

Resumptive Pronouns in LFG*

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1. Introduction

Since the beginnings of generative syntax, filler-gap constructions have attracted a great deal of attention. What has attracted significantly less attention is the other type of long-distance dependency: the resumptive pronoun construction. In this paper, we will outline an analysis of resumptive pronouns in LFG, based primarily on Hebrew but with consideration of other languages.

The major questions that need to be addressed by a theory of resumptive pronouns are the following:

- In what ways are filler-resumptive constructions similar to filler-gap constructions and in what ways are they different? An adequate analysis must account for both the similarities and the differences.
- Why pronouns? In other words, how is it that pronouns come to be used as a way of marking the lower end of a long-distance dependency. The importance of this question is reinforced by the fact that even in languages that do not “have” resumptive pronouns, like English, there is a limited marginal use of resumptive pronouns as a way of circumventing island constraints.

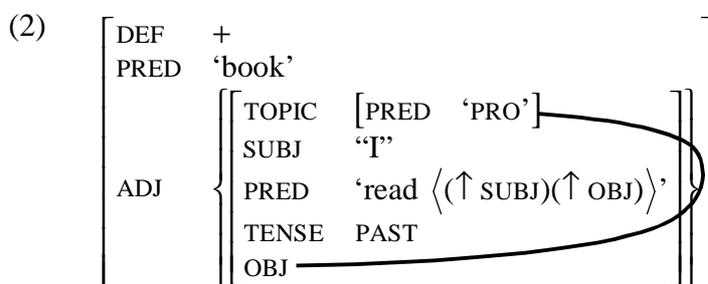
2. Resumptive pronouns vs. gaps

The relationship between filler-gap and filler-resumptive constructions has been discussed in much of the literature on resumptive pronouns. It has led Vaillette (2001) to analyze resumptive pronoun constructions as essentially the same as gap constructions, and Sharvit (1999) to analyze them as being different.

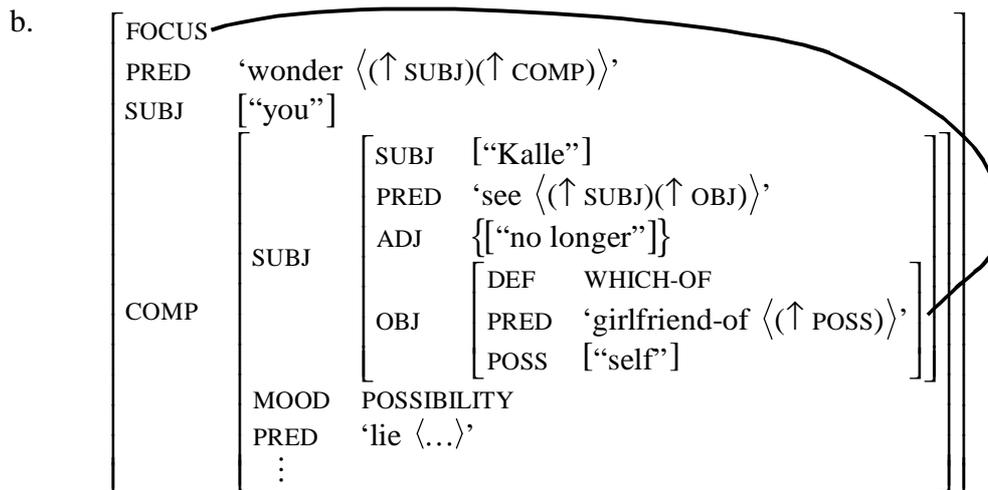
The main similarity between gaps and resumptive pronouns is that both are linked to a discourse function or operator.

- (1) a. ha- sefer še kara- ti oto
 the- book that read.PST- 1SG it
 b. ha- sefer še kara- ti
 the- book that read.PST- 1SG
 ‘the book that I read’

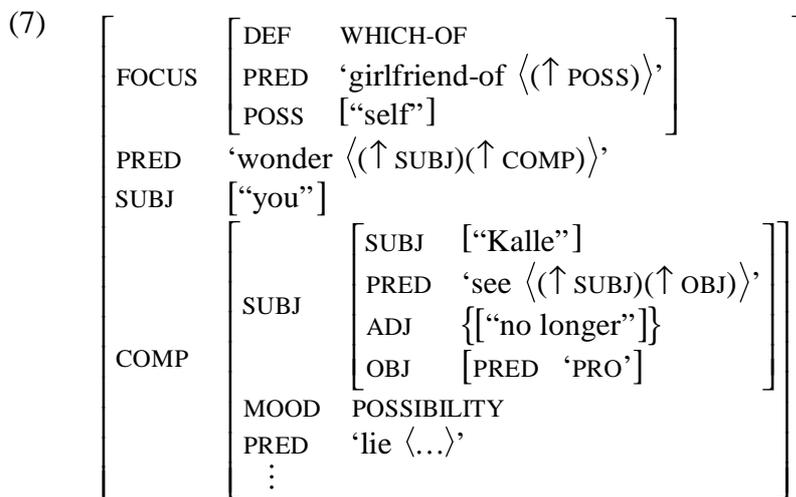
This invites an analysis in which the two constructions are essentially the same, with a single f-structure element having two distinct grammatical functions.



