumption that are often found to be counterintuitive in the literature (see, e.g., McCloskey 2006:113). Namely, resumptives allow greater expressivity than gaps (e.g., they can occur in islands) and they might seem to place a smaller burden on the processor (this does not actually comport with psycholinguistic results — see, e.g., (Alexopoulou and Keller 2007)). Why, then, are some resumptive dependencies apparently modified filler-gap dependencies and why are gaps the typologically preferred mechanism for unbounded dependencies?
 - ⇒ Pronouns create massive local ambiguities for the processor. A gap is actually a better way to identify an antecedent. (Foiled expectations are informative).

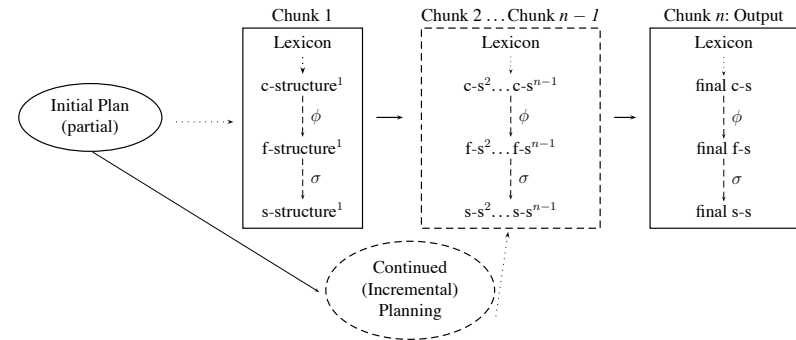


Figure 2: The production model

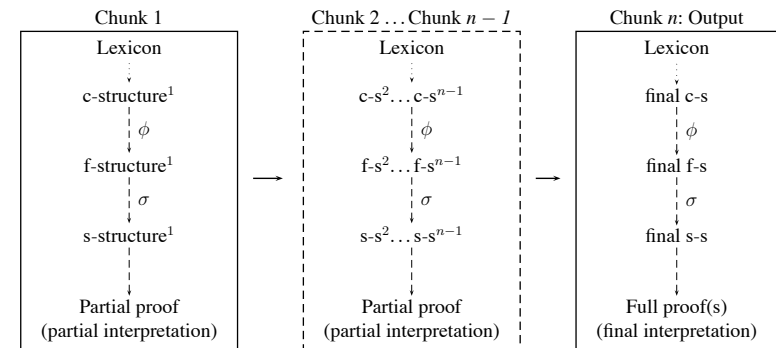


Figure 3: The parsing model

8 Conclusion

- The resource management theory of resumption gives a provides a unification of Class 1 Irish-like resumptive pronouns and Class 2 Vata-like resumptives. Both classes equally constitute a surplus resource at the syntax–semantics interface, which must be removed by a resumptive-licenser.
- The general picture that emerges is:

(82)	Lexicon	Syntax (c-structure)	Syntax (f-structure)	Semantics
Class 1	Ordinary Pronoun	Present	Present	Absent
Class 2	Ordinary Pronoun	Present	Absent	Absent
- The theory explains McCloskey’s Generalization because there is no lexical or featural difference between resumptive pronouns and other pronouns, not even for resumptives in Vata.
- The theory gives a more satisfactory explanation of Class 2 resumptives than a Copy-Delete transformational theory, because the latter does not explain why the residue of a *wh*-phrase is realized as a pronoun and why the residue, which is underlyingly not a pronoun, is interpreted like a pronoun.
- The theory depends on:
 1. The hypothesis of Resource Sensitivity, based on resource-logical semantic composition, as in Glue Semantics.
 2. Independently motivated aspects of Lexical Functional Grammar
 - (a) LFG’s parallel projection architecture
 - (b) Codescription
 - (c) Unbounded dependencies as functional equality

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