Such an analysis has the advantage of being consistent with the strongest version of the Extended Coherence Condition:



Under an anaphoric analysis of the resumptive pronoun, the reflexive would not be bound in its minimal nucleus.



Another relevant property is the licensing of parasitic gaps (Sells 1984, Shlonsky 1992, Vaillette 2001). Resumptive pronouns do not license parasitic gaps in adjuncts, but do license them in subjects.

- (8) a. *Elu hasfarim še Dan tiyek otam bli likro pg.
 these the.books that Dan filed them without to.read
 'These are the books that Dan filed without reading.'
- b. ?Zo- hi habaxura še haanašim še tearu pg lo hikiru ota hetev.
 this- is the.girl that the.people that described not knew her well
 'This is the girl that the people who described didn't know very well.'

A full understanding of this would require a theory of parasitic gaps in general, and the contrast between parasitic gaps in subjects and those in adjuncts in particular. However, on the standard assumption that parasitic gaps are licensed by long-distance dependencies, the ability of resumptive pronouns to license any kind of parasitic gap indicates that resumptive pronoun constructions are long-distance dependency constructions.

Another similarity, which we will not review here, is susceptibility to crossover effects

(Sells 1984, Shlonsky 1992, Vaillette 2001). Since crossover effects are based on the operator-gap relation (Bresnan 1995), this also argues for a long-distance dependency analysis.

Another piece of evidence that has been cited is the fact that across-the-board extraction is satisfied in structures where one conjunct has a gap and the other has a resumptive pronoun.

- (9) ha- sefer še kaniti ve še divaxti al- av
 the- book that I.bought and that I.reported on- it
 ‘the book that I bought and reported on’

Under the analysis of the across-the-board phenomenon proposed by Falk (2000), this is not direct evidence for an LDD analysis. Under that analysis, the discourse function is distributed between the conjuncts, so there is a separate dependency in each conjunct.

Other properties of resumptive pronouns point to differences between them and gaps. For example, in most languages, including Hebrew, resumptive pronoun constructions are not subject to island constraints.

(10) a. **Coordinate Structure**

ha- sefer še karati oto / *∅ ve nirdamti
 the- book that I.read it and fell.asleep
 ‘the book that I read it and fell asleep’

b. **“Complex NP”**

ha- sefer še riayanti et ha- iša še katva oto / *∅
 the- book that I.interviewed ACC the- woman that wrote it
 ‘the book that I interviewed the woman who wrote (it)’

c. **Object of Preposition**

ha- sefer še šamati al- av / *∅
 the- book that I.heard about it
 ‘the book that I heard about’

It is this fact, combined with the approximate complementary distribution of gaps vs. resumptives that led Shlonsky (1992) to propose that resumptive pronouns are a last resort device, used to circumvent island constraints.

On the other hand, it is not universally true that no island constraints apply to resumptive pronouns. In Igbo, as reported by Goldsmith (1981), both gaps and resumptive pronouns obey what Goldsmith identifies as the Complex NP Constraint.

- (11) a. *Nke-a bụ uno m maalu nwoke lulu (ya).
 this is house I know man built (it)
 ‘This is the house that I know the man who built it.’
 b. *Nke-a bụ uno m maalu onye lulu (ya).
 this is house I know who built (it)
 ‘This is the house that I know who built it.’

Similarly, in Palauan (Georgopoulos 1990) extraction from an adjunct is ungrammatical, even with a resumptive pronoun.

- (12) *ng- oingerang a mlarngii a betok el 'ad el mle
 CLFT- when REAL.PST.be many LNK man COMP AUX
 songerenger (se er ngii)
 starving when P it
 'When were there many people who starved (then)?'

Sells (1984) reports that in Swedish resumptive pronouns are subject to most of the island constraints to which gaps are subject. However, this situation seems to be relatively unusual.

Another difference that argues against too close a relationship between gaps and resumptive pronouns has to do with special morphological marking on the long-distance dependency path. In some languages, as discussed by Zaenen (1983), there is special marking on either the verb or the complementizer of every clause between the filler and gap. Irish is one such language, and it is also a language with resumptive pronouns (McCloskey 1979). In the resumptive pronoun construction, the special marking is only on the main clause of the construction (the one with the operator), but not on lower clauses.

- (13) a. an t-úrscéal aL mheas mé aL thuig mé ___
 the novel COMP.WH thought I COMP.WH understood I
 b. an t-úrscéal arL mheas mé gurL thuig mé é
 the novel COMP.RESUMP thought I COMP understood I it
 'the novel that I thought I understood'

On the other hand, Vaillette (2001) points out that in Palauan resumptive constructions behave the same as gap constructions as regards marking of the path. It is interesting to note, though, that Palauan is one of the few languages in which resumptive constructions are subject to island constraints.

It is significant that this evidence that resumptive pronoun constructions differ from gap constructions relates to the path between the filler and gap or resumptive. In the LFG theory of long-distance dependencies (Kaplan and Zaenen 1989, Falk 2001), properties of the path relate not to the dependency itself but rather the nature of the licensing of the dependency. Islands are the result of an illicit grammatical function on or adjacent to the path, as defined by the language-specific functional uncertainty expression defining a well-formed extraction path. Special marking along the path, such as the complementizer *aL* in Irish, is analyzed in Dalrymple's (2001) reworking of Zaenen's original analysis as an off-path constraint in the functional uncertainty expression. Thus, this evidence does not contradict our earlier conclusion that resumptive pronoun constructions are long-distance dependencies; it simply requires the dependencies to be licensed differently from gap dependencies.

3. Pronouns

Lying at the heart of the phenomenon of resumptive pronouns is the question of why pronouns can be used as the lower end of a long-distance dependency. As observed above, this includes languages like English which do not have a grammatical phenomenon of resumptive pronouns but nevertheless seem to marginally allow pronouns in place of gaps (what Sells 1984 refers to as "intrusive pronouns") in islands.

The fact that the use of pronouns in this construction is not accidental is emphasized by observations that have been made from time to time concerning the referential possibilities for resumptive pronouns. The essential observation is that the reference of the resumptive pronoun is what one would expect from an ordinary pronoun. For example, Sharvit (1999) discusses the inability of resumptive pronouns to be interpreted as being in the scope of a quantifier in the same clause, unlike gaps. Note the contrast between the gap, which is ambiguous, and the

resumptive pronoun, which only has the referential reading.¹

- (14) a. ha- iša še kol gever hizmin ___ hodeta lo.
the- woman that every man invited thanked him
(i) ‘The [one] woman every man invited thanked him [=one particular man].’
(ii) ‘For every man *x*, the woman that *x* invited thanked *x*.’
- b. ha- iša še kol gever hizmin ota hodeta lo.
the- woman that every man invited her thanked him
‘The [one] woman every man invited thanked him [=one particular man].’

Unlike the gap, the resumptive pronoun must be interpreted as referential. Another case that Sharvit discusses is the distinction between the *de re* (i) and *de dicto* (ii) readings in the following example.

- (15) a. Dan lo yimca et haiša še hu mexapes ____.
Dan not will.find ACC the.woman that he looks.for
(i) ‘Dan will not find the [specific, existing] woman he is looking for.’
(ii) ‘Dan will not find the woman he is looking for [who may not exist].’
- b. Dan lo yimca et haiša še hu mexapes ota.
Dan not will.find ACC the.woman that he looks.for her
‘Dan will find the [specific, existing] woman he is looking for.’

The gap allows both the *de dicto* reading, in which the object of ‘look-for’ is not referential, and the *de re* reading, in which it is referential. The resumptive pronoun only allows the referential reading. That this is true of pronouns in general is shown by the following.

- (16) a. Dan mexapes iša.
Dan looks.for woman
‘Dan is looking for a woman.’ (ambiguous)
- b. Dan mexapes iša. Gam Ram mexapes ota.
Dan looks.for woman also Ram looks.for her
‘Dan is looking for a [specific, existing] woman. Ram is also looking for her.’

This example clearly shows that the referential properties of resumptive pronouns are related to the referential properties of ordinary pronouns. Similar effects have been noted in other languages, with the same conclusion. Thus, in discussing resumptive pronouns in Spanish, Suñer (1998: 358) observes that “resumptive pronouns in restrictive relatives act like regular pronouns with respect to the antecedent.”

Another point that emerges from the literature on resumptive pronouns is that the antecedent of the resumptive pronoun has some kind of discourse-related prominence, characterized by Erteschik-Shir (1992) as “restrictive focus” (identification as part of a set defined by the context), and by Sharvit (1999) as “D(iscourse)-linking.” Erteschik-Shir contrasts the following two sentences.

¹Sharvit also observes that the facts are different in specificational sentences, and explains this in terms of a theory of pronoun interpretation.

- (17) a. Hine ha- simla še kaniti.
 here.is the- dress that I.bought
 b. Hine ha- simla še kaniti ota.
 here.is the- dress that I.bought it
 ‘Here is the dress that I bought.’

As described by Erteschik-Shir, (17b) would be used if the hearer knew not only that the speaker went to town to buy a dress, but also that she had a few specific dresses in mind. That is to say, there is a contextually defined set, and this example identifies a particular dress as a member of the set. Another piece of evidence is provided by Sharvit, who notes that while it is usually stated that in Hebrew resumptive pronouns are only used in relative clauses, and it is true that questions generally disallow them, some varieties of Hebrew allow them in ‘which’ questions.

- (8) a. im mi nifgšta?
 with who you.met
 ‘Who did you meet with?’
 b. *mi nifgašta ito?
 who you.met with.him
 ‘Who did you meet with?’
 c. eyze student nifgašta ito? [grammatical for some speakers of Hebrew]
 which student you.met with.him
 ‘Which student did you meet with?’

This fits with Erteschik-Shir’s description of the situation: in ‘which’ questions there is an assumed set, presumably defined by the context, and the purpose of the question is to choose a member of the set.

We will not discuss all the intricacies of pronoun interpretation, nor will we formalize our observations in terms of glue-language semantics. (For a glue-based account of pronouns, see Dalrymple 2001.) However, we will need some informal rudimentary assumptions. Following such work as Reinhart (1983) and Bresnan (2001), we distinguish between the referential use of pronouns and the bound-variable use. As argued by Reinhart, bound-variable pronouns are syntactically constrained while referential pronouns are not. Since syntactic constraints on binding are based on notions of rank at various syntactic levels, including the functional level, and the discourse functions are not part of the relational hierarchy of grammatical functions, we assume that a bound-variable account of the relation between the operator and the resumptive pronoun is not available. We also assume that, since the reference of referential pronouns is essentially governed by pragmatics, that “D-linking” can be included in a full account of the referential properties of resumptive pronouns.

The essence of (referential) pronouns is referentiality. A pronoun is an element which refers, but has no inherent reference of its own. Therefore, it must pick up its reference from something else in the discourse, usually something relatively prominent in the discourse. We take it to be uncontroversial in LFG that referentiality is represented at some non-syntactic level of representation. For concreteness, we will assume a ρ projection from f-structure, represented as a list of elements which have entered into the discourse. This referential structure should probably take the form of a DRT-like representation, but we will use a simplified representation

have resumptive pronouns. Under the version of the Extended Coherence Condition we are assuming, this is ungrammatical. On the other hand, the existence of an anaphoric link makes this interpretable, even if it violates a technical requirement of the syntax. This seems to conform to the intuitive “feel” of a sentence like this. It is odd, but usable since there is no other way to say this.³

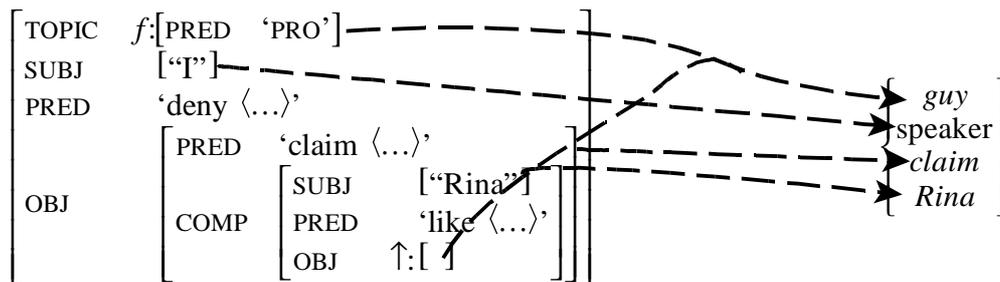
The difference between resumptive pronouns in English and resumptive pronouns in Hebrew is that in Hebrew there is an actual long-distance dependency. This can be accounted for by letting Hebrew pronouns have the following specification as an alternative to the [PRED ‘PRO’] feature.

$$(22) \quad f \in \rho^{-1}(\uparrow_\rho) \wedge (DF f) \Rightarrow \uparrow = f$$

Like the ordinary [PRED ‘PRO’] specification, (22) is a realization of the referentiality which we claim is the essential property of pronouns. The fact that the same pronouns are typically used for resumption as for ordinary pronominal uses is captured here by taking \uparrow_ρ to be the core, with universal grammar allowing different realizations for it.⁴

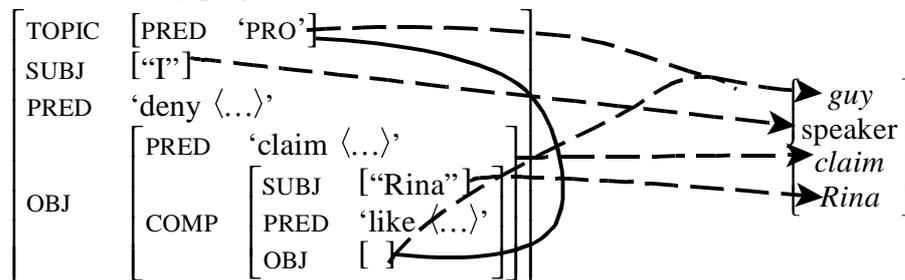
In the Hebrew equivalent of (20), the f-structure and ρ projection are the following if we ignore the specification in (22) and also do not assign the pronoun the [PRED ‘PRO’] feature.

(23)



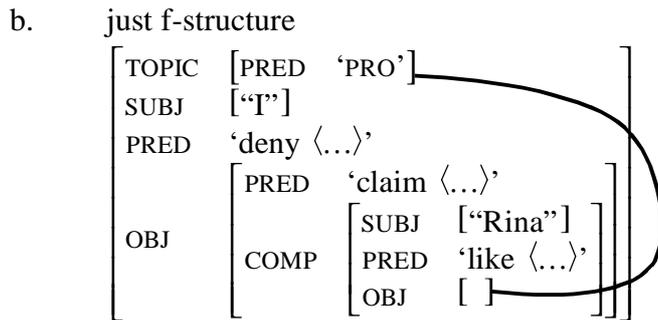
In this f-structure, the ‘ \uparrow ’ and ‘ f ’ of (22) are labeled. (22) licenses establishing identity between these two f-structure elements, resulting in an ordinary long-distance dependency which is licensed not by a functional uncertainty equation but by (22).

(24) a. f-structure + ρ projection



³My non-linguist wife refers to this as “talking yourself into a corner.”

⁴On the other hand, nothing in this account requires all languages to use the same forms for resumption and for pronouns. It allows for a marked situation in which a language might have the lexical specification (22) on a form which is not otherwise a pronoun. It has been pointed out to me by George Aaron Broadwell (personal communication) that such a situation obtains in the Mayan language Kaqchikel. Kaqchikel has a resumptive pro-PP *wi*, which is optional, but appears to be more natural with a greater distance between filler and gap, a common situation for resumptive pronouns. However, *wi* is not used as an ordinary anaphor. So it appears to be a resumptive which is not a pronoun.



Note that there is no syntactic restriction on the path between the filler and the resumptive pronoun in Hebrew; in fact, the path is not even mentioned. This accords with the observation that filler-resumptive relations are not governed by island constraints. In languages in which they are so governed, an extra conjunct will be added to the premise of the conditional specifying the relation between the two f-structure elements in the form of a conventional inside-out functional uncertainty equation.

Some of the differences between real resumptive pronouns and “intrusive” pronouns may be related to the syntactic link. For example, Sells (1984) claims that in a relative clause embedded in a quantified nominal phrase, the quantifier can bind resumptive pronouns but not intrusive pronouns.

(25) every linguist that Mary couldn’t remember if she had seen ___/*him before

- (26) a. Which of the linguists do you think that if Mary marries ___ then everyone will be happy. [___ could be a list]
 b. Which of the linguists do you think that if Mary marries him then everyone will be happy. [*him* is a single linguist]

(27) kol gever še Dina xoševet še hu ohev et Rina
 every man that Dina thinks that he loves ACC Rina
 ‘every man that Dina thinks loves Rina’

We will not pursue this here.

4. Distribution of Resumptive Pronouns and Gaps

We have not yet accounted for the relative distribution of resumptive pronouns and gaps. In Hebrew, subjects in the main clause of the relative clause must be gaps, objects and embedded subjects can be either gaps or resumptive pronouns, and oblique objects must be resumptive pronouns. This is nearly complementary distribution, but not entirely complementary. (Since an oblique object is unextractable in Hebrew, we hypothesize that OBL_0 is not allowed on the extraction path, and thus that obliques are islands in Hebrew.)

In LFG, it has been proposed that c-structure is constrained by the Economy of Expression principle, which disallows syntactic nodes which are not necessary for either f-structure well-formedness or semantic expressivity (Bresnan 2001). Interpreted strictly, Economy of Expression should allow resumptive pronouns in islands, because there is no other

way to license the same f-structure, but not in non-island contexts.⁵ That is to say, it suggests complete complementarity.⁶ This complementarity is approximately what we find, but not exactly. We note in passing that Economy of Expression can be invoked here only because we have analyzed resumptive pronouns as involving long-distance dependencies; if it were simply an anaphoric dependency the f-structures would be different and the two types of relatives would not be in competition with each other.

So the question is why we do not find absolute complementarity.⁷ We propose that Economy of Expression is only part of the story. While Economy of Expression can account for certain interesting patterns (such as the distribution of relative pronouns and complementizers in English relative clauses, as discussed in Falk 2001), there are other constructions which blatantly violate Economy of Expression. One particularly striking case is the complementizer *that* (or, more precisely, the CP which it heads) in complements to verbs in English. The following sentences produce identical f-structures:

- (28) a. I believe [_{IP} the world is flat].
 b. I believe [_{CP} that [_{IP} the world is flat]].

The question is why (28b) is grammatical, given Economy of Expression. Intuitively, the complementizer is useful for the hearer: it marks the beginning of the clause, thus making the sentence easier to parse. We propose that there is another principle (or perhaps family of principles) in competition with Economy of Expression. We will call it Sufficiency of Expression, and state it informally as follows.

(29) **Sufficiency of Expression**

Syntactic elements which provide clues to parsing are exceptions to Economy of Expression. Such elements include markers of clause boundaries and extraction sites.

This will allow resumptive pronouns where they compensate for parsing difficulty.

There are several reasons to think that the presence of resumptive pronouns in positions where they are not necessary is conditioned by parsing. For example, Erteschik-Shir (1992) notes that in many languages distance from filler improves the grammaticality of the resumptive pronoun, as in the following examples from English and Hebrew.

- (30) a. This is the girl that John likes ___/*her.
 b. This is the girl that Peter said that John likes ___/??her.

⁵An anonymous reviewer has remarked that my use of Economy of Expression differs from that of Bresnan (2001), in that Bresnan's version of the principle assumes fixed lexical choice. However, I do not believe that this is an accurate reading of Bresnan. On pp.147–8 she discusses pronominal clitics in Spanish, which have (at least in dialects that allow clitic doubling) lost their [PRED 'PRO'] feature and become merely agreement markers. She suggests, assuming the clitic is adjoined to the verb, that the higher V node is subject to Economy of Expression, and thus that *lo vio a Juan* (him s/he.saw ACC Juan) should be less economical than the version without the clitic: *vio a Juan.*, and then goes on to suggest ways to circumvent this conclusion for clitics. It is clear that Bresnan views the two versions of the sentence as being in competition, even though the lexical choice is different (including the clitic *lo* in one case but not the other).

⁶This is true of principles that have been proposed in other theoretical frameworks as well, such as the "Avoid Pronoun" Principle in GB.

⁷This question is raised in other theories as well. Shlonsky (1992) is forced to hypothesize two separate complementizers *še* in relative clauses to account for the lack of complementarity.

- c. This is the girl that Peter said that John thinks that Bob likes ___/?her.
- d. This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to ?___/her.
- (31) a. ?Šošana hi ha- iša še nili ohevet ota.
Shoshana is the- woman that Nili loves her
'Shoshana is the woman that Nili loves.'
- b. Šošana hi ha- iša še dani siper še moše rixel še nili
Shoshana is the- woman that Dani said that Moshe gossiped that Nili
ohevet ota.
loves her
'Shoshana is the woman that Dani said that Moshe gossiped that Nili loves her.'

Sells (1984) observes that in Swedish resumptive pronouns are used for multiple crossing dependencies, and also when there are two clauses between the filler and the extraction site. Both distance and multiple crossing dependencies introduce potential parsing complexity; it is plausible that the resumptive pronouns are used to overcome this complexity. Glinert (1989) explicitly notes that while resumptive pronouns are not usually used for objects, they are used in long, complex relative clauses.

The general resistance of resumptive pronouns to appear as SUBJ in the matrix of the long-distance dependency can also be explained by an appeal to ease of parsing. The SUBJ function⁸ is an "overlay" or discourse-like function (Bresnan 2001, Falk 2000). and thus has a natural affinity to other discourse functions. The matrix SUBJ is thus the most natural extraction site, and therefore the easiest to parse. Sufficiency of Expression is inapplicable, and Economy of Expression rules out the resumptive pronoun.

There is an exception to the generalization that the matrix SUBJ of the long-distance dependency cannot be a resumptive pronoun in Hebrew. As observed by Borer (1984) and Shlonsky (1992), it can be a resumptive pronoun if there is a topicalized phrase.

- (32) a. ha- iš še rak al kesef hu / ??___ xošev
the- man that only on money he thinks
'the man who only thinks about money'
- b. ha- iš še al politika hu / ??___ lo ohev ledaber
the- man that on politics he NEG likes to.speak
'the man who doesn't like to talk about politics'

Following the argumentation of this section, this should be explained on the grounds of additional complexity due to the topicalization. It is plausible that, in a subject-initial language like English or Hebrew, pre-subject material in the clause would make parsing more difficult. The attribution of the resumptive pronoun to processing considerations is also supported by Shlonsky's observation that Hebrew speakers disagree on the acceptability of the version with no resumptive pronoun. There is independent evidence that such complexity is introduced by topicalization. Culicover (1993) observes that the *that*-trace effect is suspended in English if there is a topicalized adverbial intervening between the complementizer and the clause.

⁸In the framework of Falk (2000), this is the PIV(ot) function. In "syntactically ergative" languages with resumptive pronouns, it would be the OBJ in a transitive clause that can't be resumptive. This is confirmed by Mosel and Hovdhaugen (1992) for Samoan and Chung (1978) for Tongan.

- (33) a. Robin met the man **that/who** Leslie said **that** [for all intents and purposes] was the mayor of the city.
 b. Leslie is the person who I said **that** [under no circumstances] would run for president.

In these sentences, the bolded complementizer would be ungrammatical if the bracketed phrase were not topicalized. This kind of effect is unexpected under almost any theory of the *that*-trace effect.⁹ If there is some condition which disallows the complementizer *that* from coexisting with subject extraction in the same clause, the presence of a topicalized phrase should be irrelevant. However, on the assumption that a topicalized phrase introduces additional computational complexity, the Sufficiency of Expression principle becomes relevant. By marking the beginning of the clause, the complementizer aids the language hearer in parsing the sentence.

Languages also may differ in exactly what constitutes parsing complexity. For example, Suñer (1998) states that while top-level SUBJ resumptive pronouns are marked in Spanish, they are not as dispreferred as in Hebrew:

- (34) Conozco a un tipo que él me aconseja a mí.
 I.know ACC a guy that he me.DAT advises to me
 ‘I know a guy that (he) advises me.’

The contrast may have to do with the greater flexibility of subject expression in Spanish than in Hebrew.

An interesting case of resumptive pronouns where Economy and Sufficiency can explain an otherwise puzzling distribution is discussed (from a Minimalist perspective) in Aoun, Choueri, and Hornstein (2001). The language in question is Lebanese Arabic. Subject pronouns are independent words, while other pronouns are incorporated into the head of which they are arguments. Economy of Expression, which constrains syntactic nodes, is therefore relevant for subject pronouns but not for non-subject pronouns. Pronouns and epithets can serve as resumptive pronouns. Resumption is used fairly freely.

- (35) ha- l- muttahame ʔrəfto ʔənno hiyye nħabasit.
 this- the- suspect.F know.2PL that she imprisoned.3FSG
 ‘This suspect, you know was imprisoned.’

However, if the fronted element is quantified, a full resumptive pronoun (or epithet) is possible only if the extraction path crosses an island boundary and an incorporated pronoun is possible even in a non-island context.

- (36) a. *kəll muttahame ʔrəfto ʔənno ha- l- maʒduube nħabasit.
 each suspect.F know.2PL that this- the- idiot.F imprisoned.3FS
 ‘Each suspect, you know that this idiot was imprisoned.’
 b. kəll muttahame saʔalto ʔəza ha- l- maʒduube nħabasit.
 each suspect.F asked.2PL whether this- the- idiot.F imprisoned.3FS
 ‘Each suspect, you asked whether this idiot was imprisoned.’

⁹For more on the *that*-trace effect in LFG, see Appendix A to this paper.

- c. kəll məʒrim fakkarto ʔənnɔ l- bolisiyye laʔaʔu- u.
 each criminal.M thought.2PL that the- police caught.3P- him
 ‘Each criminal, you thought that the police had caught him.’

We do not expect pronouns to be able to resume quantified expressions, since they are not referential and do not add discourse referents to the context (Dalrymple 2001). This use of pronouns looks like the bound-variable interpretation, which is generally not available with discourse-function antecedents. We hypothesize that Lebanese Arabic exceptionally allows discourse-function quantifiers to bind pronouns, and that a long-distance dependency can be licensed by it. However, perhaps because it is a marked kind of resumptive pronoun, a bound-variable-type resumptive pronoun seems not to trigger Sufficiency. With this assumption, Economy and Sufficiency derive the correct distribution of forms.

- (37) a. Extraction of nonquantified subject without crossing island
 Gap: ✓
 Resumptive: not ruled out by Economy because the pronoun is referential, so it satisfies Sufficiency
- b. Extraction of quantified subject without crossing island
 Gap: ✓
 *Resumptive : has to be a bound-variable pronoun, not a referential pronoun, so Sufficiency is irrelevant. Economy is violated.
- c. Extraction of nonquantified nonsubject without crossing island
 Gap: ✓
 Resumptive: incorporated pronoun, so not subject to Economy
- d. Extraction of quantified nonsubject without crossing island
 Gap: ✓
 Resumptive: incorporated pronoun, so not subject to Economy
- e. Extraction of nonquantified element across island
 *Gap: not generable (because of island)
 Resumptive: ✓
- f. Extraction of quantified element across island
 *Gap: not generable (because of island)
 Resumptive: ✓

The resumptive pronoun facts concerning quantifiers and islands are thus derived.

What is not yet clear is the exact nature of Sufficiency of Expression, and its interaction with Economy of Expression. Unlike Economy of Expression, Sufficiency of Expression seems not to be an entirely competence-based principle; rather, it is tied to linguistic performance. It is not clear whether it is possible to define the relevant notion of computational complexity formally, and interspeaker variation suggests that it might not be. A stochastic Optimality Theory approach may be possible, but we will not pursue one here.

5. Conclusion

This paper has argued for an analysis of resumptive pronouns in LFG under which they participate in long-distance dependency constructions. These long-distance dependencies are not

licensed in the normal way by functional uncertainty equations, but rather by establishing a referential (anaphoric) identity between the two positions. This analysis is able to account for both the similarities and differences between gaps and resumptive pronouns. It also crucially depends on the parallel projection-based architecture of LFG, and the analysis of long-distance dependencies as a static identification of two functions rather than a derivational process of movement.

Appendix A. *That*-Trace Effect

One very common use of resumptive pronouns is to circumvent the “*that*-trace” effect, as in the following examples from Sells (1984) from Hebrew and Swedish, respectively.

- (38) a. Eize xešbon kol maškia lo zoxer im hu noten ribit tova?
 which account every investor NEG remembers if he gives interest good
 ‘Which account does every investor not remember if it gives good interest?’
- b. Det finns mycket som man önskar att det skulle vara annorlunda.
 there is much that one wishes that it should be difficult
 ‘There is much that one wishes should be difficult.’

This poses a problem for the analysis of the *that*-trace effect proposed by Falk (2000). This appendix offers a solution to the problem.

The analysis of the *that*-trace effect in Falk (2000) is based on the idea that complementizers which mark functionally more-independent subordinate clauses formalize this greater independence by disallowing their SUBJ (actually PIV(ot), but we will use SUBJ here for simplicity) from being identified with an element in a higher clause. Formally, complementizers like English *that* and Hebrew *im* have the following lexical specification:

$$(39) \quad (\uparrow \text{SUBJ}) \neq ((\text{GF}^+ \uparrow) \text{GF})$$

Consider the resumptive pronoun-less version of (38a).

- (40) *Eize xešbon kol maškia lo zoxer im noten ribit tova?
 which account every investor NEG remembers if gives interest good
 ‘Which account does every investor not remember if it gives good interest?’

The *f*-structure is:

$$(41) \quad \left[\begin{array}{l} \text{FOCUS} \quad [\text{“which account”}] \\ \text{SUBJ} \quad [\text{“every investor”}] \\ \text{POL} \quad \text{NEG} \\ \text{PRED} \quad \text{‘remember } \langle (\uparrow \text{SUBJ})(\uparrow \text{COMP}) \rangle \text{’} \\ \text{COMP} \quad f: \left[\begin{array}{l} \text{TYPE} \quad \text{Q} \\ \text{SUBJ} \quad \text{---} \\ \text{PRED} \quad \text{‘give } \langle (\uparrow \text{SUBJ}) (\uparrow \text{OBJ}) (\uparrow \text{OBL}_{\text{Goal}} \text{ OBJ}) / \emptyset \rangle \text{’} \\ \text{OBJ} \quad [\text{“good interest”}] \end{array} \right] \end{array} \right]$$

The *f*-structure labeled *f* is headed by the complementizer *im*, and thus is associated with the constraint (39). Since $(f \text{SUBJ}) = ((\text{COMP } f) \text{FOCUS})$, the constraint is violated and the sentence is

ungrammatical. The problem is that the grammatical (38a) has the same f-structure.

The difference between the grammatical sentence with the resumptive pronoun and the ungrammatical sentence without is that in the grammatical sentence the SUBJ is partially represented in c-structure in *im*'s clause, whereas in the ungrammatical sentence it is completely outside of *im*'s clause. (Note that this only goes through under an analysis in which there is no c-structure trace in the position of the extracted subject. This is consistent with either a completely traceless analysis, as in Kaplan and Zaenen 1989 and Dalrymple, Kaplan, and King 2001, or a mixed analysis in which there is a trace for everything except subject extraction, as in Falk 2000, 2001.) If we consider c-structure, then, there is a way in which the (semi-)independence of the *im* clause's SUBJ is still the issue. The mistake in Falk (2000) was doing it entirely at f-structure.

Semi-formally, we want to replace (39) with something like the following:

- (42) If \uparrow is represented in c-structure (i.e. if $\phi^{-1}(\uparrow)$ exists)¹⁰, one of the nodes in $\phi^{-1}(\uparrow)$ must immediately dominate one of the nodes in $\phi^{-1}(\uparrow \text{ SUBJ})$

More formally, we can define an f-structure-aware notion of immediate dominance, similar to such concepts as f-precedence. We will call this the f-ID relation.¹¹

- (43) For any f-structures f_1 and f_2 , f_1 f-IDs f_2 ($f_1 \rightarrow_f f_2$) iff there exists a node n_1 in $\phi^{-1}(f_1)$ and a node n_2 in $\phi^{-1}(f_2)$ such that n_1 immediately dominates n_2 .

We can now restate the lexical constraint on *that*-trace complementizers:

- (44) $\phi^{-1}(\uparrow) \Rightarrow \uparrow \rightarrow_f(\uparrow \text{ SUBJ})$

We now have an account of the *that*-trace effect which retains the original insight of Falk (2000) and also explains the use of resumptive pronouns to circumvent the effect.

Appendix B. Pronoun Fronting in Hebrew

Although it is only marginally related to the question of resumptive pronouns, no discussion of Hebrew relativization would be complete without mentioning pronoun fronting. In addition to (45a), (45b,c,d) are also grammatical.

- (45) a. ha- sefer še ani xošev še karata oto
 the- book that I think that you.read it
 b. hasefer še ani xošev še oto karata
 c. hasefer še oto ani xošev še karata
 d. hasefer oto ani xošev še karata
 ‘the book that I think you read’

That is to say, the pronoun can be fronted, either partially or completely, and if it is fronted completely the complementizer can be omitted.

The description in the previous sentence has often been taken to be an accurate

¹⁰This natural condition prevents the effect from applying in the case of “empty operator” LDD constructions, such as *that* relatives in English.

¹¹Thank you to Ron Kaplan (p.c.) for help with the formalization.

description of the situation. Borer (1984: 223) takes the fronting of the pronoun to “demonstrate clearly that a major strategy of relative clause formation in Hebrew involves movement of some sort.” Glinert (1989) notes the variable positioning of the pronoun, and also notes that preposing the pronoun can substitute for having a complementizer.

However, as argued by Vaillette (2001), there are serious problems with an analysis which sees the movement of the pronoun as part of the process of relativization in Hebrew, or sees the complementizer-less version as just another minor variation. Vaillette observes that Hebrew allows free partial or complete topicalization independently of relative clauses. The simplest analysis, then, is to see the fronting of the resumptive pronoun as a case of topicalization. In fact, pronouns other than the resumptive pronoun can be fronted in relative clauses.

- (46) ha- rofe še otam šalaxti elav
 the- doctor that them I.sent to.him
 ‘the doctor that I sent them to’

There is thus no reason to see fronting as part of relativization in Hebrew.

The form without the complementizer is different, though. In the first place, the complementizer *še* is generally obligatory, unlike the English *that*. This renders Borer’s (1984) free deletion analysis of the absence of *še* somewhat dubious. Secondly, as observed by Vaillette, the fronting of the pronoun in the complementizerless version behaves differently from topicalization: the fronting must be all the way to the matrix of the relative clause, and other elements cannot front instead.

- (47) *ha- rofe otam šalaxti elav
 the- doctor them I.sent to.him
 ‘the doctor that I sent them to’

This looks more like the fronting of a relative pronoun in a language like English. Finally, as observed by Sharvit (1999), the fronted pronoun in the complementizerless relative does not have the referential properties of resumptive pronouns.

- (48) a. Ha- iša ota kol gever hizmin higia ito.
 the- woman her every man invited arrived with.him
 (i) ‘The [one] woman every man invited arrived with him [=one particular man].’
 (ii) ‘For every man *x*, the woman that *x* invited arrived with *x*.’
 b. Ha- iša še ota kol gever hizmin higia ito.
 the- woman that her every man invited arrived with.him
 ‘The [one] woman every man invited arrived with him [=one particular man].’

This observation of Sharvit’s confirms Vaillette’s analysis, under which the two fronted-pronoun variants are very different constructions: the one with a complementizer involving a resumptive pronoun that happens to be fronted, and the one without a complementizer involving a homophonous relative pronoun.

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